

White Paper

On

**The Necessity of the U.S.
Nuclear Deterrent**

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The Purpose and Value of The U.S. Nuclear Deterrent

The U.S. nuclear deterrent is now at an important crossroads. Near-term decisions will be made on a host of issues, including: whether to build the new Reliable Replacement Warhead, ratify the Comprehensive Test Ban Treaty, change the size and composition of the stockpile, and whether to modernize the nuclear weapons production complex. Before these decisions are made, an overarching question must be answered: Why does the United States continue to need nuclear weapons? This paper addresses the purpose and value of the U.S. nuclear deterrent.

Nuclear Deterrence Defined

Nuclear deterrence is preventing aggression against the U.S., its allies, and vital interests by threatening the prospect of nuclear retaliation. Specifically, the U.S. threatens the possibility that, in event that all other diplomatic and military efforts fail to prevent or end a conflict, U.S. nuclear weapons could be used to inflict unacceptable damage on the aggressor, including defeat and denial of his objectives.

The use of nuclear weapons against Hiroshima and Nagasaki resulted in the immediate deaths of over 150,000 people and prevented the probable deaths of many times that number of Americans, allies, and Japanese should the war have continued. Following World War II, the U.S. nuclear deterrent strategy changed from one that allowed targeting civilians to one that doesn't. As the Cold War evolved, the U.S. designed its nuclear arsenal to hold at-risk potential aggressors' nuclear and military forces, leadership, and the industrial infrastructure that could support aggression against us.

During the Cold War, the U. S. nuclear deterrent had two basic missions: deterrence of nuclear attack (by threatening swift, effective retaliation), and deterrence against overwhelming conventional attack against North Atlantic Treaty Organization (NATO) countries by the Warsaw Pact. In the post-Cold War era, the first mission has been updated to include deterrence of attacks that employ other weapons of mass destruction (WMD).

To be effective, nuclear deterrence must be credible and must be communicated clearly and in a manner understandable to the intended recipient. The adversary must be persuaded that if he undertakes or persists in aggression, we will carry out our threat and he will suffer intolerable losses.

Roles of the U. S. Nuclear Deterrent

At the end of World War II, a competition ensued between the U.S. and USSR to produce sufficient numbers of nuclear weapons to assure that each could survive a first nuclear weapons strike and retaliate. The U. S. arsenal was comprised mostly of weapons with large nuclear

yields for three reasons. First, the majority of targets were military sites and capabilities, many of which were hardened and therefore large-yield weapons were required to destroy them. Second, large-yield weapons were viewed as necessary to destroy some military-industrial infrastructure targets in the USSR. Third, the accuracy of delivery-system technologies at the time was limited. High-yield devices helped assure destruction, despite limited accuracy. Today, these high-yield weapons are less-than-optimal vis-à-vis emerging and changing threats.

The U.S. nuclear arsenal plays three distinct but interrelated roles that presently cannot be fulfilled by any other type of weapon. First, the fundamental purpose of U.S. nuclear forces is political: to preserve peace, prevent coercion, and achieve our national objectives without use of military force. U.S. nuclear weapons help deter attacks from adversaries using all types of weapons of mass destruction. In other words, our objective is to use nuclear weapons politically to prevent our having to use military force. To be effective politically, our weapons must be appropriate to the threat, and the United States must be perceived as having both the will and the capability to employ nuclear weapons.

The deterrent value of nuclear weapons may be affected by their potential for military use, which comprises the second role of U.S. nuclear weapons. Nuclear weapons differ from all other types of weapons because of their overwhelming, immediate destructive power. No other existing single weapon can deliver such force. Today's highly accurate, powerful conventional weapons can indeed threaten some, but not all, strategic military targets. Some targets—such as deeply buried targets where leadership, WMD, or other military targets might be bunkered—can be threatened with destruction only by nuclear weapons. Furthermore, conventional weapons have inherent limitations in their capability to threaten such targets. (See shaded box.) To help deter an aggressor from introducing WMD into a conflict, it may be important that the aggressor understand that there are no protected sanctuaries against potential U.S. retaliation.

The third role of the U.S. nuclear arsenal is to help prevent nuclear proliferation by extending our deterrent—the nuclear umbrella. There are several countries which could, with little effort and time, develop their own nuclear weapons but do not because they trust in and rely on the U.S. nuclear deterrent.

Reactions by Japanese and South Korean officials to North Korea's nuclear test in October 2006 highlight the importance of U.S. nuclear weapons for non-proliferation. Both countries specifically sought high-level reassurances that the “nuclear” remains in the U.S. “nuclear umbrella.” (See details below.) After receiving U.S. reassurances, both reasserted that they will remain committed to non-nuclear principles so long as the U.S. extended nuclear deterrent remains credible. In the absence of continuing confidence in the U.S. extended nuclear deterrent, it is likely that both nations would develop their own nuclear deterrents.

Potential Iranian nuclear capabilities already are putting similar pressure on U.S. allies and friends in the Middle East. If Iran achieves nuclear-weapons capability, it is likely that Egypt, Saudi Arabia, Turkey, and others will consider following suit. If so, the United States might be able to prevent further nuclear proliferation if it is prepared to extend the nuclear umbrella to others as well.

If the United States is not prepared to maintain its nuclear arsenal and remain willing to use it, this should be made clear to those who rely on the U.S. extended nuclear deterrent.

Nations Under the U.S. Nuclear Umbrella

The United States has extended security assurances to 31 countries—the 26 nations of NATO, Australia, Japan, South Korea, Taiwan, and Israel. Obviously, these assurances would include all our military capabilities. However, in all of the cases, our nuclear deterrent plays a central role.

NATO

Many countries in the North Atlantic Treaty Organization (NATO) have the capability to develop nuclear weapons and delivery systems rapidly. They have not done so primarily because they rely on the U.S. nuclear deterrent to protect them from nuclear and other WMD threats.

The NATO Treaty of 1949 states that an attack on one member is an attack on all and commits to preserve the security of member states. In the Declaration of the Heads of State and Government of June 1982, parties to the Treaty agreed that security would be preserved by means of conventional and nuclear forces adequate to deter aggression and intimidation. The Alliance's Strategic Concept of November 1991 specifically states that a mix of nuclear and conventional forces will be kept up to date and that both types are essential; one cannot substitute for the other. The Alliance's Strategic Concept of April 1999 states, "The supreme guarantee of the security of the Allies is provided by the strategic nuclear forces of the Alliance, particularly those of the United States."

A few members of NATO view nuclear forces as being increasingly irrelevant, given the demise of the Warsaw Pact. Others have the opposite view. Newer members, in particular, favor modernizing the land-based nuclear deterrent and retaining U.S. forward-deployed weapons into the future.

Limitations of Conventional Weapons

- Conventional weapons require very precise intelligence on target location. Such information may not be available.
- The effects of conventional weapons can be greatly reduced by simple passive defenses.
- Conventional weapons rely heavily on satellites for targeting and communications. In the future, other countries may have weapons capable of destroying the satellites upon which U.S. conventional weapons depend.
- Delivery of conventional weapons typically involves extended exposure of personnel and delivery systems to loss.
- Conventional armaments may not have the psychological, deterrent impact that nuclear weapons have.

ANZUS

Australia also has the wherewithal to produce its own nuclear deterrent, but instead relies on the United States for its strategic security. The 1951 Security Treaty between Australia, New Zealand and the United States (ANZUS), in which New Zealand is no longer a participant, states: “Each Party recognizes that an armed attack in the Pacific Area on any of the Parties would be dangerous to its own peace and safety and declares that it would act to meet the common danger in accordance with its constitutional processes.”

Although this language is very similar to other security commitments that specify the role of the U.S. nuclear deterrent, ANZUS makes no direct reference to nuclear forces. It is clear, however, from political history that the U.S. nuclear deterrent is integral to ANZUS obligations. The reason that New Zealand is no longer an active member is that it adopted a policy in 1985 to no longer allow ships that might be carrying nuclear weapons to enter New Zealand waters, which caused the U.S. to suspend application of the treaty to New Zealand.

Japan

Japan has the ability to develop and deploy nuclear weapons rapidly, and debated doing so just after the October 2006 North Korean nuclear test. It decided, however, to continue to rely on the 1960 Treaty of Mutual Cooperation and Security between Japan and the United States. In language similar to that in the treaties noted above, the Treaty with Japan states that “...an armed attack against either Party in the territories under the administration of Japan would be dangerous to its own peace and safety and declares that it would act to meet the common danger in accordance with its constitutional provisions and processes.”

As with other nations under the U.S. nuclear umbrella, the United States has reaffirmed the role of nuclear weapons in fulfilling its security treaty obligations in bilateral meetings over the years. For example, the *U.S.-Japan Alliance: Transformation and Realignment for the Future* (Security Consultative Committee Document, 29 October 2005) states that “U.S. strike capabilities and the nuclear deterrence provided by the U.S. remain an essential complement to Japan’s defense capabilities in ensuring the defense of Japan and contribute to peace and security in the region.”

Nevertheless, following the North Korean test Japan asked for and received high-level assurances that the U.S. nuclear deterrent is in effect. Secretary of State Rice went to Tokyo where she said, “I reaffirmed the President's statement of October 9th that the United States has the will and the capability to meet the full range—and I underscore full range—of its deterrent and security commitments to Japan.”

South Korea

Another country that could develop and deploy nuclear weapons with little effort is South Korea. Instead, it relies on the U.S. nuclear deterrent.

The Mutual Defense Treaty between the Republic of Korea and the United States says that an armed attack on either party obligates the other to meet the common danger in accordance with its constitutional processes. This language, which is similar to that in ANZUS, has been clarified—with regard to the role of U.S. nuclear deterrence—in a number of high-level meetings and communiqués since 1978.

In October 2006, also just after the nuclear test by North Korea, then-Secretary of Defense Rumsfeld met with Defense Minister Yoon to again clarify defense commitments under the Mutual Defense Treaty. The communiqué stated that “The United States reaffirms its firm commitment to the Republic of Korea, including continuation of the extended deterrence offered by the U.S. nuclear umbrella, consistent with the Nuclear (sic) Defense Treaty.”

Taiwan

In the late 1970s, Taiwan was working on technologies that could have resulted in its acquiring nuclear weapons. At that time, the United States worked with Taiwan intensely to allay its strategic security concerns and, ultimately, formulated the Taiwan Relations Act of 1979. Without this security assurance, it is very likely that Taiwan would have developed nuclear weapons.

The Taiwan Relations Act states that it is the policy of the United States—“... 4) to consider any effort to determine the future of Taiwan by other than peaceful means ... a threat to the peace and security of the Western Pacific area and of grave concern to the United States; ... 6) to maintain the capacity of the United States to resist any resort to force or other forms of coercion that would jeopardize the security, or the social or economic system, of the people on Taiwan.”

Although there are no regular communiqués that stress the role of the U.S. nuclear deterrent in defense of Taiwan, President George W. Bush indicated the seriousness of this issue in Charles Gibson’s interview of the President on *Good Morning America*, 25 April 2001:

Gibson: If Taiwan were attacked by China, do we have an obligation to defend the Taiwanese?

Bush: Yes we do. And the Chinese must understand that.

Gibson: And you would...

Bush: Yes, I would.

Gibson: With the full force of the American military?

Bush: Whatever it took to help Taiwan defend herself.

Israel

There is now no formal defense treaty with Israel, but there are informal commitments confirmed by leadership statements. For example, in an interview with Reuters, President Bush said he is concerned about Iranian President Mahmoud Ahmadinejad's "menacing talk" about Israel, such as his comments denying the Holocaust and saying Israel should be wiped out of history. He went on to say, "Israel is a solid ally of the United States. We will rise to Israel's defense, if need be. So this kind of menacing talk is disturbing. It's not only disturbing to the United States, it's disturbing for other countries in the world, as well." Then, when asked whether he meant the United States would rise to Israel's defense militarily, Bush said: "You bet, we'll defend Israel."

The State of the U.S. Nuclear Deterrent

During the past two decades, the U.S. stockpile has diminished in size and no new weapons or delivery capabilities have been added. Since 1988, the United States has dismantled more than 13,000 nuclear weapons and reduced the number of non-strategic weapons in Europe by 90%, including all nuclear artillery shells, Lance missile warheads, and naval nuclear depth bombs. Additionally, it removed all non-strategic nuclear weapons from surface ships and naval aircraft. The U.S. is now in the process of drawing down deployed nuclear warheads to between 1700 and 2200 by the year 2012, as required by the Moscow Treaty. When the drawdown is completed, the U.S. nuclear arsenal will be only about 20% of the size it was in 1991.

In addition to eliminating nuclear warheads, the United States is also reducing its nuclear delivery systems. Over 1000 long-range missiles and bombers have been removed from service and 450 silos for ICBMs have been destroyed. The B-1 bomber has been removed from nuclear roles permanently. Four submarines carrying nuclear-tipped missiles were removed from nuclear weapons service. Many programs have been canceled, including the Midgetman missile, and production of the B-2 Stealth bomber also has been halted. On July 3, 2007, the U.S. and Russia reiterated their intent "to carry out strategic offensive reductions to the lowest possible level consistent with their national security requirements and alliance commitments."

Before the U.S. undertakes further reductions that affect its nuclear deterrent, it is important to reevaluate not only how many and what kind of nuclear weapons the U.S. needs for its own protection, but also what might be needed for extended deterrence, for the future.

Immediate and Potential Deterrence Concerns

As noted in this paper, nuclear weapons are unlike all other weapons in the physical and psychological effects they can have. Even the most powerful, accurate conventional weapon cannot have the same physical effects, and therefore might not provide the same deterrent effects. (See shaded box.) This fact has not been lost on other nations. While the United States

has reduced the size of its arsenal and refrained from modernizing its warheads or delivery systems, some other nations have pursued acquisition and/or improvement of nuclear stockpiles.

Both the present and the near future are very uncertain politically and militarily. There is no longer a Cold War, with a single opponent who can be studied and, to some extent, understood and communicated with. Rather, there are multiple states (and potentially subnational groups) that have expanding WMD and delivery system capabilities. Whether a state will pose a direct threat in the future is a matter of whether its intentions are benign or belligerent. Furthermore, new WMD threats could emerge overnight if leadership in a possessor state should change hands rapidly, or if a state provides WMD to another state or to a subnational group. As a consequence, U.S. deterrence requirements may also be extremely dynamic.

Although we cannot predict the future, it is worthwhile to catalog briefly some other nations' nuclear capabilities and ambitions.

Russia

The Cold War is over and Russia has undertaken significant reductions in its nuclear forces in compliance with its arms control commitments. However, Russia is still the only nation with the potential to destroy the United States. Because Russia's future is far from certain, prudence dictates that the U. S. consider Russia's evolving nuclear capabilities and intentions.

Russia's present nuclear doctrine reserves the right to use nuclear weapons "...in response to large-scale aggression utilizing conventional weapons in situations critical to the national security of the Russian Federation." Russia has stated that it is prepared to conduct limited nuclear strikes to warn off an enemy or alter the course of a battle. The continued importance accorded nuclear weapons is evident in Russia's efforts to improve and diversify the types of warheads in its arsenal as well as nuclear delivery systems. The emphasis, according to President Putin, is on quality over quantity.

In 2000, Russia increased its nuclear weapons budget by 50%. Objectives are to extend the lives of some warhead types as well as to develop new weapons, including warheads ranging from tons of nuclear yield to megatons. New designs include nuclear earth-penetrators and probably include neutron-emitting weapons with suppressed blast effects.

Attributes Unique to Nuclear Weapons

The **explosive power** produced by nuclear weapon of a specific size and weight is much greater than that of a conventional weapon of the same size and weight (yield-to-weight). A van packed with conventional explosives had limited effect on the World Trade Center. A nuclear weapon in the trunk of a car could bring down many buildings of the same size.

Nuclear **radiation** (electromagnetic pulse) can destroy electronics unless they are hardened.

Radiation can be enhanced in nuclear weapons to make them anti-personnel weapons that leave infrastructure intact. Radiation output can also be tailored to make an area radioactive for specified periods of time (area-denial weapons).

Nuclear weapons produce more intense **heat** than do conventional explosives (thermal properties), which give them the potential to destroy stockpiles of chemical and biological weapons.

One of the reasons that Russia is able to pursue new nuclear weapons designs despite a nuclear testing moratorium might be that its interpretation of what is allowed under the Comprehensive Test Ban Treaty is, and always has been, contrary to the U.S. interpretation. Although the CTBT does not define what constitutes a nuclear test, the U.S. has insisted that it is “zero yield,” a definition to which Moscow has never agreed. Russia’s interpretation could permit low-yield testing that can enable new weapons development. Thus, Russia may have abided by the moratorium, but according to its own definition of “testing.”

Russia also continues to invest heavily in its long-range nuclear-armed missile forces. Since the end of the Cold War, it has deployed a new ballistic missile (the SS-27 in silos and on mobile launchers), and is developing an SLBM counterpart (the SS-N-X-30 or *Bulava*). These missiles carry one or more maneuverable warheads designed to overcome missile defenses. Russia also has tested an improved SS-N-23 SLBM, the *Sineva*. In May 2007, Russia successfully tested what it has called a new ICBM, although it appears to be a modified version of the SS-27 ICBM. This missile, the RS-24, carries up to 10 independently targetable warheads and is intended for use on both fixed and mobile launchers. At the same time, Russia tested a new ground-launched cruise missile, the R-500, which will be able to be launched from the transporter-erector-launcher of the Iskander-M (SS-26 or *Stone*) tactical ballistic missile. With a range of up to 280 km (170 miles), a radar-evading trajectory and a hit error of no more than three meters, it can be effectively used against small targets. There are also indications that Russia continues to deploy short-range (tactical) nuclear weapons on submarines (which would be inconsistent with its 1991 pledge not to do so), as well as nuclear cruise missiles. In sum, Russia is placing great emphasis on modernizing and increasing its nuclear weapon capabilities, and is prepared to use these weapons in a much wider range of circumstances.

China

China’s strategic nuclear force is in the midst of a thoroughgoing and long-standing modernization program. It is introducing at least three new modern, mobile ICBMs, each fitted with new nuclear warheads. The 8000 km range DF-31 is deployed, the 14,000 km range DF-31A is in the process of being deployed, and the 10000 km range SLBM based on the DF-31, called the JL-2, will be deployed within a couple of years. China may also place multiple warheads on its old CSS-4 ICBMs, the only missile prior to the modernization that could strike the U.S. mainland.

China’s modernization of nuclear weapons and delivery systems is designed to provide it with a more reliable, survivable force that suits China’s expanding international role. Just as China’s conventional modernization appears to be going beyond the needs of defending the homeland—even beyond the need to be able to subdue Taiwan—its nuclear forces are being modernized and increased to serve China’s ever expanding interests and involvement in the world.

An extremely important complement to China’s forces modernization is its recent demonstration of anti-satellite weaponry. U.S. conventional weaponry relies heavily on the Global Positioning System (GPS) not only for navigation and precision strikes, but also for timing and

communications. Conceivably, China could attack our GPS satellites, making the vast majority of our weaponry less effective or ineffective.

North Korea

North Korea currently poses significant risk to U.S. interests and to U.S. allies due to its bellicose nature, burgeoning military capabilities, and propensity both to sell and share technology and weaponry with other states and, potentially, terrorists. It violated and then pulled out of the Nuclear Nonproliferation Treaty. For the last decade, the United States and the international community have negotiated with North Korea and reached multiple agreements, yet Pyongyang has repeatedly reneged on its commitments to roll back its nuclear program.

North Korea tested a nuclear device in October 2006. It has continued to amass fissile materials for weapons, despite international pressures and agreements to stop.

North Korea has Scud B and C short-range missiles as well as the Nodong 1, which can reach 1300 km. It has also tested the Taepodong missile, with a range of 2000 km, and the Taepodong 2, with a range of 5000-6000 km.

In addition to its nuclear capabilities, North Korea has had for many years an extensive stockpile of chemical weapons and trains regularly for operating in a chemical environment. It has also reportedly produced biological weapons, including smallpox.

Iran

Iran's ruling theocracy aspires to nuclear weapons. Iran has a history of assisting terrorist groups and there is serious potential that Iran might share nuclear weapons or technology with others. Also, Iranian leaders have said that Israel should be eliminated; former President Rafsanjani even suggested that nuclear weapons could be used to do so.

Iran has stated that its 3,000 centrifuges (in an underground facility) are already enriching uranium, and that it will build up to 54,000 centrifuges. Iran is pursuing other nuclear-weapons-related technologies, including a heavy-water reactor that is well-suited to producing plutonium. Iran has reportedly received ballistic missiles and technology from North Korea, Russia, and elsewhere. It has developed a sophisticated missile-production infrastructure that has produced missiles indigenously, and has received extensive help from North Korea.

The international community has negotiated extensively for several years to try to entice Iran to give up its nuclear weapons ambitions. Thus far, all efforts have failed.

The Need for Debate

The 2001 Nuclear Posture Review (NPR) set out multiple goals for U.S. strategic forces, and recognized the contribution of nuclear weapons to these goals. For example, our strategic forces must not only deter contemporary adversaries known to possess WMD, but also must have the potential to be adjusted in response to possible negative political developments in Russia or China, and to answer sudden developments in which WMD might change hands (e.g. coups d'état or provision of WMD to subnationals). The contribution of U.S. nuclear weapons to this goal in some cases could be essential. Second, U.S. strategic forces must assure allies. The U.S. extended deterrent plays a very important role in preventing not only war and intimidation against them, but also contributes to nonproliferation. Third, the deterrent must be politically acceptable to Americans. While this paper will not address the specific qualities and quantities of weapons necessary to meet these goals, it is useful to elaborate on what our nuclear deterrent should achieve. The U.S. nuclear deterrent should:

- Convince contemporary and potential adversaries that we have, and can quickly augment, the capability to hold what they value at risk. The objective is to deter them from threatening to use or using WMD against the United States or its allies and friends. Determining what those adversaries hold dear is essential to knowing what types of designs and how many weapons are required.
- Assure allies and friends that the deterrent is both credible and capable of defending them against intimidation and attack. It is imperative that they be consulted about key decisions on the nature of our nuclear deterrent, lest they decide in the future that it is so inadequate or untrustworthy that they prefer to rely on their own nuclear deterrent, or to seek security accommodations with nuclear proliferators.
- Be of sufficient size, quality, and potential that it will dissuade those nations that might otherwise aspire to match or surpass our deterrent's capabilities.
- Be survivable. We cannot allow other nations' technical advances to erode our capabilities to protect the U.S. nuclear deterrent.
- Meet the expectations of the American people. Americans want to assure their ultimate safety and security while at the same time doing the utmost to prevent nuclear war. Prevention of nuclear use depends on having an effective nuclear deterrent. If use of U.S. nuclear weapons should become vital, Americans want to achieve our purpose with the least destruction, loss of life, and collateral damage.

Important decisions regarding the nature and future of the U.S. nuclear deterrent are being made with little or no debate by the U.S. public at-large or by Congress. While it is generally accepted that the deterrent must be kept, there has not been sufficient attention to the questions of what types of weapons should be in the arsenal and what capabilities must be retained or developed to assure the viability and credibility of the deterrent. And, very importantly, there has been no

input from the 31 nations that rely on our deterrent regarding what they believe is required for their defense and what they would expect us to do to maintain the deterrent on which they depend.

Questions that should be addressed in the informed debate over the nature and composition of the U.S. nuclear deterrent include:

- What capabilities and characteristics should U.S. nuclear weapons have now and into the future?
- What priority should be given to improving the safety and security of weapons in our stockpile?
- To what extent are conventional weapons and missile defenses capable of reducing reliance on nuclear weapons for deterrence?
- What do we need to assure reliability of the deterrent over the long term?

The United States has not modernized its arsenal qualitatively and our inaction on a host of questions is defining the arsenal's future. With regard to the few decisions that have been made or may soon be made, it is important not to put the cart before the horse. For example, it does not make sense to decide on the future character of our nuclear weapons or the potential value of nuclear testing before we decide on what our current and likely future strategic force requirements are for deterrence, assurance and dissuasion. And, because the future may unfold in surprising ways, the flexibility to adapt to new requirements must be preserved. No decisions should be made absent a careful consideration of the types and numbers of weapons we may need now and for the future, including consideration of the views of our allies and friends who depend on our extended deterrent.

Credible nuclear deterrence requires high confidence that our nuclear weapons will work as intended. In our open society, deficiencies in the reliability of our nuclear arsenal will inevitably become public, thus affecting the credibility of our deterrent vis-à-vis those whom we wish to deter. We must undertake whatever is required to assure ourselves, and others, that our nuclear weapons are safe, reliable, and can perform the missions we require.

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