

Reducing  
Nuclear Threats  
and  
Preventing  
Nuclear Terrorism



The National Security *Advisory Group*

October 19, 2007

In response to growing concerns over nuclear proliferation and nuclear terrorism, a group of leading experts and former top-ranking officials decided to look at the issues surrounding nuclear threats. A working group (noted by \* below), under the direction of Wendy R. Sherman, Principal, The Albright Group LLC and Robert J. Einhorn, Senior Advisor, International Security Programs, Center for Strategic and International Studies, analyzed the current situation with regard to the nuclear threat environment and developed a comprehensive strategy. This report builds upon earlier work by the National Security Advisory Group. All signatories have endorsed this report as individuals, not as representatives of their respective organizations. Those signing endorse the report in general though not necessarily each specific recommendation.

Madeleine K. Albright  
Graham T. Allison\*  
Donald A. Baer  
Rand Beers  
Daniel Benjamin  
Samuel R. Berger  
Carol M. Browner  
Kurt M. Campbell  
Ashton B. Carter\*  
Joseph Cirincione\*  
Wesley Clark  
Bill Danvers  
Thomas A. Daschle  
Thomas E. Donilon\*  
Thomas J. Downey  
Robert J. Einhorn\*  
Michele A. Flournoy\*

Leon Fuerth\*  
Robert Gallucci\*  
Suzanne A. George  
Donald L. Kerrick  
Ernest J. Moniz\*  
James C. O'Brien  
George Perkovich\*  
William J. Perry  
John Podesta  
Elizabeth Sherwood Randall  
Steve Ricchetti  
Susan E. Rice  
John Shalikashvili  
Wendy R. Sherman\*  
Jeffrey H. Smith  
Tara Sonenshine  
Jim Steinberg

## **Reducing Nuclear Threats and Preventing Nuclear Terrorism**

The nuclear nightmare that haunts us today is very different from the one we feared during the Cold War. Back then, our nightmare was a massive, civilization-destroying nuclear exchange involving thousands of nuclear detonations. But despite the magnitude of the risks, we believed our single mortal enemy would be deterred by the prospect of devastating nuclear retaliation and, over time, the two sides developed both tacit and formal rules of the competitive game that for the most part kept them a safe distance from a nuclear showdown.

Today's nightmare scenarios may be less lethal on a global scale but are widely viewed as more likely to occur. Instead of a single, well-known, and generally cautious adversary, we now face multiple potential adversaries, both state and non-state, some of whom may not be governed by the rules of deterrence, several of whom are known to be seeking nuclear weapons, and all of whom we understand more poorly than we had come to understand the Soviet Union.

Since the end of the Cold War and especially since 9/11, we have recognized that the nuclear threats facing the U.S. and its friends and allies have changed radically. But our policy responses have not kept pace with the rapidly evolving threat. We haven't moved quickly or decisively enough; our efforts have lacked sufficient priority and focus; and ends and means have been poorly aligned.

We need a new strategy for reducing nuclear threats, and especially the threat of nuclear terrorism. This paper is intended as a contribution to developing such a strategy. It focuses on the threat to the United States and its friends and allies posed by nuclear weapons. Much of the analysis and recommendations in the paper may also apply to the threats posed by other so-called weapons of mass destruction – biological weapons (BW) and chemical weapons (CW), both of which are capable of producing large-scale casualties. But because nuclear weapons are in a class by themselves in terms of their destructiveness and their political and security implications – and because BW and CW are less susceptible to preventative policies and more to protective measures that can reduce their lethal effects – this paper focuses mainly on nuclear threats.

### **The changing nuclear threat environment**

During the Cold War, U.S. nuclear planning was preoccupied with a totalitarian USSR that we feared could threaten the U.S. nuclear deterrent with its formidable nuclear capabilities and overwhelm NATO's defenses with its massive conventional capabilities. The principal challenge of U.S. nuclear policy was to maintain effective, survivable nuclear forces capable of deterring and defending against Soviet nuclear attacks or large-scale conventional aggression by the Warsaw Pact. The human and material costs of deterrence failing were almost unimaginable, but over time the two main protagonists developed habits of caution and restraint that brought stability and predictability to their deterrent relationship.

Today, the U.S. faces very different nuclear threats. The gravest current threat is the possibility that terrorist groups such as al-Qaeda will succeed in their effort to acquire nuclear weapons. We must assume that suicidal terrorists cannot be deterred and would use such weapons if they managed to get hold of them. Although today's terrorists lack the resources to produce fissile material themselves, the continuing vulnerability to theft or seizure of nuclear materials worldwide and the availability of sensitive equipment and materials in the nuclear black market create a serious risk that terrorist groups may eventually obtain the wherewithal to build the bomb.

Another growing nuclear threat is the prospect of acquisition of nuclear weapons by countries hostile to the United States, especially North Korea and Iran. The leaders of such countries may well be rational and deterred from initiating nuclear attacks. But their ability in a crisis situation to maintain internal discipline, practice nuclear restraint, and avoid catastrophic miscalculations cannot be taken for granted. Even if they are not prone to using nuclear weapons, their nuclear capability may give them confidence that they can intimidate neighbors and jeopardize U.S. interests with impunity. If such countries became desperate economically or militarily, they might decide to run the risk of selling fissile material or otherwise assisting terrorist groups to acquire the bomb. Moreover, instability in those countries or collapse of central authority could lead to a breakdown of controls at nuclear installations and increase the likelihood of nuclear weapons or materials falling into the hands of non-state actors.

International security and U.S. interests would be threatened not just by the acquisition of nuclear weapons by hostile countries but also by the acquisition of such weapons by friends and allies of the United States. While we trust our friends and their intentions, friends' acquisition of nuclear weapons can prompt acquisition or nuclear build-ups by less friendly neighbors, and friends may have inadequate capabilities to protect nuclear installations and materials on their territory from theft or seizure. With prospects for thwarting the nuclear ambitions of North Korea and Iran now highly uncertain, several U.S. friends that would feel threatened by a nuclear-armed DPRK or Iran – including Egypt, Saudi Arabia, Turkey, Japan, and South Korea – may feel compelled to re-think their own nuclear options. Moreover, the continued weakening and potentially even the unraveling of the global nonproliferation regime would increase the difficulty of dissuading these and other countries from deciding to pursue their own nuclear deterrents.

Today's nuclear threat from Russia is qualitatively different from the Cold War Soviet threat. Russia remains committed, especially with its petro-wealth, to maintaining and modernizing its still-formidable nuclear arsenal. But despite serious strains in U.S.-Russian relations – with newly self-confident Moscow staking out an assertive foreign policy often in opposition to the United States – a return to Cold War levels of military threat and hostility seems unlikely.

Apart from Russia, the only potential peer nuclear competitor in sight is China. After fielding only small, vulnerable strategic forces during the Cold War, China is now embarked on a substantial strategic modernization program aimed at achieving long-

range, survivable, land-based and submarine-based nuclear capabilities. Although relations between China and the U.S. have steadily improved in recent years, Taiwan remains a potential flashpoint and China has heavily focused its conventional military modernization efforts on countering the U.S. ability to intervene on behalf of Taiwan in any cross-Strait military confrontation. Still, the nuclear threat posed by China today is low and likely to remain low for quite some time. It is largely the uncertainty surrounding Beijing's future intentions and capabilities that is of concern, and this concern is heightened by China's lack of transparency about its plans.

Another current nuclear threat is the possibility that nuclear weapons will be used as a result of accident or misperception. Some weaknesses in Russia's early warning capabilities that became apparent during the 1990s are now being remedied, but vulnerabilities and incentives to launch promptly persist and large percentages of both Russia and American strategic forces remain at high alert levels inconsistent with the transformation of bilateral relations since the end of the Cold War. Moreover, there is a risk that the nuclear weapons capabilities of the newer nuclear powers will expand without due regard for the need to minimize the risks of accident and misunderstanding.

A nuclear threat we face in the longer term is that the expected growth in the use of nuclear power worldwide, unless accompanied by steps to discourage the spread of fuel-cycle capabilities (e.g., enrichment and reprocessing facilities) to additional countries, could greatly increase the risks of proliferation in the future. Failure to stop Iran's enrichment program would create a damaging precedent in this regard, especially if countries considering their own nuclear power plans were to accept Iran's claim that opposition to its fuel-cycle facilities is an attempt to prevent developing countries from acquiring advanced technology and exercising their legitimate right to benefit from the peaceful uses of nuclear energy.

### **The need to shift priorities**

These major changes in the nuclear threat environment require major changes in U.S. nuclear policies. Some significant adjustments in U.S. policies have been made since the end of the Cold War, but several of those adjustments **have not gone far enough** (e.g., reductions in U.S. and Russian nuclear forces, lower alert levels of strategic forces), **have not gone fast enough** (e.g., Nunn-Lugar nuclear security programs in Russia, the Global Threat Reduction Initiative to reduce weapons-grade uranium at research reactor sites worldwide), or **have gone in the wrong direction** (e.g., doctrine of preventive war, consideration of a broader range of contingencies in which nuclear weapons might be used, decreased support for arms control and nonproliferation agreements and norms, reliance on regime change to achieve disarmament).

In the current security environment, we need to alter substantially our nuclear threat reduction priorities. In particular, we must elevate the priority we give to preventing terrorists from acquiring and using nuclear weapons and to stopping the proliferation of nuclear weapons to additional countries. We must still maintain effective, reliable nuclear forces for the foreseeable future to deter threats against the U.S.

and our allies. But given the qualitative change in our relationship with post-Soviet Russia and new technological trends (e.g., more accurate, lethal conventional weapons), we can now achieve our deterrence goals at significantly lower levels of nuclear forces and with less reliance on nuclear weapons in our national security strategy. Indeed, by reducing the salience of nuclear weapons while maintaining effective deterrence, we can put ourselves in a stronger position to build broad international support for measures needed to stop terrorists and hostile regimes from obtaining nuclear weapons.

### **A new strategy**

The U.S. needs a new strategy for reducing nuclear threats – a strategy that restores America’s traditional leadership role, relies on broad international cooperation whenever possible, ensures effective U.S. deterrence capabilities, builds on formal agreements and regimes as well as informal, ad hoc arrangements, and commands wide Congressional and public support.

An important element of the new strategy should be to reinvigorate international arms control and nonproliferation efforts. Both arms control and nonproliferation have changed considerably in recent years. Arms control was born during the Cold War to stabilize and reduce the nuclear competition between the United States and the Soviet Union. Today, not only has the U.S.-Russia relationship changed fundamentally, but new actors are now engaged in nuclear competition – and their competition may have a much greater impact on international peace and security than any remaining competition between Washington and Moscow. While the U.S. and Russia have more to do bilaterally, nuclear arms control in the period ahead should also involve a wider range of participants.

Nonproliferation has also changed significantly. It was born before the age of mass-casualty, suicidal terrorism. It was also born before global warming gave a boost to the expansion of nuclear power and before we fully appreciated that the spread of sensitive fuel-cycle capabilities (uranium enrichment and plutonium reprocessing) to more and more countries was both uneconomical and very dangerous. We need a new vision of nonproliferation that recognizes the threat from non-state actors and the reality that nuclear power can spread economically and safely, without weapons-sensitive technologies spreading inexorably in their wake.

The overarching goal of the new strategy should be to protect the United States, its allies, and its friends from nuclear attack and from coercive pressures by states possessing nuclear weapons. More specifically, the goals of the strategy should include the following:

- As our highest priority, prevent terrorists from acquiring and using nuclear weapons against the U.S. homeland or against U.S. friends or forces abroad.
- Roll back North Korea’s nuclear weapons capability and head off Iranian efforts to acquire nuclear weapons.

- Discourage and prevent additional countries, even U.S. friends and others who might be tempted by recent setbacks in the nonproliferation effort, from acquiring nuclear weapons capabilities.
- Maintain effective military forces, both nuclear and conventional, capable of deterring countries that already possess nuclear (or biological/chemical) weapons from using such weapons against the U.S., its allies, and friends or from using those capabilities to pressure or undermine U.S. friends and interests around the world.
- Reduce the likelihood that nuclear weapons will be used – whether by Russia, the U.S., or any other nuclear power – as a result of accident or misperception.
- Ensure that any large-scale expansion of civil nuclear power programs worldwide will proceed within the framework of new rules and procedures that can minimize the risks of proliferation to additional states and terrorists.

### **U.S. policies**

To support these goals, a new U.S. strategy for reducing nuclear threats should include the following policies:

#### **Securing nuclear materials worldwide**

- U.S. Nunn-Lugar programs to upgrade security at Russian nuclear installations should be completed by the 2008 target date, with the Russians increasingly capable of sustaining high physical protection standards on their own after U.S. assistance is phased out.
- The U.S. should work with Russia to accelerate efforts under the Global Threat Reduction Initiative to remove highly-enriched uranium (HEU) reactor fuel from potentially vulnerable civil research reactor sites worldwide, secure HEU fuels at reactor sites pending removal, and convert research reactors to operate on non-weapons-usable low-enriched uranium (LEU).
- The U.S., working with the International Atomic Energy Agency (IAEA) and others, should engage all states to promote best practices for securing nuclear materials to the highest practicable standards.
- The U.S. and Russia should clear away remaining obstacles, including a shortage of funding, to implementing the 2000 agreement under which each country agreed to dispose of 34 tons of weapons plutonium. They should also complete the “megatons to megawatts” program under which Russia is blending down 500 tons of former weapons HEU to LEU and selling it to the U.S. for use in reactor fuel. Beyond these initial efforts, the U.S. and Russia should consider additional measures for disposing of weapons-grade uranium and plutonium, particularly as continued reductions and

dismantling of nuclear weapons result in increasing stocks of fissile materials excess to defense requirements.

### Protecting the homeland against nuclear threats

- Although the most cost-effective way to prevent nuclear terrorism is to secure nuclear weapons and materials at their source, we should also give high priority to acquiring additional layers of protection, including strengthening our capabilities to interdict international shipments of nuclear materials, deterring state-actor nuclear assistance to terrorists, detecting attempts to smuggle nuclear materials into the United States, and mitigating as much as possible the effects of a nuclear detonation in the U.S.
- Building on the Container Security Initiative and the recent Congressional call for 100 percent scanning of U.S.-bound shipping containers within 3-5 years, the United States – working with the World Customs Organization, the International Maritime Organization, and other major container-shipping countries – should press for the implementation of stronger global container security standards.
- The U.S. needs to step up significantly the development, production, and deployment of equipment capable of detecting smuggled nuclear materials at U.S. ports and airports, land border crossings, critical infrastructure nodes, and major urban areas. The current approach to nuclear detection is uncoordinated, spread over too many agencies and jurisdictions, and too labor intensive. The authority and budget of DHS' Domestic Nuclear Detection Office should be increased to enable the creation of a national real-time monitoring capability.
- To deter states from providing fissile materials to terrorists, it is critical that the U.S. have the capability to rapidly characterize and identify the source of nuclear materials contained in a terrorist group's nuclear device, whether apprehended before use or actually detonated in the U.S. Department of Energy (DOE) should take the lead in accelerating research and development of nuclear forensic technologies and in working with foreign partners, including key governments and the IAEA, to establish an international stockpile database.
- Although prevention is certainly the preferred path for dealing with nuclear threats to the United States, we must confront the reality that a nuclear attack on an American city could happen. However, terrorists – even those armed with nuclear weapons – should never be allowed to take away the American way of life. A nuclear attack on the United States would make the challenges posed by Hurricane Katrina – which revealed gross inadequacies in our federal disaster response system -- seem tame. To be sufficiently prepared, the United States needs to develop a detailed national contingency plan for the management of the consequences of a nuclear attack on an American city. Following such an attack, Americans would not only face the destruction of lives and infrastructure but would experience the broader destruction of their sense of safety and well-being. Serious advance planning focusing on public preparedness, citizen education, and measures to enhance effective deterrence of

further attacks and retaliation against perpetrators could save hundreds of thousands of lives, billions of dollars, prevent unnecessary panic, support continued trust in the government, and help preserve democratic institutions in a time of emergency.

### Stopping North Korea and Iran

- Given the huge stakes for U.S. security interests and for future efforts to impede proliferation, the U.S. should exercise strong leadership in mobilizing the international community to roll back North Korea's nuclear weapons program and head off Iran's acquisition of a nuclear weapons capability. Multilateral diplomacy provides a promising framework for pursuing those objectives, but bilateral U.S. engagement within that framework will often prove necessary to make progress.
- The U.S. should work closely with Japan, China, South Korea, and Russia on a strategy combining incentives and credible penalties to implement the September 2005 joint statement on eliminating North Korea's nuclear weapons program and the February 2007 agreement on "initial actions" for the implementation of that joint statement.
- The U.S. should cooperate with the Europeans, Russia, China, Japan, and Iran's neighbors to pressure Tehran to abandon its uranium enrichment and plutonium production programs as well as to end its support for Middle East terrorist groups, its efforts to destabilize Lebanon, its support for violence in Iraq, and its opposition to Israel. In addition to building on the July 2005 offer of incentives by the P-5 countries and Germany, the U.S. should seek to change radically Iran's current calculations of benefit and risk by going beyond Security Council sanctions and mobilizing strong financial and other economic pressures against Iran.
- Pressures alone will not persuade Pyongyang and Tehran to forswear their nuclear weapons ambitions. Incentives will also be necessary. If North Korea and Iran are genuinely prepared to change their behavior in the nuclear area and in other areas, the U.S. should be prepared to normalize relations with the regimes currently in power – and to leave regime change to the people of those countries.
- Americans have understandable moral qualms about dealing with highly repressive regimes. But the "moral hazard" of engaging such regimes may be far outweighed by the adverse moral consequences of not engaging them and standing by while they acquire nuclear weapons capabilities and use those capabilities to maintain control domestically and intimidate neighbors. Moreover, engaging those regimes to reach agreements that promote U.S. security and make the world safer does not preclude addressing their moral shortcomings. Indeed, engagement should be used as an opportunity to pursue a principled and forceful human rights agenda.
- While seeking to thwart North Korea's and Iran's nuclear ambitions, the U.S. should build international support for measures over the longer term to contain and deter those countries and eventually roll back their nuclear programs if they persist in

pursuing them. The U.S. and other key governments should remain firm and united in making clear to those countries that their nuclear weapons programs will never be “accepted” by the international community and that, as long as those programs are pursued, they will not enjoy normal, sanctions-free relations with the rest of the world.

### Ensuring credible deterrence

- U.S. nuclear forces remain crucial in deterring nuclear strikes against the U.S. and its allies by existing or future nuclear weapon states.
- Our nuclear force posture continues to be based on Cold War assumptions about what is required for deterrence. Deterring nuclear attack by today’s Russia (and by China for the foreseeable future) can be achieved at significantly lower levels than are now planned of both operationally deployed weapons and non-deployed reserve weapons. It would be premature to be precise about future U.S. force levels before adopting an overall nuclear strategy, agreeing on an approach to stockpile maintenance, and gaining a better understanding of the force plans of other nuclear powers. Depending on these and other factors, an operationally deployed force of fewer than 1000 nuclear weapons may well be justified.
- Nuclear weapons are much less credible in deterring conventional, biological, or chemical weapon attacks. A more effective way of deterring and defending against such non-nuclear attacks – and giving the President a wider range of credible response options – would be to rely on a robust array of conventional strike capabilities and strong declaratory policies.
- While suicidal terrorists cannot in all likelihood be deterred, we should seek to deter states from assisting terrorist groups to obtain nuclear capabilities. It should be U.S. policy that, in the event we have high confidence that a state has knowingly provided material or technical assistance enabling a terrorist group to conduct a nuclear attack against the U.S. or its allies, we would hold that state responsible and would reserve the right to respond as if the state itself had conducted the attack.
- Given concerns in Northeast Asia about a nuclear-armed North Korea and in the Middle East about an eventually nuclear-armed Iran, high priority should be given to assuring U.S. friends and allies in those regions about the credibility of the U.S. extended deterrent.
- The use of conventional military force is an available option for preventing the acquisition or use of nuclear weapons by hostile state or non-state actors. Indeed, it is likely to be the preferred option for dealing with terrorists. But in the case of state actors, it should only be used to preempt an imminent threat or if other options have been exhausted.

### Modernizing U.S. deterrent forces and infrastructure

- Especially at lower quantitative levels, U.S. forces must be highly capable and reliable. That means continuing to upgrade strategic nuclear delivery systems. Programs are currently underway to upgrade and extend the service life of various elements of the U.S. nuclear triad consisting of Trident submarines, Minuteman ICBMs, B-52 and B-2 long-range bombers. If these programs continue as planned, the reliability and effectiveness of those delivery systems should be maintained well into the future, and no decisions on follow-on delivery systems would likely be needed before the middle of the next decade at the earliest.
- The U.S. needs a safe, secure, and responsive nuclear weapons R&D and production infrastructure to ensure a durable and credible deterrent, and that will require refurbishing the current aging weapons complex. Among the objectives of this effort would be to consolidate and increase the security of U.S. special nuclear materials, reduce the environmental impact of nuclear weapons-related activities, and upgrade production facilities to support legacy weapons systems or any reliable replacement warheads (RRWs) that may be introduced into the stockpile. In addition, a more responsive infrastructure, by enabling the U.S. to react in a timely manner to emerging threats, could permit deeper reductions in the weapons stockpile. But sizing the complex and developing a plan for managing the considerable long-term infrastructure costs will critically depend on such basic policy questions as the number of U.S. nuclear weapons required in the future, the types of weapons that will be included in the stockpile (including whether the RRW will proceed), and the platforms on which they will be deployed. Decisions on these and other issues will be required before we attempt to design and fund the required complex.
- A major effort should go into developing a range of conventional strike weapons and operational concepts that would give the President more credible and technically suitable options for dealing with new and evolving threats. Such an effort could produce conventional forces capable of performing some missions previously assigned to nuclear weapons as well as missions that have assumed greater urgency in recent years (e.g., prompt targeting of terrorists and mobile/re-locatable weapons systems). It could therefore help reduce U.S. reliance on nuclear weapons in its defense strategy.
- The U.S. needs to plan on the basis that it will have to maintain the reliability of its nuclear weapons stockpile for the foreseeable future. The Bush Administration affirms that the Stockpile Stewardship Program (SSP) has maintained the reliability and safety of current U.S. warheads without nuclear testing. It also concurs with the conclusions of a recent study that aging of plutonium in nuclear warheads has been slower than previously feared – in particular, that the lifetimes of existing U.S. nuclear weapons pits exceeded 85 years, as compared to earlier estimates of 45 years. Nonetheless, the Administration has expressed concern that confidence in the reliability of legacy nuclear weapons designs refurbished through life extension programs might erode over time. It has selected a baseline design for a “reliable replacement warhead” (RRW) for the W76 Trident SLBM warhead that it claims will

be safer, more reliable, and more cost-effective, will not perform new military missions, and will not require nuclear testing. It requested \$89 million in FY08 to develop detailed costs and a schedule, with a decision to be taken later on whether to proceed with development and production. But Congress – questioning whether the reliability of the stockpile is eroding and insisting that any proposed change in the current approach to stockpile maintenance be considered not on a piecemeal basis but as part of a serious review of the future role of nuclear weapons in overall U.S. strategy – is likely to cut back significantly on the Administration’s FY08 request.

- Given the current, widely-shared judgment that U.S. warheads are reliable and safe and that life extension efforts are sound, there is no urgency to proceed with the Administration’s RRW program or any other alternative to the long-standing SSP to assure the continuing safety and reliability of U.S. nuclear weapons. The importance of proceeding deliberately was underlined by a September 2007 study by the JASON Defense Advisory Group, which maintained that additional experiments, analyses, and independent peer reviews were necessary to establish the necessary confidence in RRW performance without underground nuclear testing. We can afford to study our options carefully, and we should. The reliability of our deterrent is at stake, the strength of our leadership toward a new nuclear order is at stake, and billions of dollars are at stake. As we assess RRW and its many variants and alternatives, we need to examine the military requirements for the initial RRW and possible additional RRWs; the possible advantages of RRWs over legacy warheads in terms of cost, safety, security, and reliability; the ability to certify and maintain long-term confidence in RRWs without nuclear testing; and the implications of going ahead with RRWs for U.S. nonproliferation objectives.
- We do not need a new, low-yield nuclear warhead to deal with terrorist groups or rogue regimes. We already have relatively low-yield weapons options in the inventory that provide considerable mission flexibility. To the extent that rogue regimes are deterred by the possibility of a U.S. nuclear response (as compared to a U.S. conventional response), they are unlikely to see any distinction, in terms of credibility or yield, between existing nuclear weapons and new, even lower-yield weapons. Moreover, whatever marginal gain in military capability might be achieved by developing new nuclear weapons would be more than offset by the adverse public reaction in the U.S. and internationally, which would undercut U.S. efforts to reinvigorate the nonproliferation regime.
- We do not need a new earth-penetrating nuclear warhead. A nuclear warhead with sufficient yield to destroy a deeply buried target, whether it penetrated the ground first or not, would cause enormous collateral damage and fallout. In addition, the effectiveness of such warheads would depend critically on highly accurate intelligence about the location of high-value targets, and experience in Iraq, North Korea, and Iran suggests that such intelligence may often be unavailable. More fundamentally, it is hard to imagine an American president authorizing the first use of nuclear weapons except to preempt an imminent nuclear attack on the U.S. We should explore a range of more usable conventional means (e.g., targeting ducts and

tunnel entrances, repeated conventional strikes, special forces) for defeating such targets.

### Revising U.S. declaratory policy

- Notwithstanding assertions that it is reducing U.S. reliance on nuclear weapons, the Bush Administration has conveyed the impression in statements by senior officials and in its 2002 Nuclear Posture Review that the U.S. is elevating the importance of nuclear weapons and is prepared to use them in a wider range of contingencies, including in response to CBW attacks and to destroy high-value targets even in the absence of attacks on the U.S. or its allies. The impression that the U.S. and other nuclear powers believe the role of nuclear weapons is increasing will enhance the value of possessing nuclear weapons in the eyes of states that may in the future consider acquiring them.
- To reverse this impression – and signal clearly that the U.S. is reducing its reliance on nuclear weapons and restoring its leadership role in revitalizing the nonproliferation regime – the U.S. should adopt a new declaratory policy based on the following elements:
  - The President must have credible options to respond to nuclear and mass-casualty biological, chemical, and conventional attacks against the U.S. and its allies.
  - The international security environment has changed significantly since the end of the Cold War. The option to use nuclear weapons in response to a massive Warsaw Pact conventional attack is no longer necessary. Moreover, with major enhancements in accuracy and lethality, today's advanced conventional weapons can provide devastating response options and perform some missions previously assigned to nuclear weapons.
  - The U.S. should give high priority to developing a range of conventional weapons and operational concepts that would give the President credible and technically suitable options that would reduce and eventually eliminate any need to resort to nuclear weapons in response to non-nuclear attacks.
  - Nuclear weapons remain an essential means of deterring and defending against mass casualty attacks, especially nuclear attacks. The reliability and effectiveness of the U.S. nuclear deterrent must be maintained for the foreseeable future. However, nuclear weapons must be seen as a last resort, when no other options can ensure the security of the U.S. and its allies.
  - The U.S. will reserve the right to use whatever means are necessary to protect its vital interests, while reducing the need to rely on nuclear weapons and giving increasing emphasis to the role of conventional weapons in deterring and defending against mass casualty attacks.

## Pursuing missile defense

- Especially at a time when countries hostile to the United States, such as North Korea and Iran, are actively seeking both nuclear weapons and long-range ballistic missile capabilities, it is important that the U.S. pursue missile defenses. It should continue a broadly-based development effort and proceed with deployment only as warranted by the results of realistic test programs and the evolution of the ballistic missile threat.
- At the present time, a high priority should be to cooperate on missile defenses with friends and allies located near North Korea and Iran and reassure them of our willingness to defend them against ballistic missile attack – and therefore to reduce any pressure they may feel for pursuing nuclear deterrents of their own.
- The U.S. should view missile defenses in the context of the full range of nuclear, biological, and chemical threats to the American homeland, our friends and allies, and our overseas interests, recognizing that long-range ballistic missiles are not the only means of delivery our enemies could use to attack us and that the resources we devote to defenses against ballistic missiles must be balanced against other defense and homeland security needs.
- The Bush Administration's plans to deploy elements of a ballistic missile defense system in Poland and the Czech Republic to defend against missile attacks from Iran have raised concerns on several grounds. There is little confidence among experts that, in the absence of further research, development, and testing, such a system would perform effectively. There are also doubts that the Iranian missile threat, especially against U.S. territory, will materialize as early as the Administration has suggested. In addition, some NATO allies have expressed concern that they were not adequately consulted on U.S. plans, which they say have not been coordinated with ongoing NATO efforts to pursue defenses against short- and medium-range ballistic missiles. And finally, Russia has strongly opposed deployment of missile defense components in Eastern Europe, even threatening to target the proposed sites. As a substitute for the missile defense components in Poland and the Czech Republic, President Putin at the recent G-8 summit in Germany offered to collaborate on missile defense and early warning with the U.S. and NATO, including by integrating an Azerbaijan-based Russian radar into the system. Later, during his visit to Kennebunkport, Putin reportedly expanded the proposal, suggesting that joint early warning and information-sharing centers be set up in Moscow and Brussels, that a new radar be built in southern Russia, and that other European countries be included in developing the missile defense system.
- There is no need to move ahead rapidly with the planned deployments in Eastern Europe. While Iran's nuclear and missile programs are clearly making progress and missile defenses to counter them may take years to deploy (and therefore should be started well before the threat materializes), we still have sufficient time before the threat materializes and can therefore afford to move deliberately. We should give highest priority during that time to preventing Iran from acquiring nuclear weapons

and long-range missiles. Success in that effort will require the active support of Russia and our European allies, and that will be facilitated by addressing their concerns and cooperating with them as much as possible on missile defenses. While we should not give the Russians a veto over our missile defense plans, we should give careful consideration to Russian proposals, engage them in a joint assessment of the threat posed by Iran's nuclear and missile programs, and seek to develop a common strategy for defeating that threat, including by working together and with NATO on a cooperative approach to missile defense that can help protect Europe, Russia, and the U.S. from missile attack. As we proceed with Russia and our NATO allies, the U.S. Congress – which will play a key role in considering and funding any missile defense plans and is likely to scale back the Administration's FY08 budget request for the Eastern European missile defense sites – should be kept involved and fully informed.

- Beyond the question of deploying missile defense components in Europe, Washington needs to consult closely with the Russians on U.S. missile defense plans more generally. During the Cold War, the ABM Treaty contributed to strategic stability by reinforcing the condition of mutual vulnerability and therefore of mutual deterrence. Today, despite the absence of a profound ideological and global conflict between the U.S. and the Russian Federation, Russia is expressing concern that U.S. missile defenses, no longer constrained by the ABM Treaty, could eventually undermine its deterrent, especially if missile defense technologies now being explored prove effective, and particularly in combination with deep reductions in strategic offensive forces, as are recommended elsewhere in this paper. Unless handled carefully, such developments could adversely affect U.S.-Russian relations and undercut strategic stability by strengthening arguments in Moscow for stepping up deployment of Russian strategic forces and by increasing Russian reliance on risky launch-on-warning or other prompt-launch procedures. Sharing more information with the Russians about U.S. plans, and especially working concretely with them on cooperative missile defense and early warning projects, could help alleviate these concerns.
- The U.S. also faces resistance to its missile defense programs from China. Indeed, China's opposition may be even more acute because China's strategic forces, even with current modernization programs, are both smaller and less advanced than those of Russia. Therefore, China might judge their strategic forces to be less capable of penetrating future U.S. defenses. The U.S. will have to make similar efforts to persuade China not to see our missile defense plans as a strategic threat.

#### Reinvigorating arms control

- The traditional U.S. role of leadership in international arms control efforts should be restored.
- We should agree with the Russians to replace the START I Treaty with a follow-on agreement when it expires in December 2009. In a joint statement on July 3, 2007,

U.S. Secretary of State Condoleezza Rice and Russian Foreign Sergei Minister Lavrov pledged that the two countries would continue discussions on developing “a post-START arrangement to provide continuity and predictability regarding strategic offensive forces.” In earlier bilateral discussions, the two sides held differing views on a replacement for START I. The Bush Administration resisted a formal agreement, numerical ceilings, and detailed verification provisions, and the Russians favored a legally binding measure, deeper reductions, and verification measures closer to those contained in START.

- In keeping with today’s changed strategic circumstances, the follow-on agreement should look very different from its predecessor. With the U.S. less worried today about Russian intentions and capabilities, the follow-on agreement could give both sides more flexibility than they were given in START to structure their forces as they see fit. Moreover, a number of START’s rigorous counting rules and verification measures could be relaxed or dispensed with. Even though a follow-on deal can be much shorter than START and look much less like an agreement between mistrustful adversaries, it should contain sufficient transparency and confidence-building measures to give both sides a sense of predictability about their strategic relationship, and it should be a formal, legally binding agreement to reinforce that predictability. It should also provide for reductions to significantly lower levels than required by 2002 Moscow Treaty and, unlike that Treaty, should cover both operationally deployed and non-deployed nuclear weapons.
- As part of a broader agreement with the Russians on nuclear weapons issues, the U.S. might explore with them an understanding – perhaps implemented through reciprocal parallel steps – that would involve the removal of all remaining U.S. nuclear weapons from Europe in exchange for the reduction and consolidation of Russian tactical nuclear weapons at a small number of secure sites in Russia. While the limited number of U.S. nuclear weapons remaining in Europe have lost much of their Cold War military value, they may continue to have utility in reassuring allies of America’s commitment to their security. Therefore, because some of our allies, including Turkey, may feel threatened by the prospect of Iran or others acquiring nuclear weapons and may believe that the presence of U.S. nuclear weapons in Europe would strengthen the extended U.S. deterrent against such nuclear threats, this idea should only be pursued on the basis of consensus with our NATO allies.
- The U.S. and Russia should take steps to reduce the risk that nuclear weapons would be employed as a result of accidents, misperceptions, or unauthorized actions. In particular, they should explore means of increasing warning and reaction times, including by lowering alert rates of their strategic systems, enhancing cooperation in early warning, and otherwise reducing incentives for employing prompt-launch procedures.
- It is high time that nuclear powers other than the U.S. and Russia join in the disarmament process. Moscow and Washington should urge the other nuclear powers, both those inside and outside the NPT, to accept limits and even reductions in

their nuclear capabilities. But nuclear weapon state interactions need not be confined to the traditional arms control agenda of limitations and reductions. They could discuss nuclear security and accountancy, early warning and avoidance of accidental nuclear war, transparency, and a range of confidence-building measures. They could also agree on a moratorium on the production of fissile material for nuclear weapons and urge other nuclear weapon states to join the moratorium pending completion of a verifiable, multilateral Fissile Material Cutoff Treaty.

- The U.S. should build strong international support for maintaining a universal moratorium on nuclear weapons testing. At the same time, a bipartisan process should be initiated in the United States Senate aimed at overcoming concerns about the comprehensive test ban treaty (CTBT) and achieving its ratification, after which the U.S. should press for bringing it into force internationally.

#### Shoring up the nonproliferation regime

- The U.S. should return to its traditional role as the world's strongest supporter of the global nonproliferation regime, and should take the lead in efforts to shore up the regime and prevent it from unraveling. Its efforts in this regard should be based on several principles:
  - An effective strategy should combine formal, rules-based mechanisms (e.g., NPT) and informal, ad hoc arrangements (e.g., the Proliferation Security Initiative).
  - The U.S. should rely on multilateral approaches and work with international organizations (e.g., IAEA) where possible, but act unilaterally when necessary.
  - The use of military force to prevent nuclear proliferation should be a last resort (except in the case of stopping nuclear terrorism), but should remain an option if other methods prove ineffective.
  - While regime change is a worthy objective in the case of repressive regimes that seek nuclear weapons, regime change is most effectively pursued by indigenous means and, from a U.S. perspective, the national security objective of stopping nuclear weapons programs deserves priority.
  - Effective negotiations to head off or roll back nuclear weapons programs by determined and resourceful states should combine powerful incentives and disincentives.
- The U.S. and like-minded states should work to strengthen the IAEA's verification authorities, including by making adherence to the Additional Protocol a condition of nuclear supply. The U.S. should take the lead in ensuring that the IAEA has the budgets, resources, and technical capabilities to match the increased demands.
- The Security Council should discourage states from invoking the NPT's withdrawal provision by deciding that any withdrawing state must make its case for withdrawal before the Council and accept intrusive IAEA inspections to determine whether it has

undeclared nuclear facilities or activities. Moreover, the Council should consider the idea that a withdrawing state found by the IAEA to be in non-compliance should be legally obligated to forfeit any nuclear installations and materials it acquired while it was an NPT party or at least place them under IAEA safeguards in perpetuity.

- The U.S. should press for more determined efforts to implement Security Council resolution 1540 under which all UN members are obliged to put in place effective domestic legislation, export and border controls, and physical protection measures to impede proliferation of nuclear, biological, and chemical weapons, especially to non-state actors.
- The U.S. and other states should step up cooperative efforts to interdict illicit shipments of nuclear, biological, and chemical weapons-related equipment and materials, disrupt black market networks, and impede proliferation-related financial transactions. These efforts should be grounded in international law, which should be expanded to cover international waters and airspace, as do international agreements on piracy, hijacking, and slavery.
- A key focus of U.S. nonproliferation efforts in coming years should be to discourage countries that feel threatened by the prospect of North Korean and Iranian nuclear capabilities from seeking their own nuclear deterrents. In the case of U.S. allies and friends, this will involve reassuring them that the U.S. remains a dependable security partner.
- To buttress the NPT, the U.S. and the other NPT nuclear weapon states should take steps (including those mentioned in the arms control section, above) to demonstrate that they take seriously their NPT Article 6 obligation to make progress in nuclear disarmament. By fulfilling their end of the NPT “bargain” – in which the non-nuclear weapon states renounce nuclear weapons and the nuclear weapon states agree to pursue disarmament – the nuclear powers will strengthen their hand in pressing for tighter restrictions in such areas as verification, compliance, and technology transfers. As recommended by Henry A. Kissinger, Sam Nunn, William J. Perry, and George P. Shultz in their *Wall Street Journal* op-ed of January 4, 2007, the U.S. and the other NPT nuclear weapon states (and perhaps also the non-NPT nuclear powers) should commit themselves to the goal of a world without nuclear weapons and to pursuing practical steps that would lay the groundwork for moving toward that goal.
- The U.S. should encourage India, Pakistan, and Israel (which have never joined the NPT) to pursue policies that bring them closer to the nonproliferation mainstream, including strengthening their export controls and joining other nuclear powers in a moratorium on the production of fissile materials for nuclear weapons. In the case of India, this would be especially important as a means of reducing the adverse implications for the nonproliferation regime of the U.S.-India civil nuclear cooperation deal.

Promoting the safe expansion of civil nuclear energy

- Given the widespread expectation that reliance on nuclear power globally will increase substantially in coming decades, it is essential to put in place cooperative arrangements now that can minimize the attendant proliferation risks. In particular, states embarking on or expanding existing nuclear power programs should be given incentives to forgo their own uranium enrichment and plutonium reprocessing capabilities (i.e., fuel-cycle capabilities) and to limit their access to the plutonium in spent reactor fuel.
- The U.S. should work with the IAEA and other states that currently supply fuel-cycle services to the international market on an arrangement providing reliable assurances of nuclear fuel supply. Under such an arrangement, states with nuclear power reactors that adhere to the IAEA Additional Protocol and do not have their own fuel-cycle facilities would be assured that they could acquire reactor fuel from an IAEA-controlled nuclear fuel reserve if their existing commercial fuel supply arrangements were interrupted for reasons unrelated to their compliance with nonproliferation obligations.
- As part of such an assured fuel supply arrangement or in addition to it, the U.S. and other nuclear fuel suppliers should pursue fuel leasing arrangements with their customers. Unlike most traditional fuel supply contracts, under which the customer takes ownership and maintains possession of the spent fuel, the leasing arrangement would involve supplying the fresh fuel and then removing it from the customer's territory following several years of irradiation and cooling, thereby reducing risks that the plutonium in the spent fuel could be diverted to a weapons program. An incentive for leasing fuel (in addition to any pricing incentive that might be adopted) would be avoidance of the burden of nuclear waste management.
- To complement the assured nuclear fuel services initiative and leasing arrangements and increase incentives to participate in them, international spent fuel storage facilities should be established that could accept spent fuel from countries that do not have their own fuel-cycle capabilities. Ideally, such facilities would be located in several countries, but so far the most likely candidate is Russia. Such a storage arrangement would only be lucrative for Russia if it could store U.S.-origin spent fuel (e.g., from South Korea and Taiwan), and storage of U.S.-origin fuel is only legally possible if the U.S. and Russia have a civil nuclear cooperation agreement in place. To permit the idea of a Russian storage facility to go forward (as well as to realize the other benefits of bilateral nuclear cooperation), the civil nuclear energy agreement recently concluded between the two countries should be brought into force as soon as possible.
- Additional incentives should be developed to encourage states embarking on civil nuclear programs to proceed in a manner that enables them to enjoy the full benefits of nuclear energy without the proliferation risks associated with indigenous fuel-cycle capabilities. Among those incentives would be access to international financing for the construction of nuclear power plants, assistance in setting up appropriate

regulatory frameworks and safety systems, and participation in international research and development efforts examining advanced nuclear technologies.

- At the Kennebunkport, Maine, summit in July 2007, President Bush and President Putin issued a joint declaration pledging to establish a new international civil nuclear infrastructure that would build on existing initiatives – especially the U.S. Global Nuclear Energy Partnership and the Russian initiative on International Nuclear Fuel Centers – and permit the expansion of nuclear energy worldwide while minimizing proliferation risks. This U.S.-Russian collaboration is desirable both because the two countries are leaders in nuclear technology and because working together in areas of mutual interest such as nuclear cooperation and nuclear nonproliferation can help keep their bilateral relationship on an even keel at a time when those relations are strained.

## **Conclusions**

Reducing the nuclear threats of the 21<sup>st</sup> century will require broad international cooperation to prevent dangerous cargoes from reaching America's shores; secure bomb-making nuclear materials worldwide, convince countries embarking on nuclear energy programs that they do not need their own enrichment or reprocessing facilities; deny terrorists and non-compliant regimes access to international financial markets; or develop a suitable mix of penalties and incentives to induce nuclear aspirants to abandon their nuclear weapons ambitions. No country can stop nuclear proliferation on its own. Multilateral measures – whether formal or ad hoc, adopted universally or by smaller groups of states – will be essential.

Reliance on multilateral approaches, however, must not mean settling for least common denominator solutions. Broad support must be built for strong, decisive measures, and that will require effective leadership – leadership that only the United States can provide. The U.S. has traditionally been the leader of international arms control and nonproliferation efforts but in recent years has surrendered that role. If today's proliferation challenges are to be overcome, U.S. leadership must be restored.

At times, the protection of American interests will require the U.S. to act unilaterally or with a coalition of like-minded states. But that should be the result of necessity, not preference; and it should be the exception rather than the rule.

U.S. leadership will be especially important in moving the world back from an over-reliance on nuclear weapons. As Kissinger, Nunn, Perry, and Shultz said in their op-ed piece, "U.S. leadership will be required to take the world to the next stage – a solid consensus for reversing reliance on nuclear weapons globally as a vital contribution to preventing their proliferation to potentially dangerous hands." For the foreseeable future, the United States must continue to have reliable, capable nuclear weapons – both to deter potential adversaries and reassure friends. But significant changes in the international security environment allow us to achieve those objectives with far fewer nuclear weapons and less dependence on them in pursuing our national security policies.

Of course, North Korea, Iran, and al-Qaeda did not begin their pursuit of nuclear weapons because of the levels of nuclear forces possessed by the United States and other nuclear powers, and they cannot be expected to abandon their quest if the nuclear weapon states reduce those force levels. But by fulfilling our commitment to make progress toward nuclear disarmament, we give ourselves much greater leverage to persuade other countries to take the firm steps we consider necessary to prevent terrorists and additional countries from acquiring nuclear weapons, including adopting tighter export controls, tougher financial pressures and other sanctions, and stronger nuclear security measures. By demonstrating that nuclear weapons will play a smaller, not larger, future role in international affairs, we and the other nuclear powers can reduce expectations of inevitable proliferation that can motivate today's non-nuclear weapon states to reconsider their nuclear options.

A world of increasing numbers of nuclear weapon states is not inevitable. Neither is a nuclear attack by terrorists. Both can be prevented. But if we are to avoid today's nuclear nightmares – as we avoided the nuclear nightmare of the Cold War – the prevention of nuclear proliferation and nuclear terrorism will have to be an overriding U.S. national priority, and strong American leadership in mobilizing the sustained, concerted efforts required of the international community will be indispensable.