Western States Legal Foundation

Special Report May 2005

War is Peace, Arms Racing is Disarmament

The Non-Proliferation Treaty and the U.S. Quest for Global Military Dominance

Summary

Thirty five years after the Nuclear Non-Proliferation Treaty (NPT) entered into force, nuclear weapons remain a profound threat to our future as a species. Despite the promise made by the original nuclear weapons states in Article VI of the Treaty to negotiate for the elimination of their nuclear arsenals, tens of thousands of nuclear weapons remain. The current U.S. nuclear stockpile is estimated at over 10,000 warheads. Of these, approximately 5,300 are operational, including 4,350 strategic and 780 non-strategic warheads.[1] A significant number of these stand ready for use within minutes, capable of wreaking unimaginable destruction anywhere on earth. Nonetheless, the United States claims that it is "is fully meeting its obligations under Article VI," pointing to the deactivation of excess Cold War nuclear weapons and delivery systems.[2] This stance ignores the irrational factors that drove Cold War superpower arsenals to extreme and unsustainable levels, and downplays the central role that nuclear weapons continue to play in the U.S. pursuit of global military dominance.

Contrary to its 1970 NPT Article VI commitment to negotiate the "cessation of the nuclear arms race at an early date," the United States continues to develop nuclear weapons and delivery systems with new capabilities. Advances in a wide range of missile, computing, and space sensing technologies allow either conventional or nuclear weapons to be delivered over great distances with increasing accuracy. This may allow the United States to substitute conventional weapons for nuclear weapons to achieve some military goals, but it is clear that the U.S. intends to retain a large and constantly modernized nuclear arsenal for the foreseeable future. According to the 2004 Defense Department *Strategic Deterrence Joint Operating Concept*, "...nuclear weapons allow the U.S. to rapidly accomplish the wholesale disruption of an adversary nation-state with limited U.S. national resources. While the legacy force was well suited for successful deterrence throughout the Cold War, an enhanced nuclear arsenal will remain a vital component of strategic deterrence in the foreseeable security environment."[3]

The 2001 *Nuclear Posture Review* (NPR) identified a number of desired new capabilities for strategic weapons. The NPR stated that

New capabilities must be developed to defeat emerging threats such as hard and deeply buried targets

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.

Article VI , Treaty on the Non-Proliferation of Nuclear Weapons, Signed at Washington, London, and Moscow July 1, 1968. Entered into force March 5, 1970.

(HDBT), to find and attack mobile and relocatable targets, to defeat chemical or biological agents, and to improve accuracy and limit collateral damage. Development of these capabilities, to include extensive research and timely fielding of new systems to address these challenges, are imperative to make the New Triad a reality.[4]

In an effort to assure global military dominance well into the 21st century, the United States has embarked on a broad campaign to modernize its missiles and other long-range delivery systems, its nuclear bombs and missiles, and the industrial capacity necessary to design, test, and deploy existing and new types of strategic weapons, both nuclear and conventional.

These activities include:

- **Modification of existing nuclear warheads to achieve additional capabilities**. The U.S. in the late 1990's modified and deployed an existing nuclear weapon, the B61-11 bomb, to give it some earth penetrating capacity.[5] Despite being rebuffed by Congress last year, the current administration has again requested funding for a "robust nuclear earth penetrator," slated to be a redesign of an existing warhead.[6] A variety of additional capabilities could be obtained by modifying currently available nuclear weapons designs without the need for underground nuclear explosive tests.[7]

- **Retooling of the nuclear weapons research, design, and production infrastructure to allow maintenance of a downsized nuclear arsenal still numbering in the thousands of weapons for many decades to come, while enabling the production of nuclear weapons for the "post-Cold War" missions envisioned by military planners.** The 2004 National Nuclear Security Agency *Strategic Plan* declared that the United States intends to maintain indefinitely sufficient "responsive infrastructure" to "enable timely reconstitution to larger force levels, if needed; field new or modified nuclear warheads either to respond to a stockpile "surprise" or to meet new military requirements; and, ensure readiness to conduct an underground nuclear test, if necessary."[8] In order to do so, the U.S. is building a new generation of nuclear weapons research facilities[9] and plans to build a new factory for the manufacture of plutonium pits,[10] and is exploring the requirements for "small builds" of special purpose weapons and for a "testing strategy for weapons more likely to be used in small strikes."[11]

- **Exploration of a different paradigm for nuclear weapons design, production, and certification, called the "reliable replacement warhead."** The goal is an approach that will obtain greater reliability by combining modern manufacturing techniques with greater design margins, in some circumstances taking advantage of the less demanding requirements in terms of yield and weight than was deemed necessary for some Cold War missions. If successful, the program could provide a long-lasting nuclear arsenal with capabilities comparable to existing weapons, and possibly additional capabilities crafted for new missions as well.[12]

- **Revamping systems used to plan and execute nuclear strikes.** These include upgrades to the Strategic War Planning System to "produce preplanned and adaptively planned options" for "Weapons of Mass Destruction (WMD) and Nuclear, Chemical and Biological (NBC) targets using nuclear and/or conventional weapons"[13] and a "Tunnel Target Defeat Advanced Concept and Technology Demonstration" that "will develop a planning tool that will improve the warfighter's confidence in selecting the smallest nuclear yield necessary to destroy underground facilities while minimizing collateral damage."[14]

- **Modernizing ballistic missiles and other nuclear delivery systems, and beginning development of a new generation of systems to replace existing ones in coming decades.** The accuracy and reliability of Minuteman land-based intercontinental ballistic missiles (ICBMs) are being upgraded, and supporting infrastructure also is being redesigned to allow for more rapid re-targeting.[15] Trident submarine launched ballistic missiles improvements include guidance system upgrades and changes in the W76 warhead arming, fusing and firing system to allow ground burst use.[16] The nuclear-capable B-2 and B-52 long-range bombers are being upgraded as well,[17] and the current budget request proposes over $1.25 billion in spending for "next generation bomber" research through FY2011.[18] New nuclear delivery vehicles under consideration include an enhanced cruise missile, submarine-launched intermediate range ballistic missiles, and a new generation of ICBMs. These missile programs are in their early phases, with contractors being encouraged to submit concepts that will exploit new technologies to provide additional capabilities such as greater accuracy and maneuverability.[19]

- **Developing a "Global Strike" capability that will allow the delivery of either conventional or nuclear weapons anywhere on earth in a few hours or less.** While explicitly retaining a spectrum of "[n]uclear attack options that vary in scale, scope, and purpose,"[20] U.S. military planners also hope to exploit advances in space technology, missile accuracy, computing, and communications to develop conventional weapons that can strike anywhere on earth in a matter of hours. Conventional options may include use of existing strategic missiles such as the MX "Peacekeeper"[21] or the development of new systems, such as re-useable launch vehicles carrying several reentry vehicles capable of delivering a variety of weapons.[22] These programs call for continued research on missiles, guidance, and hypersonic flight, technologies that also could be adapted for more advanced nuclear weapons delivery systems.

U.S. officials argue that research aimed at "making our nuclear weapons more tailored to the target type" will make nuclear weapons use less likely.[23] In the minds of U.S. officials, the purpose of continued U.S. nuclear weapons development may be to make their use less probable, but only by making the *threat* of nuclear weapons use more believable. Further, these programs are going forward in the context of a declared U.S. policy of "preemptive"– really, preventive-- warfare. The *National Security Strategy of the United States of America,* issued in September 2002, states that the U.S. "must be prepared to stop rogue states and their terrorist clients before they are able to threaten or use weapons of mass destruction against the United States and our allies and friends."[24] The United States has shown that it will go to war with little regard for international law or its treaty obligations, invading and occupying Iraq despite the lack of an imminent threat of attack or authorization from the United Nations to act to prevent a threat to peace. "Counterproliferation" was used as the rationale for a thinly veiled war of aggression. Yet the NPT preamble states that its goals are to be achieved "in accordance with the Charter of the United Nations," and that "States must refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State..."

What the United States calls "deterrence" is in reality the use of strategic weapons to underwrite the projection of force in pursuit of broadly defined "U.S. interests" anywhere on earth. Operating under the umbrella of a strategic arsenal in which nuclear weapons will play a key role for the foreseeable future, U.S. conventional forces can go to war against most countries without fear of being "deterred" themselves. "...[D]eterrence of both the initial and intra-war escalatory use of weapons of mass destruction will remain important since it enables the joint force to fully leverage our preeminence in large-scale, combined-arms operations."[25]

For the other nuclear-armed states, U.S. insistence on a constantly modernized nuclear arsenal, despite its advantage in conventional forces, provides a permanent rationale for inaction on nuclear disarmament. Whether allies or potential adversaries of the United States, they can assert that if the most heavily-armed state has a right to nuclear weapons to assure its "security," they do as well. Others that see the U.S. or its allies as potential adversaries may seek to acquire nuclear weapons to counter the massive U.S. conventional advantage. It is this dynamic that the United States hopes to outrun– forever--by the continued pursuit of ever more advanced military technologies, from "tailored" nuclear weapons that adversaries can believe will be used to ballistic missile defenses.

The end of the Cold War provided an unprecedented opportunity to fulfill the NPT disarmament promise during a period characterized by relatively little tension among the worlds' most powerful states. But that window is closing quickly, and we are facing the prospect of a new period of intense economic and military competition in a world of diminishing resources, with a number of states likely to have large and varied high-tech arsenals that include nuclear weapons. There is a growing possibility of a new nuclear confrontation that may overshadow the Cold War in its complexity, and in the probability that nuclear weapons will be used.

By taking the position that nuclear weapons are acceptable tools of warfare that it will use to achieve a variety of goals, the U.S. has severely undermined the NPT's status as partial codification of an emerging global norm against nuclear weapons use, moving towards a universal prohibition on their possession. The implication that the selective use of nuclear weapons in ordinary warfare is lawful and legitimate signifies acceptance of the end of nuclear non-proliferation as a normative and legal enterprise. If it is legal and moral for one country to use nuclear weapons when it considers interests that it alone defines as vital to be at stake, it is legitimate for any country to do so.

2005 marks the passage of 60 years since the U.S. atomic bombings of Hiroshima and Nagasaki. The survivors of atomic warfare are dying off, and with them the living memory of what cannot be imagined, of what nuclear weapons really are and can do. They leave behind a world ruled by people who appear to have lost all understanding of the immediacy of the danger that nuclear weapons at every moment represent. Each one can generate a horror that will echo down through generations. Together they can end everything. There are no new arguments and no magical diplomatic formulas that will save us from ourselves. We must recapture the simple, true urgency of the time before the realities of nuclear warfare could be obfuscated, denied, and forgotten:

> "You cannot talk like sane men around a peace table while the atomic bomb itself is ticking beneath it. Do not treat the atomic bomb as a weapon of offense; do not treat it as an instrument of the police. Treat the bomb for what it is: the visible insanity of a civilization that has ceased to worship life and obey the laws of life." *Lewis Mumford, 1946.*[26]

Introduction: Why the U.S. Numbers Game is not Disarmament

A statement recently released by the United States in the run up to the 2005 Non-Proliferation Treaty (NPT) Review Conference asserts that

> The United States is in full compliance with all of its NPT obligations, including Article VI. The Cold War era nuclear arms race is over; significant numbers of U.S. nuclear forces are being reduced, and large numbers of nuclear weapons and their delivery systems have been, and continue to be, eliminated.
>
> A gradual, step-by-step process toward nuclear disarmament is the proper and most effective course to pursue. The United States is on that course, and is making real strides toward that end.[27]

The Nuclear Non-Proliferation Treaty entered into force thirty-five years ago. At that time, the United States, along with the Soviet Union and the United Kingdom, promised to negotiate in good faith towards both the early cessation of the arms race and the elimination of their nuclear arsenals – two separate but related obligations. The preamble of the NPT further clarified the disarmament goals of the Treaty: "to facilitate the cessation of the manufacture of nuclear weapons, the liquidation of all their existing stockpiles, and the elimination from national arsenals of nuclear weapons and the means of their delivery..."

Nonetheless, for almost two decades, the nuclear superpowers expanded their arsenals by many thousands of nuclear weapons, and developed an array of new ways of delivering them from the air, land, and sea. By the late 1980's, there were approximately 70,000 nuclear weapons on earth, with more than 24,000 in the U.S. arsenal. The United States also possessed the most powerful and technologically advanced conventional forces.

The approach taken by the United States towards its own disarmament obligations asks us to look only backward, towards those immense Cold War stockpiles. It expects us to accept the possession and constant modernization of thousands of nuclear weapons for many decades to come as consistent with progress towards disarmament. But this backward looking approach fails to address the nuclear dangers we are facing in the 21st century.

--First, we have the normalization of still very large nuclear arsenals, with the largest nuclear weapons states preparing to keep thousands of nuclear weapons deployed indefinitely.

--Second, we have efforts to modernize nuclear weapons. The United States continues to develop nuclear bombs, warheads, and delivery systems with new capabilities. Other nuclear weapons states also are modernizing their arsenals, but U.S. efforts dwarf those of any other country. In the United States, nuclear weapons modernization is integrally linked to a move away from a policy emphasizing diplomatic efforts to restrain nuclear weapons proliferation, and towards a counterproliferation policy mainly based on the threat of overwhelming force. This approach to the proliferation of nuclear weapons, particularly when conjoined with a declared (and acted upon) policy of unilateral preventive war, runs counter to the principles underlying the NPT. The NPT preamble also states that its goals are to be achieved "in accordance with the Charter of the United Nations," and that "States must refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State..."

--Third, we have nuclear weapons states outside the NPT, with nuclear-armed militaries engaged in confrontations in the most volatile regions on earth. There is unlikely to be much progress on reducing these nuclear dangers without genuine progress on nuclear disarmament by the original nuclear weapons states.

--Fourth, and perhaps most dangerous, we have

Effects of Nuclear Weapons Use

A number of studies have estimated the effects of nuclear attack. They show that a few hundred nuclear weapons can devastate any country on earth, and that even the accidental launch of a small number of nuclear weapons would be a catastrophe of unprecedented magnitude. Even the first atomic bombs, far less powerful than those that exist by the thousands today, could destroy entire cities in an instant.

"The atomic bombs dropped on Hiroshima and Nagasaki shattered all war precedent. The mind-numbing damage these nuclear weapons wrought shook the foundations of human existence....

Beneath the atomic bomb's mushroom cloud, human skin was burned raw. Crying for water, human beings died in desperate agony. *With thoughts of these victims as the starting point, it is incumbent upon us to think about the nuclear age and the relationship between human beings and nuclear weapons....* [emphasis added]

The unique characteristic of the atomic bombing was that the enormous destruction was instantaneous and universal. Old, young, male, female, soldier, civilian– the killing was utterly indiscriminate. The entire city was exposed to the compound and devastating effects of thermal rays, shock wave blast, and radiation..." November 1995 Testimony of Takashi Hiraoka, Mayor of Hiroshima, before the International Court of Justice in the case *Legality of the Threat or Use of Nuclear Weapons,* General List No. 95 (Advisory Opinion of 8 July 1996).

"As a conservative estimate, an accidental intermediate- sized launch of weapons from a single Russian submarine would result in the deaths of 6,838,000 persons from firestorms in eight U.S. cities. Millions of other people would probably be exposed to potentially lethal radiation from fallout." Lachlan Farrow, et al., "Accidental Nuclear War: A Post--Cold War Assessment," *New England Journal of Medicine,* v.338 no.18, pp.1326-1331, at 1326.

"Based on the available population date, the historical experiences of Hiroshima and Nagasaki and different physical models, we have estimated short-term casualties from a hypothetical explosion over Bombay. For a 15 kiloton explosion [approximately the explosive yield of the Hiroshima bomb], the number of deaths would range between 160,000 to 866,000. A 150 kiloton weapon could cause somewhere between 736,000 and 8,660,000 deaths. In addition, there would be several hundreds of thousands of people who would suffer from injuries or burns. Many of them may die without prompt medical aid, which is quite unlikely. These estimates are conservative and there are a number of reasons to expect that the actual numbers would be much higher. Further, these estimates do not include the long-term effects like cancers that would afflict thousands of people in the following years or genetic mutations that would affect future generations." M.V. Ramana, *Bombing Bombay? Effects of Nuclear Weapons and a Case Study of a Hypothetical Explosion,* International Physicians for the Prevention of Nuclear War, 1999, p. 38.

"A total of 500 deliverable U.S. retaliatory warheads, for instance, could destroy 'most [Russian] petrochemical, metallurgical, and heavy-machinery industry; all major [CIS] storage sites for ammunition, fuel, and other military supplies; all major tactical airfields; some troop concentrations; and all major [Russian] transportation nodes and choke points en route to the European and Far Eastern theaters,' all garrisons for mobile strategic missiles; all primary strategic bomber bases and submarine pens; most strategic bomber dispersal bases; and most major fixed and mobile command posts. A comparable number of survivable Russian strategic warheads could wreak no less comprehensive devastation on the United States." Bruce Blair, The Logic of Accidental Nuclear War (The Brookings Institution, Washington, D.C., 1993), citing U.S. Congressional Budget Office, The START Treaty and Beyond (1991) pp.14-15, 21.

the integration of nuclear weapons into global warfighting systems that are taking a quantum leap in complexity, with more types of weapons that can strike halfway across the planet in hours or minutes, and more dependence on electronic systems that operate at speeds beyond human comprehension and that themselves will be the targets of new forms of deception and attack. There is the possibility in the long run of a bewildering array of interlocking arms races, and if these systems are used against each other by several states with high tech arsenals of a fog of war that increases the danger of a slide into nuclear

catastrophe.

The current U.S. nuclear stockpile is estimated at over 10,000 warheads. Of these, approximately 5,300 are operational, including 4,350 strategic and 780 non-strategic warheads. Almost 5,000 additional warheads are retained in a "responsive reserve" status or on inactive status, with their tritium removed. It is believed that 480 operational U.S. nuclear bombs are deployed at eight bases in six NATO countries, for delivery by U.S. and NATO bombers.[28]

The United States asks us only to look at the numbers, and to measure progress mainly by a partial descent from the heights of insanity that the Cold War arsenals represented. They ask us to accept as adequate the "achievements" of the Strategic Offensive Reductions Treaty, (SORT), which requires only that the United States and Russia reduce *deployed strategic* nuclear arsenals to between 1700 and 2200 warheads and bombs by 2012. Thousands more will be kept in various states of storage and readiness. There is no requirement that a single bomb, warhead, or delivery system be destroyed. There are no transparency or verification mechanisms and no milestones for reductions prior to 2012, when the treaty expires. There will also be unspecified numbers of non-strategic nuclear weapons, which may grow more diverse in capabilities and intended missions.

It is important to think about what these numbers really mean. In an interview published in 1982, Herbert York, a former U.S. arms control negotiator and nuclear weapons laboratory director, noted about the Cold War era that "[t]hroughout this period, most of our Presidents have taken the attitude when they've become President and really seen what the situation is, that my God, this is awful, these forces are simply beyond belief, beyond what is necessary..." And as McGeorge Bundy, National Security Advisor to Presidents Kennedy and Johnson, pointed out, "In the real world of real political leaders, a decision that would bring even one hydrogen bomb on one city of one's own country would be recognized in advance as a catastrophic blunder; ten bombs on ten cities would be a disaster beyond history; and a hundred bombs on a hundred cities are unthinkable."[29]

The U.S. position that Cold War stockpile numbers should be the yardstick for disarmament makes little sense. By this logic, if the stockpiles had been twice as excessive, twice as insane, if the scenario spinners and the war planners and the arms industry lobbyists had been twice as successful in their efforts to accumulate more and more and more, we should be willing to wait twice as long for disarmament.

Nuclear Weapons: a Key Element in Plans for U.S. Global Military Dominance

The United States claims that it is reducing its reliance on nuclear weapons, and points to its December 2001 Nuclear Posture Review as evidence for its changed stance. They argue, in essence, that the U.S. is adding conventional options to its strategic strike capabilities, and that this constitutes movement towards nuclear disarmament, since some missions that previously might have been assigned to nuclear weapons now or in the near future can be accomplished with high-tech conventional weapons.[30] It is clear, however, that the United States intends to keep as many nuclear weapons as it wants, and to develop nuclear weapons and delivery systems with new capabilities as well. The goal is global military dominance, made possible by maintaining a technological edge in computing, space based sensing and communications systems, and weapons that can strike anywhere on earth in a matter of hours. Although advances in the accuracy of bombs and missiles and electronic warfare technology may make it possible to achieve some strategic goals without nuclear weapons, U.S. military forces operating world-wide ultimately are backed by the world's most technologically sophisticated nuclear arsenal, and will be for the foreseeable future. These nuclear weapons have a far broader role than deterring nuclear attack on the United States. As the 2004 *National Military of the United States of America* stated, "Nuclear capabilities continue to play an important role in deterrence by providing military options to deter a range of threats, including the use of WMD/E

[weapons of mass destruction/effect] and large-scale conventional forces."[31]

Nuclear weapons are the ultimate threat underwriting any U.S. use of force. In the words of the commander of the U.S. Air Force Space Command,

> "The legacy of our ICBMs [Intercontinental Ballistic Missiles] is strategic deterrence, but today, they also provide operational deterrence. Gen Jumper calls it 'Top cover for the AEFs [Air Expeditionary Forces]'. Our ICBMs deter our enemies from unacceptable escalation of combat, providing an "incentive" against regimes that may consider using weapons of mass destruction, such as chemical weapons, against US or allied forces. To put a bumper sticker on it, 'our ICBMs make our adversaries think twice!'"[32]

This view of nuclear weapons exists within an expansive view of "strategic deterrence" that extends to defending equally broadly defined U.S. "vital interests." According to the recent *Strategic Deterrence Joint Operating Concept*, the role of "strategic deterrence" includes "maintaining the integrity of U.S. territory; preserving basic political and societal integrity within the U.S; preventing mass casualties among the U.S. population; securing critical U.S. and international infrastructures (energy, telecommunications, water, essential services, etc.) that support our basic standard of living and economic viability; and supporting the defense of U.S. allies."[33]

In addition, strategic deterrence provides a "permissive environment for pursuing constructive U.S. policy goals worldwide."[34] Operating under the 'top cover' of a strategic arsenal in which nuclear weapons will play a key role for the foreseeable future, U.S. conventional forces can go to war without fear of being "deterred" themselves. "...[D]eterrence of both the initial and intra-war escalatory use of weapons of mass destruction will remain important since it enables the joint force to fully leverage our preeminence in large-scale, combined-arms operations." [35]

The Nuclear Posture Review: New Missions for Nuclear Weapons

The 2001 *Nuclear Posture Review* identified a number of desired new capabilities for strategic weapons, including nuclear weapons upgrades and improvements or replacements for nuclear-capable delivery systems. The NPR stated that

> Today's nuclear arsenal continues to reflect its Cold War origin, characterized by moderate delivery accuracy, limited earth penetrator capability, high-yield warheads, silo and sea-based ballistic missiles with multiple independent reentry vehicles, and limited retargeting capability....
>
> New capabilities must be developed to defeat emerging threats such as hard and deeply buried targets (HDBT), to find and attack mobile and relocatable targets, to defeat chemical or biological agents, and to improve accuracy and limit collateral damage. Development of these capabilities, to include extensive research and timely fielding of new systems to address these challenges, are imperative to make the New Triad a reality.[36]

U.S. officials argue that research aimed at "making our nuclear weapons more tailored to the target type" will make nuclear weapons use less likely.[37] In the minds of U.S. officials, the purpose of continued U.S. nuclear weapons development may be to make their use less "likely," but only by making the *threat* of nuclear weapons use more believable. According to the Department of Defense *Strategic Deterrence Joint Operating Concept*, there are some missions that only nuclear weapons can accomplish:

> The nature of the costs nuclear weapons impose, and the speed and inevitability with which those costs can be imposed, is qualitatively different from even our most advanced conventional capabilities. The most important limitation on their cost imposition impact is the credibility of our willingness to use them in conflict. Clearly,

> this credibility is in large part a function of the threat magnitude that nuclear weapons use would counter. However, selective improvements and innovations in our nuclear capabilities could significantly enhance their use credibility.[38]

Regarding such "improvements and innovations," the *Nuclear Posture Review* stated that

> There are several nuclear weapon options that might provide important advantages for enhancing the nation's deterrence posture: possible modifications to existing weapons to provide additional yield flexibility in the stockpile; improved earth penetrating weapons (EPWs) to counter the increased use by potential adversaries of hardened and deeply buried facilities; and warheads that reduce collateral damage.[39]

In 2004 The Defense Science Board (DSB), an influential body that advises the Secretary of Defense, also recommended consideration of a variety of upgrades, ranging from low yield and earth penetrating nuclear weapons to destroy chemical and biological agents and hard targets with "reduced collateral damage" to new delivery modes capable of striking quickly and precisely with either nuclear or conventional payloads. Such systems could include innovative reentry vehicles for intercontinental ballistic missiles capable of delivering vehicles that could maneuver and deliver or drop weapons after reentry into the atmosphere and supersonic or hypersonic cruise missiles.[40]

New Nuclear Capabilities: a Work in Progress

Research is proceeding on modification of nuclear weapons to provide additional military capabilities. The U.S. claims in its statement that this work is "entirely conceptual," but in the late 1990's it modified an existing nuclear weapon, the B61-11 bomb, to give it some earth penetrating capabilities, and deployed it without underground nuclear tests.[41] Despite considerable public controversy and a failure to obtain funding for the effort last year, the Bush Administration has reintroduced a funding request for research on a more effective earth penetrator, the Robust Nuclear Earth Penetrator (RNEP). This funding will cover further design studies as well as impact tests involving the B83 bomb, a weapon with a one megaton yield (although some commentators have speculated that only its fission primary could be employed to provide a reduced 1-10 kiloton yield).[42] The Administration's FY2006 budget request also includes funding to study integration of the RNEP with the B-2 stealth bomber.[43]

The current National Nuclear Security Administration (NNSA) budget also includes funding for a "Reliable Replacement Warhead." The initial focus will be to "provide cost and schedule efficient replacement pits that can be certified without Underground Tests."[44] The NNSA also plans to use this program to train the next generation of nuclear weapons designers, in order to "preserve the ability to produce weapons with new or modified military capabilities if this is required in the future." The NNSA hopes to be able demonstrate that the Reliable Replacement Warhead (RRW) can be designed and certified without underground testing, culminating with a "small build" of new warheads between 2010 and 2015.[45] The RRW appears to be a paradigm for warhead development, production, and certification, rather than a single warhead design. If successful, it is conceivable that it could be used to design and produce nuclear weapons for new missions, presuming no capabilities outside previously tested and understood principles are required.[46]

Work also is going forward on a variety of technology upgrades intended to increase U.S. capabilities to plan and execute nuclear strikes, ranging from research on nuclear weapons effects on underground bunkers and chemical and biological warfare facilities to extensive upgrades in the computer software and hardware used to plan and execute nuclear strikes, including software to assess likely "collateral damage."[47] For example, upgrades to the Strategic War Planning System are to "produce preplanned and adaptively planned options" for "Weapons of Mass Destruction (WMD) and Nuclear, Chemical and Biological (NBC) targets using nuclear

and/or conventional weapons." The objective is to "automate the current manual processes, required to produce decision documents [Theater Nuclear Planning Document (TNPD) and Theater Planning Support Document (TPSD)] for the theater Commanders-in-Chief (CINCs)." One aspect of the project will be "Earth Penetration Weapon Targeting."[48] A "Tunnel Target Defeat Advanced Concept and Technology Demonstration" is scheduled that "will develop a planning tool that will improve the warfighter's confidence in selecting the smallest nuclear yield necessary to destroy underground facilities while minimizing collateral damage."[49]

Rebuilding the Nuclear Weapons Complex: Reversible Reductions and Flexible Production

The 2001 *Nuclear Posture Review* (NPR) elevated the research and development infrastructure to one leg of a "new" strategic triad, intended to support both offensive strike capabilities (nuclear and non-nuclear) and "defenses" (active and passive). The United States continues to modernize its nuclear weapons research and production capabilities, to enable it to respond to "unanticipated events or emerging threats."[50] According the 2004 National Nuclear Security Agency *Strategic Plan,* the United States intends to maintain indefinitely sufficient "responsive infrastructure" to "enable timely reconstitution to larger force levels, if needed; field new or modified nuclear warheads either to respond to a stockpile "surprise" or to meet new military requirements; and, ensure readiness to conduct an underground nuclear test, if necessary."[51]

To assure its ability to "augment" its nuclear forces, the U.S. plans to build a new factory to produce plutonium pits. Current plans call for a facility that could produce at least 125 pits per year, with the capacity both for a larger "surge" capability and for "modular expansion" to increase base capacity without costly modifications.[52] Environmental studies for the pit production facility have considered capacities up to 450 per year in normal single shift operation, and considerably more if the government chose to operate a second shift.[53] Recent Congressional testimony by National Nuclear Security Agency Administrator Linton Brooks estimated the MPF would have a capacity between 125 pits and "the low 200s."[54] Currently, there is a smaller "interim" pit production operation at the Los Alamos National Laboratory in New Mexico.[55] U.S. goals include the capability to modify existing weapons within eighteen months, and to develop and begin production new designs within three to four years of a decision to do so.[56]

Some additional nuclear weapons capabilities, such as reduced yield, enhanced radiation, and some additional degree of earth penetrating capabilities, can be achieved without underground testing.[57] To maintain and expand their ability to maintain existing weapons and design new ones, the U.S. nuclear weapons laboratories are spending billions of dollars on sophisticated research facilities. These range from new hydrodynamic facilities for explosive tests using substitute materials that will not produce a nuclear explosion to inertial confinement fusion facilities that can create conditions similar to those in a thermonuclear blast. (see sidebar, "Stockpile Stewardship.")

"Small Builds" for Potential New Nuclear Missions

It is clear that the U.S. plans to maintain the ability to field nuclear weapons with new capabilities for potential new post-Cold War missions. In 2002, the Administrator of the National Nuclear Security Agency told a Congressional committee that "...[A]n ability to innovate and produce small builds of special purpose weapons, characteristic of a smaller but still vital nuclear infrastructure, would act to convince an adversary that it could not expect to negate U.S. nuclear weapons capabilities. The development and subsequent modification of the B61-7 bomb—converting a few of them into B61-11 earth penetrator weapons—is a case in point."[58]

A January 2003 Pentagon meeting attended by high-ranking officials from the Defense Department and the Energy Department nuclear weapons programs set the agenda for further planning sessions to consider

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"[I]f my modeling and simulation really understands the environment in which that weapon will go to, I can do things with it that allow me to stay within the law which says that I have to leave the current warhead configuration as it is, but that I can take my 1966 Mustang, which is when most of these assets were made available to me, and I could put seatbelts, airbags, antilock brakes, GPS in it. I could do a whole bunch of things that would fundamentally change the characteristic of that stockpile." General James Cartwright (USMC) Commander, U.S. Strategic Command, remarks delivered at the Air Warfare Symposium - Orlando, Florida, February 18, 2005.[59]

A significant part of the "revitalized defense infrastructure" called for by the Nuclear Posture Review is the Department of Energy (DOE)/National Nuclear Security Administration (NNSA) nuclear weapons research, testing, and production facilities. To sustain this vast complex, the U.S. is spending over six billion dollars a year on the "Stockpile Stewardship" program,[60] including billions on new and more advanced nuclear weapons research and production facilities.

These include:

- The National Ignition Facility (NIF), now being built at the Livermore National Laboratory in California. The NIF is a laser driven fusion machine the size of a football stadium, designed to create very brief, contained thermonuclear explosions. It is slated to be used for a wide range of applications, from training weapons designers in nuclear weapons science to nuclear weapons effects testing. NIF experiments, together with other fusion research being conducted at the nuclear weapons laboratories, could, in the long run, lead to the development of pure fusion weapons, not requiring plutonium or uranium.

- The Dual Axis Radiographic Hydrotest Facility (DARHT). This facility at the Los Alamos National Laboratory in New Mexico, will join several already existing facilities where mockups of primaries or "pits", the first stage of a thermonuclear weapon, are imploded while very fast photographic or x-ray images are generated, thus allowing scientists to "see" inside the implosion. DOE already is developing technology for an even more sophisticated "hydrodynamic testing" facility, the Advanced Hydrotest Facility.

- Pulsed power technologies: Further experiments exploring the extreme conditions created in a nuclear weapon explosion are studied using various types of "pulsed power," in which a large amount of energy is stored up and then released very quickly in a small space. The energy source can be chemical high explosives or stored electrical energy. Pulsed power facilities at both DOE and Department of Defense laboratories are used to explore nuclear weapons function and effects and directed energy weapons concepts, and could play a role in the development of a wide range of high technology weapons, including new types of nuclear weapons.

The data streams from these and other experimental facilities, along with that from "subcritical" tests which implode nuclear materials but have no measurable nuclear yield and the archived data from over 1000 past U.S. nuclear tests, will be integrated via the Advanced Strategic Computing Program. This multi-billion dollar supercomputing program reaches beyond the weapons laboratories, seeking to incorporate the nation's leading universities into an effort to attract and train yet another generation of nuclear weapons designers.

In addition to the Modern Pit Facility, the DOE is pursuing a variety of programs to modernize its nuclear weapons production infrastructure. These range from a smaller pit manufacturing capability at Los Alamos National Laboratory in New Mexico to upgraded nuclear weapon component manufacturing facilities at Oak Ridge National Laboratory and tritium facilities at Savannah River, Georgia. In addition, the government will be producing tritium for nuclear weapons at civilian nuclear power plants operated by the Tennessee Valley Authority (TVA).

requirements for nuclear weapons and supporting infrastructure in the light of the *Nuclear Posture Review*. Topics included possible "[r]equirements for low-yield weapons, EPWs, [earth penetrating weapons] enhanced radiation weapons, [and] agent defeat weapons" (weapons intended to destroy chemical or biological agents); "[e]ffects modeling capabilities to effectively plan for these weapons," "testing strategy for weapons more likely to be used in small strikes," and the "strategy for selecting first 'small builds.'" The group also placed on their agenda the need to "[d]etermine if the NNSA and DoD infrastructures are agile enough to support a 'small build' strategy." [61] The FY 2006 National Nuclear Security Agency budget request includes funds for design work for a proposed "Component Evaluation Facility" at the Pantex plant in Texas, where nuclear weapons are assembled. The facility as proposed will cost over $100 million and is slated to include "Small Lot Build" and "Advanced Concepts/Diagnostics" assembly facilities, which are to "be equipped with typical assembly/disassembly bay utility services to allow production flexibility."[62]

Additional agenda items underscored the different requirements that might be placed on the infrastructure supporting nuclear weapons and their delivery systems by missions calling for use of small numbers of nuclear weapons. The "Future Arsenal Panel," for example, posed the following questions: "What is the testing strategy for weapons more likely to be used in small strikes?" and "Does a requirement for higher confidence in small strikes drive larger test asset inventories?"[63] The Defense Science Board, in its 2004 report on Future Strategic Strike Forces, put forward this view of the difference between the Cold War nuclear doctrine and the new missions contemplated for strategic weapons, whether nuclear or conventional:

> During the Cold War—when massive arsenal exchanges were anticipated— assurance of success was to be achieved statistically. Even though the probability of success of individual weapons was high, we still planned to allot multiple weapons— generally to be delivered by different platforms—to each target. Under the new paradigm, where one or two weapons may be launched against each of a small number of targets, very high assurance of success is necessary.[64]

This emphasis on the higher levels of confidence needed for individual weapons that might be used in "small strikes" makes it clear that U.S. military planners are contemplating roles for nuclear weapons quite different from what most Americans understand as "deterrence:" preventing a nuclear attack against the United States by threat of assured retaliation capable of inflicting unacceptable damage. "Deterrence" as defined by U.S. policy makers always has, of course, encompassed far more than this. Thousands of nuclear weapons have been budgeted, built and deployed by exploiting the difference between the public rhetoric of "mutual assured destruction" and war plans that contemplated nuclear use for everything from halting a conventional Warsaw Pact assault on Europe to "damage limiting" strikes indistinguishable from massive preemptive destruction of the Soviet arsenal. But today's planners apparently are contemplating even broader roles for nuclear weapons, making them the ultimate tool of a new gunboat diplomacy, designed to "deter" resistance to punishment or invasion by U.S. conventional forces. In the words of C. Paul Robinson, who has served both as Director of the Sandia National Laboratories and on the Strategic Advisory Group for the Commander, US Strategic Command, "For any real or emerging conflict in which the U.S. becomes engaged, the fact of the U.S. powerful arsenal of nuclear weapons cannot be dismissed from the thinking of the potential adversary, nor in my mind should it ever be so."[65]

The U.S. argues that "[a] revitalized infrastructure that can respond quickly to changes in the security environment can also permit reductions in the stockpile of non-deployed nuclear weapons."[66] What this really means that is if the United States retains the ability to design and build large numbers of new nuclear weapons, it will not have to keep as many old ones. The clear intent is to make any further nuclear

weapons reductions fully reversible, and to allow the United States to maintain its edge in strategic weaponry for the foreseeable future. Further, the U.S. intends to maintain not only its existing nuclear arsenal, but the ability to design and produce new kinds of nuclear weapons to counter anything that might be deemed a "threat" in the future. In the words of the *Nuclear Posture Review*, "[t]he capacity of the infrastructure to upgrade existing weapon systems, surge production of weapons, or develop and field entirely new systems for the New Triad can discourage other countries from competing militarily with the United States."[67]

Global Strike: Missiles and Missions Old and New

Research on nuclear bombs and warheads with new capabilities has in recent years aroused some debate and opposition in the United States. Continuing research and development programs that could lead to strategic delivery systems with additional capabilities have received far less scrutiny. This is so despite the fact that improvements in delivery systems play a central role in the new nuclear weapons capabilities under consideration. Military technology planners argue that greater accuracy, for example, might allow certain types of targets to be destroyed with lower yield weapons. Destroying deeply buried tunnels and bunkers or chemical and biological weapons materials with nuclear weapons while limiting "collateral damage" also may appear more feasible if more accurate delivery systems are developed.[68]

While explicitly retaining a spectrum of "[n]uclear attack options that vary in scale, scope, and purpose,"[69] U.S. military planners also hope to exploit advances in space technology, missile accuracy, computing, and communications to develop conventional weapons that can strike anywhere on earth in a matter of hours. The military's label for the "mission" envisioned by the NPR, encompassing long-range delivery of both nuclear and conventional weapons, is "prompt global strike." To this end, the U.S. is both modernizing existing forces and taking the first steps towards development of next-generation delivery systems. Although some of the proposed systems under consideration currently are slated to carry only conventional payloads, the technologies under consideration, such as new missiles and advanced reentry vehicle technologies, easily could be adapted for delivery of nuclear weapons. As described in the Air Force Space Command Strategic Master Plan for FY 06 and Beyond,

> A viable, prompt global strike capability, whether nuclear or non-nuclear, will allow the US to rapidly and accurately strike distant high-payoff, difficult-to-defeat targets. This capability provides the US with the flexibility to employ innovative strategies to counter adversary antiaccess and area denial strategies. Such a capability will provide warfighting commanders the ability to rapidly deny, delay, deceive, disrupt, destroy, exploit, and neutralize targets in hours/minutes, even when US and allied forces have a limited forward presence. Thus, prompt global strike space capabilities will provide the President, Secretary of Defense, and warfighting commanders with flexible options to deter, or defeat, most threats in a dynamic security environment.[70]

The Air Force has begun analyzing alternatives for replacement of its land-based intercontinental ballistic missiles, asking contractors to consider approaches that will provide such new capabilities as improved reentry vehicle maneuverability, trajectory shaping, and greater accuracy. The program goal is "maintaining US qualitative superiority in nuclear warfighting capabilities in the 2020-2040 time frame."[71]

The Air Force also is beginning concept studies for a nuclear enhanced cruise missile, examining potential capabilities such as increased range, accuracy, and survivability in difficult "anti-access" environments.[72] Research on ballistic missile propulsion, guidance and reentry vehicle technologies is ongoing, contributing both to the modernization of existing nuclear delivery systems and to development of next-generation delivery systems capable of delivering either nuclear or conventional payloads at

intercontinental range with increased accuracy. The existing Minuteman land-based missiles are being modernized, to improve accuracy and reliability and to extend their service life. Supporting infrastructure also is being upgraded to allow for more rapid re-targeting.[73] The Minuteman refurbishment is so extensive that the retired commander of U.S. ICBM forces, Major General Thomas H. Neary, likened the process to "jacking up the radiator cap and driving a new car under it."[74]

Trident submarine launched ballistic missiles also are being modernized. Improvements include guidance system upgrades and changes in the W76 warhead arming, fusing and firing system to allow ground burst use.[75] The nuclear-capable B-2 and B-52 long-range bombers are being upgraded as well,[76] and the current budget request proposes over $1.25 billion in spending for "next generation bomber" research through FY2011.[77] New portable fire control systems for launching nuclear Tomahawk cruise missiles from attack submarines are on order, designed to provide "increased flexibility and retargeting capability."[78]

The U.S. is considering new submarine-launched intermediate range ballistic missiles (SLIRBM), capable of carrying either nuclear or conventional warheads. This program also is in its early stages, with contractors being asked to submit concepts.[79] A March 2005 announcement solicited concepts and information from contractors for technologies that would allow launch of several SLIRBM's from a single launch tube on a converted ballistic missile submarine (denoted nuclear powered guided missile submarines--SSGN).[80]

The Navy is converting four of its eighteen Trident ballistic missile submarines, which carried longer-range nuclear armed missiles, to SSGNs, versatile, stealthy undersea warfare platforms invisible and invulnerable to the militaries of all but a few states. This conversion is touted by the U.S. as an arms control "achievement," one of the measures of its commitment to the disarmament goals of the NPT: "Since 1997, the United States has... taken out of strategic service four ballistic missile submarines by removing the submarine launched ballistic missiles and modifying the submarines so that they no longer can carry such missiles...." [81]

As currently envisioned, each SSGN will be refitted to carry as many as 154 cruise missiles or a combination of cruise missiles and intermediate range ballistic missiles. They may also be capable of deploying other military systems such as unmanned aerial vehicles.[82] SSGNs may not be capable of carrying what were defined for Cold War treaty purposes as "submarine launched ballistic missiles," but highly accurate missiles with a range in the high hundreds to well over a thousand miles that can be launched from stealthy platforms offshore, even with conventional payloads, constitute a significant threat to most countries that view themselves as potential U.S. targets. U.S. submarine-launched cruise missiles already can carry nuclear warheads, although the nuclear variants are not currently deployed.[83] And as noted above, the SLIRBM concepts under study include the capability to deliver either conventional or nuclear warheads, and the launching of multiple SLIRBM's from converted ballistic missile submarines. Regardless of currently stated intentions, the SSGN's could be used again in the future to deliver nuclear weapons.

U.S. military planners are looking at potential conventional "global strike" missions for the silo-based Peacekeeper missile as well. The Defense Science Board recommended that "The Air Force should preserve 50 Peacekeeper ICBMs currently being deactivated, and redeploy them to Vandenberg [California] and Cape Canaveral [Florida] for use with conventional warheads," noting that "[t]hese weapons would give the United States a 30-minute response capability for strategic strike worldwide."[84]

In addition to exploring conventional payloads for existing ICBM's, the military is researching a variety of technologies that could allow accurate weapons delivery at global distances. Near term options proposed by the Pentagon include a gliding "Common Aero Vehicle" (CAV) with increased range and maneuverability that could be carried by a variety of

long-range missiles. More speculative technologies include reuseable launch vehicles that could be used for general space launch purposes and that also could deliver several next-generation reentry vehicles at a time, each able to carry a variety of payloads. Congress has allowed work to go forward on such programs, but recently limited expenditures in the near term to the development of hypersonic technologies for non-weapons related research.[85] Although current policy calls for any such systems to be used only for satellite launch or, in the long run, for delivery of non-nuclear payloads, the types of technologies being pursued, including advances in hypersonic flight, guidance, and reentry vehicle technologies, could be adapted for nuclear weapons delivery.[86]

U.S. officials routinely deny that they are going forward with "new" nuclear weapons designs right now. This is in part a disingenuous play on what constitutes a "new" nuclear weapons capability. As noted above, the U.S. has continued to research modifications of existing warheads that will provide new capabilities ranging from improved earth penetration for gravity bombs to ground burst fusing for the most numerous submarine launched ballistic missile warhead. But the United States also is proceeding with research on new delivery systems, and is constructing the nuclear warhead production infrastructure and researching designs that will allow it to provide a range of new nuclear weapons capabilities far into the future.

Typically, the capabilities of the delivery systems drive final warhead specifications, not the reverse. Such characteristics as accuracy and payload, together with the military's mission goals, set the parameters for the warhead designers to meet. The United States currently is in the early stages of developing its next generation of delivery systems, so it is not surprising that the options for particular payloads, including nuclear warhead modifications or designs, have not yet been determined. But its intentions to explore both new nuclear weapons capabilities and new conventional weapons with global reach are clear. As the commander of U.S. Strategic Command told the Senate Armed Services Committee in April 2005,

> Coupled with improved collaboration and shared global awareness, The New Triad concept will enable more precisely tailored global strike operations. With a full spectrum of nuclear, conventional and non-kinetic options available, regional combatant commanders will be enabled to achieve specific local effects against high value targets in the context of the strategic objective.
>
> While we are confident in our ability to support effective global strike operations today, we must continue to evolve that capability to meet the demands of an uncertain tomorrow. For example, I intend to conduct experiments to better understand the value of weapon accuracy within a range of stressing environments. If modeling and testing confirm the value of such capability, this may lead to new thoughts on the balance between nuclear and conventional strike alternatives.[87]

Designing for Preemption

All of these programs are going forward in the context of a declared U.S. policy and practice of "preemptive"– really, preventive-- warfare. The *National Security Strategy of the United States of America,* issued in September 2002, states that the U.S. "must be prepared to stop rogue states and their terrorist clients before they are able to threaten or use weapons of mass destruction against the United States and our allies and friends."[88] The 2004 National Military Strategy of the United States declares that "[t]he potentially catastrophic impact of an attack against the United States, its allies and its interests may necessitate actions in self-defense to preempt adversaries before they can attack."[89] As the Iraq war demonstrated, the U.S. claims the right to decide, unilaterally, when a "threat" is sufficient to warrant military action.

Military planners hope that precise, devastating long-range strike weaponry will make such preventive warfare more feasible, both technologically and politically:

> Because many Global Strike scenarios involve threatened (or actual) preemptive attacks on very-high value targets that will only be exposed for brief periods, Global Strike capabilities must also be highly reliable. Single-string operations lacking the redundancy commonly associated with traditional military operations will be common. The Global Strike philosophy will be 'one shot equals one kill.'[90]

Regarding political constraints, a 1999 RAND study for the Air Force noted that:

> Most U.S. military operations for the foreseeable future will be undertaken with limited or less-than-majority American public support. Technological advances that expand the USAF's effectiveness will help it play an important role overcoming possible domestic constraints on the use of force such as casualty sensitivity.[91]

Among the "examples of technological advances that might provide the USAF with capabilities that will help overcome or alleviate U.S. domestic constraints" identified by the RAND study were "[h]ighly effective unmanned weapons, such as cheap standoff munitions and space-based assets, that pose no risk of U.S. casualties."[92]

It should be noted that the weapons concepts being considered likely will not be limited to those discussed in publicly available documents. The 2004 Department of Defense *Strategic Deterrence Joint Operating Concept* suggested that "Global Strike" should have both visible *and covert* elements for maximum effectiveness:

> Key elements of Global Strike capabilities should be periodically demonstrated openly on the world stage--to ensure adversaries fully comprehend the credible threats they face. However, in all scenarios, it will be highly desirable to conduct strike operations without alerting in advance the adversary, who, if warned, might employ certain capabilities (e.g., WMD) rather than lose them. A "black" or covert component within an otherwise highly visible Global Strike capability is highly desirable.[93]

There is no way to predict exactly what mix of nuclear weapons and other high-tech "global strike" technologies the United States will develop and deploy. Near term military spending priorities may, for example, shift significantly towards conventional ground forces if the United States attempts to sustain large-scale military occupations for long periods of time. It is clear, however, that the United States has no intention of pursuing or achieving nuclear disarmament, unless and until it can obtain the same kinds of military advantages now provided by nuclear weapons in other ways. According to the 2004 *Strategic Deterrence Joint Operating Concept*,

> Although advances in conventional kinetic and non-kinetic means (e.g., computer network attack (CNA), High Energy Radio Frequency (HERF), directed energy (DE), etc.) by 2015 will undoubtedly supplement U.S. nuclear capabilities to achieve these effects, nuclear weapons that are reliable, accurate, and flexible will retain a qualitative advantage in their ability to demonstrate U.S. resolve on the world stage. These capabilities should be further enhanced by improving our capability to integrate nuclear and non-nuclear strike operations. Providing the President an enhanced range of options for both limiting collateral damage and denying adversaries sanctuary from attack will increase the credibility of U.S. nuclear threats, thus enhancing deterrence and making the actual use of nuclear weapons less likely. Additionally, nuclear weapons allow the U.S. to rapidly accomplish the wholesale disruption of an adversary nation-state with limited U.S. national resources. While the legacy force was well suited for successful deterrence throughout the Cold War, an enhanced nuclear arsenal will remain a vital component of strategic deterrence in the foreseeable security environment.[94]

Nuclear Weapons and the Wars of the 21st Century

Despite advantages in conventional armaments that are unprecedented in modern times, the United States continues to spend many times more than any conceivable adversary to develop and deploy new generations of high tech weapons systems, from attack aircraft and missiles to space-based systems to monitor adversaries, coordinate forces, and target weapons. No country currently can compete with the vast U.S. science-technology-military-industrial complex, and it is express U.S. policy to keep it that way. As stated in the 2002 *National Security Strategy,* "Our forces will be strong enough to dissuade potential adversaries from pursuing a military build-up in hopes of surpassing, or equaling, the power of the United States."[95]

These overwhelming U.S. forces make it far less likely that the elites of other countries will be willing to give up nuclear weapons. For the other nuclear-armed states, U.S. insistence on a constantly modernized nuclear arsenal, despite its advantage in conventional forces, provides a permanent rationale for inaction on disarmament. Whether allies or potential adversaries of the United States, they can assert that if the most heavily-armed state has a right to nuclear weapons to ultimately assure its "security," they do as well. States that see the U.S. or its allies as potential adversaries may try to acquire nuclear weapons to counter the massive U.S. conventional advantage.

It is this dynamic that the United States hopes to outrun– forever--by the continued pursuit of ever more advanced military technologies, from "tailored" nuclear weapons that adversaries can believe will be used to ballistic missile defenses. And ballistic missile defenses, currently sold to the U.S. public as defense against a "bolt from the blue" attack by a "rogue state," are viewed by U.S. policy makers– who know how unlikely such an attack is– as one more means to preserve "freedom of action" for U.S. military forces. Missile defenses are seen by U.S. planners as working together with nuclear weapons, globe-girdling surveillance and communications, and a devastating conventional arsenal to impose unacceptable "costs" on those who would resist military enforcement of U.S. global "interests."[96]

U.S, nuclear weapons policies and actions also are an additional factor fueling regional arms races. The U.S. proclaims its own nuclear weapons to be good, and gives them a central role in the task of preventing the spread of nuclear weapons. The nuclear weapons of friends and allies also are good, or, in the case of Israel, largely are treated as invisible. The blatant contradictions of U.S. "nonproliferation" policy provide governments with a variety of arguments for acquiring nuclear weapons, ranging from their continuing legitimacy in the eyes of the world's most powerful state to the "need" to deter the United States and its nuclear-armed allies.

The post Cold-War decade of the 1990's, which should have been a time of great opportunity for progress on nuclear disarmament, instead saw continued insistence on special nuclear privileges by the original nuclear weapons states, and the emergence of two new declared nuclear weapons states, India and Pakistan. Government officials in South Asia explicitly cited active U.S. programs, clearly not winding down towards disarmament, as a justification for nuclear arms as a legitimate "security" tool.[97] And with the United States now claiming the right to attack other states that dare to acquire–or even seem to be preparing to acquire–nuclear, chemical, or biological weapons, potential target states are responding instead by insisting on their own sovereign right to defend themselves, if they choose, in the same manner as the United States–with nuclear arms, the ultimate terror weapons. As North Korea put it in a statement concerning its threat to extract weapons-useable plutonium from its spent nuclear fuel,

> The Iraqi war teaches a lesson that in order to prevent a war and defend the security of a country and the sovereignty of a nation it is necessary to have a powerful physical deterrent force only.[98]

Iran is pursuing a more subtle course, insisting on its right to develop its own indigenous "peaceful" nuclear technologies, including the development of nuclear reactors and the fuel cycle to support them. This entails development of an extensive nuclear materials establishment and the institutions and trained personnel to administer it. This path would leave it only a few steps short of a nuclear weapons program–which also is true of the many other countries that have sophisticated nuclear industries.

U.S. claims that such a nuclear industry is "not necessary" for a particular sovereign state reveal the contradictions, and the hypocrisy, at the heart of the second key NPT bargain: the assurance that non-nuclear weapons states parties would be provided access to non-military nuclear technology, and assistance in its development. Having purchased decades of grudging assent to their own arsenals in part through subsidized proliferation of nuclear technologies (while at the same time using selective technology transfer to advance their geopolitical goals), the nuclear weapons states now are forced to acknowledge the inextricable link between "peaceful" nuclear capacities and nuclear weapons. An increasing number of countries, now nearing the point where they can have nuclear weapons of their own, are in a position to either call in the NPT disarmament promise, or to argue that it is void as it becomes more evident that at least some of the original nuclear weapons states never intended to hold up their end of the bargain. These contradictions continue to undermine the emerging norm against possession and use of nuclear weapons.

We are entering a time when new economic and military powers are emerging. In significant ways, the global scene resembles that which brought the devastating world wars of the last century. Rising states are seeking an increased share of the means needed to create wealth for their elites and to raise the standard of living for the rest of their populations sufficiently to avoid unrest. Old empires are determined to hold on to advantages acquired through centuries of war, conquest, and profligate, hard-driving forms of technological and economic development that have enabled them to accumulate great economic and military power, but also have rapidly depleted the resources they directly control.

The U.S. response to all this is to build up its military forces, and to keep thousands of nuclear weapons as a "hedge" against increased tensions in the future. This U.S. "hedge" is huge and concrete--constant modernization of an already overwhelming nuclear arsenal at a cost of approximately $40 billion annually.[99] In contrast, U.S. disarmament "commitments" remain vague and far less reliable than its nuclear weapons, with promises to the international community often readily abandoned or never really seriously made. Ratification of the Comprehensive Test Ban Treaty, one of the key elements of the commitments made by the nuclear weapons states at the 2000 NPT Review Conference, was repudiated by the Bush administration shortly thereafter. Another 2000 NPT Review Conference commitment, to make disarmament measures irreversible, is incompatible with the subsequent U.S.–Russia Moscow Strategic Offensive Reduction Treaty (SORT), which has no requirements that either warheads or delivery systems be destroyed.[100] U.S. nuclear weapons policies throughout the post Cold-War period intended to preserve indefinitely the capacity to design and build new nuclear weapons and delivery systems and to reconstitute a larger arsenal if desired further undermine the meaning of a commitment to irreversible disarmament measures.

This determination to maintain immense, constantly modernized nuclear forces in response to the possibility of future nuclear confrontation ignores the original context of the NPT Article VI disarmament obligation. The United States entered into that obligation at a time of dangerous confrontation between great powers, acknowledging however grudgingly what the rest of the world understood: that nuclear weapons pose the greatest threat to humanity under precisely such circumstances. The end of the Cold War provided an opportunity to fulfill the NPT disarmament promise during a period characterized by relatively little tension among the worlds' most powerful states. But that window is closing quickly,

and we are facing the prospect of a new period of intense economic and military competition in a world of diminishing resources, with a number of states likely to have large and varied high-tech arsenals that include nuclear weapons. There is a growing possibility of new nuclear confrontations that may overshadow the Cold War in their complexity, and in the probability that nuclear weapons will be used. It is sheer hubris to believe that the conflicts of the 21st century can be "managed" in a way that avoids disaster. As the historian Eric Hobsbawm wrote about the years before the First World War, "...[W]hat gave the period its peculiar tone and savour was that the coming cataclysms were both expected, misunderstood and disbelieved. World war would come, but nobody, even the best of the prophets, really understood the kind of war it would be. And when the world finally stood on the brink, the decision-makers rushed towards the abyss in utter disbelief."[101]

U.S. Military Dominance, "General and Complete" Disarmament, and the Quest for a Global Norm Against Nuclear Weapons

Ironically, against the backdrop of their incessant pursuit of global military dominance, U.S. officials continue to assert that lack of progress on *conventional* disarmament is a sufficient excuse for maintaining a very large nuclear arsenal more or less forever. In a February 2005 statement, Assistant Secretary of State for Arms Control Stephen G. Rademaker maintained that the language of Article VI "contains no suggestion that nuclear disarmament is to be achieved before general and complete disarmament is achieved." Consequently, Rademaker argued, "It follows that if anyone wishes to argue that the nuclear weapons states are in default on their obligations relating to nuclear disarmament, they will have a difficult time explaining why all NPT states parties are not also in default on their obligations relating to general and complete disarmament."[102] Even if assumed to be legally supportable, this contention must be turned on its head to if it is to be argued from the perspective of either fairness or common sense: the United States, with by far the most powerful military on earth and a recent record of aggressive war-making, must be willing to engage in serious de-militarization on all fronts if there is to be progress towards nuclear disarmament. But the United States in recent years consistently has resisted universal disarmament efforts, whether the subject be small arms, land mines, biological weapons, or weapons in outer space.

The U.S. position that "general and complete" disarmament is a precondition to nuclear disarmament, furthermore, was implicitly rejected by the International Court of Justice, in its 1996 Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons. Despite arguments that nuclear disarmament might need to wait for more comprehensive global disarmament, the Court held unanimously that "There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to *nuclear* disarmament in all its aspects under strict and effective international control."[103] The Court looked beyond the language of NPT Article VI to such expressions of international opinion as repeated General Assembly resolutions endorsing nuclear weapons abolition, suggesting an emerging global norm requiring the elimination of nuclear arsenals, a norm that binds all states, not only those party to the NPT.[104]

By taking the position that nuclear weapons are acceptable tools of warfare that it will use to achieve a variety of goals, the U.S. has severely undermined the NPT's status as partial codification of an emerging global norm against nuclear weapons use, moving towards a universal prohibition on their possession. Every brandishing of nuclear weapons as an instrument of threat-heavy statecraft and every year that passes without progress on disarmament erodes the nascent universal norm against nuclear weapons use. At the same time, the NPT appears more and more as only one more tool of the most powerful states, to be taken up when it might work to their advantage, and discarded when it might limit their ambitions.

The implication that the selective use of nuclear weapons in ordinary warfare is lawful and legitimate signifies acceptance of the end of nuclear non-proliferation as a normative and legal enterprise. If it

5. For an overview of the B61-11 modification, see Greg Mello, "New Bomb, No Mission," *Bulletin of the Atomic Scientists* May/June 1997 (vol. 53, no. 03), pp. 28-32.

6. U.S. Department of Energy, National Nuclear Security Administration, FY 2006 Budget Request, "Directed Stockpile Work," pp.82-83.

7. See Defense Science Board, *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* pp.7-10-7-11.

8. U.S. Department of Energy, National Nuclear Security Administration, *Strategic Plan,* November 2004, p.7.

9. See sidebar below, "Stockpile Stewardship."

10. U.S. Department of Energy, National Nuclear Security Administration, "Requirements for a Modern Pit Facility: Summary," Report to Congressional Defense Committees Requested by the United States Congress in Public Law 108-375, Ronald W. Reagan National Defense Authorization Act, January 2005; Testimony of Linton F. Brooks, Administrator, National Nuclear Security Administration, Before the Strategic Forces Subcommittee of the House Armed Services Committee, March 2, 2005.

11. "Stockpile Stewardship Conference Planning Meeting Minutes," the Pentagon, 10 January 2003, Attachment 2, "Panels: Draft Topics Lists and Members." Obtained by the Los Alamos Study Group, www.lasg.org, full document available at http://www.lasg.org/StockpileStewardshipReview%5b1%5d.htm

12. U.S. Department of Energy, National Nuclear Security Administration, FY 2006 Budget Request, Directed Stockpile Work, "Reliable Replacement Warhead," p.82; Statement of Ambassador Linton F. Brooks, Administrator, National Nuclear Security Administration U.S. Department of Energy, before The Senate Armed Services Committee Subcommittee on Strategic Forces, April 4, 2005, pp.5-6; Dwight Jaeger and John Pedicini, "The Evolving Deterrent," *Los Alamos Science,* Number 29, 2005, p.4.

13. U.S. Air Force, RDT&E Budget Item Justification Sheet (R-2 Exhibit) February 2002, Program Element 0101313F, Project 5059, Strategic War Planning System.

14. U.S. Defense Threat Reduction Agency, RDT&E Budget Item Justification Sheet (R-2 Exhibit) February 2005, Project #0603160BR,Project BK- Counterforce.

15. Amy Wolf, *U.S. Nuclear Weapons: Changes in Policy and Force Structure,* Congressional Research Service Report to Congress, Updated January 13, 2005, p.CRS-28.

16. Robert S. Norris and Hans M. Kristensen, "U.S. nuclear forces, 2005*," Bulletin of Atomic Scientists,* January/February 2005, pp. 73-75; see also Department of the Navy, Fiscal Year (FY) 2006/FY 2007 Budget Estimates, RDT&E Project Justification, January 2005, Program Element 0101221N, Strategic Sub & Wpns Sys Spt, Technology Applications 2228.

17. Department of the Air Force, Fiscal Year (FY) 2006/2007 Budget Estimates, Research, Development, Test and Evaluation (RDT&E), Descriptive Summaries, Volume II, February 2005, Program Element 0604240F, B-2 Advanced Technology Bomber; Department of the Air Force, Fiscal Year (FY) 2006/2007 Budget Estimates, Research, Development, Test and Evaluation (RDT&E), Descriptive Summaries, Volume II, February 2005, Program Element 0604429F, Airborne Electronic Attack.

18. Department of the Air Force, Fiscal Year (FY) 2006/2007 Budget Estimates, Research, Development, Test and Evaluation (RDT&E), Descriptive Summaries, Volume II, February 2005, Program Element 0604015F, Next Generation Bomber.

19. See Department of the Air Force, Air Force Materiel Command, AFRL, Space Vehicles Directorate, "Concepts and Technologies Study for Enhance [sic] Cruise Missile (ECM)," Sources Sought Notice, Reference Number AFNWCA 002, December 7, 2004 (modified December 9, 2004); See Department of the Navy, Strategic Systems Programs, Special Notice, Submarine Launched Intermediate Range Ballistic Missile Technical Exchange, Reference-Number-08252003-0358, August 25, 2003; U.S. Air Force Space Command, "Final Mission Need Statement, Land Based Strategic Nuclear Deterrent," AFSPC 001-00, January, 2002; Air Force Space Command, "Request for Information/initial Delivery Vehicle Concept Call for the next generation Land Based Strategic Deterrent (LBSD) Analysis of Alternatives (AoA)," September 8, 2003.

20. *Nuclear Posture Review*, p.7.

21. See *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* 2004, p.1-8.

22. See, e.g., Defense Advanced Research Projects Agency, FALCON (Force Application and Launch from CONUS), Broad Agency Announcement, PHASE I Proposer Information Pamphlet (PIP) for BAA Solicitation 03-35 Defense Advanced Research Projects Agency July 29, 2003.

23. Statement of John A Gordon, National Nuclear Security Administration Administrator, before the House Armed Services Committee Procurement Subcommittee, June 12, 2002.

24. *National Security Strategy of the United States of America,* 2002, p.18.

25. U.S. Department of Defense, *Strategic Deterrence Joint Operating Concept,* February 2004, http://www.dtic.mil/jointvision/sd_joc_v1.doc p.13.

26. Lewis Mumford, "Gentlemen: You Are Mad!" *The Saturday Review of Literature,* March 2, 1946, collected in K. Bird and L. Lifschultz, Hiroshima's Shadow: Writings on the Denial of History and the Smithsonian Controversy (Stoney Creek, Connecticut: Pamphleteers Press, 1998) p.284, at p.286

27. U.S. Department of State, "Article VI of the Non-Proliferation Treaty," February 10, 2005, http://www.state.gov/t/ac/rls/or/42126.htm

28. Robert S. Norris and Hans M. Kristensen, "NRDC Nuclear Notebook: U.S. nuclear forces, 2005," *Bulletin of the Atomic Scientists* January/February 2005 pp. 73-75 (vol. 61, no. 01). For more detail on U.S. nuclear weapons deployments in Europe, see Hans M. Kristensen, *U.S. Nuclear Weapons in Europe: A Review of Post-Cold War Policy, Force Levels, and War Planning,* Natural Resources Defense Council, February 2005.

29. McGeorge Bundy,"To Cap the Volcano," *Foreign Affairs,* October 1969, p.10, quoted in Carl Kaysen, Robert McNamara, and George Rathjens, "Nuclear Weapons After the Cold War," in Rotblat et al, eds., *A Nuclear Free World: Desirable? Feasible?* (Westview Press, Boulder, CO: 1993), 33, 46.

30. U.S. Department of State, "Article VI of the Non-Proliferation Treaty," http://www.state.gov/documents/organization/42229.pdf

31. U.S. Joint Chiefs of Staff, *The National Military Strategy of the United States of America,* 2004, p.12.

32. "Our people...Generating Combat Effects from and through space," A speech prepared for General Lance W. Lord, Commander, Air Force Space Command, Strategic Space Conference, Qwest Center, Omaha, NE, 10/7/2004 http://www.peterson.af.mil/hqafspc/50th/Speeches.asp?YearList=2004&SpeechChoice=81

U.S. military doctrine long has called for broader possible use of nuclear weapons than deterrence of or retaliation for nuclear attack. The Air Force doctrine for nuclear operations states:

> "While there will certainly be long-term effects from the use of a nuclear device against any target, counterforce strategy focuses on the more immediate operational effect. Nuclear weapons might be used to destroy enemy WMD before they can be used, or they may be used against enemy conventional forces if other means to stop them have proven ineffective. This can reduce the threat to the United States and its forces and could, through the destruction of enemy forces, bring an end to the conflict." U.S. Air Force, *Nuclear Operations,* Air Force Doctrine Document 2-1.5, 15 (July 1998), pp. 8-9

33. U.S. Department of Defense, *Strategic Deterrence Joint Operating Concept,* February 2004, http://www.dtic.mil/jointvision/sd_joc_v1.doc p.4. "Joint Operating Concepts" are part of a set of planning documents intended to "to assist in the development of enhanced joint military capabilities needed to protect and advance U.S. interests." The goal is to "to realize the Chairman's vision of achieving Full Spectrum Dominance by the Joint Force." *Id.,* p.1.

34. *Ibid,* p.4

35. *Ibid,* p.13.

36. U.S. Department of Defense, *Nuclear Posture Review,* p.46.

37. "As you are well aware, our efforts to strengthen deterrence involve denying sanctuary to our adversaries. This may mean making our nuclear weapons more tailored to the target type, which is not equivalent to making them more likely to be used. Tailored weapons strengthen deterrence, which in turn makes them less likely to be used. Also, a robust nuclear earth penetrator is only one piece of the overall solution for targets contained in these types of structures. Other capabilities such as advanced conventional, information operations, and special operations capabilities must be developed as well. A full spectrum of capabilities strengthens deterrence and maintains the nuclear threshold by developing a range of options for the President to counter the growing hard and deeply buried target set." Statement of John A Gordon, National Nuclear Security Administration Administrator, Before the House Armed Services Committee Procurement Subcommittee, June 12, 2002.

38. U.S. Department of Defense, *Strategic Deterrence Joint Operating Concept,* February 2004, http://www.dtic.mil/jointvision/sd_joc_v1.doc ,p.34

39. *Nuclear Posture Review,* pp. 34-35.

40. *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* 2004, pp.7-17–7-21.

41. For an overview of the B61-11 modification, see Greg Mello, "New Bomb, No Mission," *Bulletin of the Atomic Scientists* May/June 1997 (vol. 53, no. 03), pp. 28-32.

42. U.S. Department of Energy, National Nuclear Security Administration, FY 2006 Budget Request, "Directed Stockpile Work," pp.82-83. Regarding the hypothetical use of a penetrator version of a B83 or B61 nuclear bomb with primary yield only, see Christopher E. Paine, Thomas B. Cochran, Matthew G. McKinzie, and Robert S. Norris, *Countering Proliferation, or Compounding It? The Bush Administration's Quest for Earth- Penetrating*

and Low-Yield Nuclear Weapons, Natural Resources Defense Council, 2003, p.v. The Defense Science Board (DSB) noted that "Current warheads could be modified for lower yields with high confidence," and noted that one way of doing so would be "replacement of a warhead secondary with inert material." The DSB noted that "Further reductions in yield are also possible without nuclear testing." *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* 2004, p. 7-11.

43. Department of the Air Force, Fiscal Year (FY) 2006/2007 Budget Estimates, Research, Development, Test and Evaluation (RDT&E), Descriptive Summaries, Volume II, Program Element 0604222F, Nuclear Weapons Support, Project 4807 Nuclear Weapons & CP Technologies, "Other program funding summary."

44. U.S. Department of Energy, National Nuclear Security Administration, FY 2006 Budget Request, Directed Stockpile Work, "Reliable Replacement Warhead," p.82.

45. Statement of Ambassador Linton F. Brooks, Administrator, National Nuclear Security Administration U.S. Department of Energy, before The Senate Armed Services Committee Subcommittee on Strategic Forces, April 4, 2005, pp.5-6.

46. Brooks also stated that the initial studies for the Reliable Replacement Warhead (RRW) will focus on the feasibility of developing "replacement warheads or warhead components that provide the same or comparable military capabilities as existing warheads in the stockpile." Statement of Ambassador Linton F. Brooks, Administrator, National Nuclear Security Administration U.S. Department of Energy, before The Senate Armed Services Committee Subcommittee on Strategic Forces, April 4, 2005, p.6.

A recent article by Los Alamos weapons scientists noted that the RRW feasibility study "is concentrating on two major questions: (1) Can we certify a replacement design without nuclear testing? (2) Would such a design provide adequate or more capability with fewer resources?" The authors also noted that a replacement warhead must, among other requirements, "4) be modular and compatible with as many delivery systems as possible..." Dwight Jaeger and John Pedicini, "The Evolving Deterrent," *Los Alamos Science,* Number 29, 2005, p.4.

If the RRW approach can provide new warheads approximating the range of sophisticated capabilities in the current U.S. stockpile, it is possible that it could provide additional capabilities as well. The Defense Science Board, in its 2004 *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* noted that a variety of additional capabilities likely could be obtained by modifying existing nuclear warhead designs without underground testing, ranging from reduced yields and improved earth penetrating ability to enhanced radiation with reduced heat and blast. (At pp.7-10-7-11).

47. For an overview of current U.S. research and development aimed at making nuclear weapons more useable, see *Sliding Towards the Brink: More Useable Nuclear Weapons and the Dangerous Illusions of High-Tech War,* WSLF Information Bulletin, March 2003, http://www.wslfweb.org/docs/nucpreppdf.pdf

48. U.S. Air Force, RDT&E Budget Item Justification Sheet (R-2 Exhibit) February 2002, Program Element 0101313F, Project 5059, Strategic War Planning System.

49. U.S. Defense Threat Reduction Agency, RDT&E Budget Item Justification Sheet (R-2 Exhibit) February 2005, Project #0603160BR,Project BK- Counterforce.

50. Statement of Ambassador Linton F. Brooks, Under Secretary of Energy for Nuclear Security and Administrator, National Nuclear Security Administration, Before the Senate Armed Services Committee Subcommittee on Strategic Forces, 24 March 2004.

51. U.S. Department of Energy, National Nuclear Security Administration, *Strategic Plan,* November 2004, p.7

52. U.S. Department of Energy, National Nuclear Security Administration, "Requirements for a Modern Pit Facility: Summary," Report to Congressional Defense Committees Requested by the United States Congress in Public Law 108-375, Ronald W. Reagan National Defense Authorization Act, January 2005, p.4.

53. See generally U.S. Department of Energy, *Draft Supplemental Programmatic Environmental Impact Statement on Stockpile Stewardship and Management for a Modern Pit Facility,* 2003.

54. Testimony of Linton F. Brooks, Administrator, National Nuclear Security Administration, Before the Strategic Forces Subcommittee of the House Armed Services Committee, March 2, 2005:

> "REP. REYES: So if the annual production rate for the MPF -- as you said, it's supposed between 100 and, I think you said, 125?
> MR. BROOKS: 125 is the lowest level analyzed in the environmental impact statement. I think it is unlikely that we would see something much lower. My guess is, as a practical matter, it's going to end up somewhere between that and the low 200s. But we don't know yet."

55. See U.S. Department of Energy, National Nuclear Security Administration, FY 2006 Budget Request, "Pit Manufacturing and Certification Campaign," pp. 171 et seq.

56. U.S. Department of Energy, National Nuclear Security Administration, *Strategic Plan,* November 2004, p.20.

57. *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* 2004, pp. 7-10–7-11.

58. John A. Gordon, Administrator of the National Nuclear Security Administration (NNSA), Written Statement to the Committee on Armed Services, U.S. Senate, February 14, 2002.

59. General James Cartwright (USMC) Commander, U.S. Strategic Command, remarks delivered at the Air Warfare Symposium - Orlando, Florida, February 18, 2005.
http://www.afa.org/Media/scripts/Cartwright_AWS05.html

60. See generally, e.g., U.S. Department of Energy, *Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management,* 1996; U.S. Department of Energy, National Nuclear Security Administration, *Stockpile Stewardship Plan, Fiscal Year 2001* ("Green Book"), 2000.

61. "Stockpile Stewardship Conference Planning Meeting Minutes," 10 January 2003, Attachment 2, "Panels: Draft Topics Lists and Members." Obtained by the Los Alamos Study Group, www.lasg.org, full document available at http://www.lasg.org/StockpileStewardshipReview%5b1%5d.htm

62. U.S. Department of Energy, National Nuclear Security Administration, FY 2006 Budget Request, Weapons Activities/RTBF/Construction, Project, 05-D-140—Project Engineering and Design, Component Evaluation Facility (CEF), Pantex, p.253.

63. "Stockpile Stewardship Conference Planning Meeting Minutes," 10 January 2003, Attachment 2, "Panels: Draft Topics Lists and Members." Obtained by the Los Alamos Study Group, www.lasg.org, full document available at http://www.lasg.org/StockpileStewardshipReview%5b1%5d.htm

64. *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* 2004, p. 5-10.

65. C. Paul Robinson, "How Does One Size the Deterrent?" 1999 Joint Operations Seminar, National Defense University/Institute for National Strategic Studies, Ft. McNair, Washington, D.C., September 21-22, 1999.

66. U.S. Department of State, "Article VI of the Non-Proliferation Treaty," http://www.state.gov/documents/organization/42229.pdf

67. *Nuclear Posture Review*, p.14.

68. "Notably missing in today's arsenal is the ability to (1) achieve the effects desired while limiting unintended collateral damage and (2) confidently predict consequences of execution. Hard and difficult targets such as HDBT and some weapons of mass destruction (WMD) pose particular challenges. Not only do they require accuracy on the order of a few meters, they also require physically large and heavy payloads, a must for earth penetration (or for clean nuclear warheads).

Realistic ISR [intelligence, surveillance, and reconnaissance] limitations impose demands for rapid targeting and retargeting systems, and even perfect ISR would require in-flight retargeting against moving targets. Delivery systems having these capabilities must be designed, developed, produced, and tested to provide our national leadership with the highest possible assurance of mission success.

We can meet some of these requirements using existing long-range delivery systems. For the most part, however, no current systems exist to meet several, much less all, of the requirements simultaneously. As noted above, certain classes of difficult targets— HDBT and some WMD—are particularly challenging and require accuracy on the order of a few meters. Such accuracy serves to reduce the warhead yield required and also limits collateral damage." *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* 2004, pp. 5-9--5-10.

See also Stephen M. Younger, (then Associate Laboratory Director for Nuclear Weapons Alamos National Laboratory and later Director of the Defense Threat Reduction Agency), *Nuclear Weapons in the Twenty-First Century,* Los Alamos National Laboratory, LAUR-00-2850, 2000, pp. 9 et seq.

69. *Nuclear Posture Review*, p.7.

70. Air Force Space Command, *Strategic Master Plan FY06 and Beyond,* 2003, p.4.

71. U.S. Air Force Space Command, "Final Mission Need Statement, Land Based Strategic Nuclear Deterrent," AFSPC 001-00, January, 2002 (unpaginated)..

72. Department of the Air Force, Air Force Materiel Command, AFRL, Space Vehicles Directorate, "Concepts and Technologies Study for Enhance [sic] Cruise Missile (ECM)," Sources Sought Notice, Reference Number AFNWCA002, December 7, 2004 (modified December 9, 2004).

73. Amy Wolf, *U.S. Nuclear Weapons: Changes in Policy and Force Structure,* Congressional Research Service Report to Congress, Updated January 13, 2005, p.CRS-28.

74. Air Force Major General Thomas H. Neary, ret., remarks at Air Force Space Command "Guardian Challenge 2004" competition, quoted in Scott R. Gourley, "ICBM Transformation," *Military Aerospace Technology Online*, Jun 25, 2004, v.3 #2.

75. Robert S. Norris and Hans M. Kristensen, "U.S. Nuclear Forces, 2005*," Bulletin of Atomic Scientists,* January/February 2005, pp. 73-75; see also Department of the Navy, Fiscal Year (FY) 2006/FY 2007 Budget Estimates, RDT&E Project Justification, January 2005, Program Element 0101221N, Strategic Sub & Wpns Sys Spt, Technology Applications 2228.

76. See, for example, Department of the Air Force, Fiscal Year (FY) 2006/2007 Budget Estimates, Research, Development, Test and Evaluation (RDT&E), Descriptive Summaries, Volume II, February 2005, Program Element 0604240F, B-2 Advanced Technology Bomber, requesting funds for various electronics upgrades including a "Secure, survivable communication systems upgrade" that "reserves the critical ability to guarantee communication through a nuclear event, while providing a dramatic increase in the data flow into and out of the B-2." Another example is a "stand-off jammer" in development for the B-52, "for reactive jamming suppression of enemy integrated air defense systems (IADS) and IADS component radars from stand-off distance." Department of the Air Force, Fiscal Year (FY) 2006/2007 Budget Estimates, Research, Development, Test and Evaluation (RDT&E), Descriptive Summaries, Volume II, February 2005, Program Element 0604429F, Airborne Electronic Attack.

77. Department of the Air Force, Fiscal Year (FY) 2006/2007 Budget Estimates, Research, Development, Test and Evaluation (RDT&E), Descriptive Summaries, Volume II, February 2005, Program Element 0604015F Next Generation Bomber.

78. *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* 2004, p.5-8, see also Department of Defense News Release, "Contracts," November 26, 2003.

79. See Department of the Navy, Strategic Systems Programs, Special Notice, Submarine Launched Intermediate Range Ballistic Missile Technical Exchange, Reference-Number-08252003-0358, August 25, 2003.

80. Department of the Navy, Strategic Systems Programs, "Request for Information (RFI) from Industry for a Submarine Launched Intermediate Range Ballistic Missile (SLIRBM) Launcher Subsystem (SLS)," March 7, 2005, solicitation #GPO381249.

81. U.S. Department of State, "Article VI of the Non-Proliferation Treaty," http://www.state.gov/t/ac/rls/or/42126.htm

82. See U.S. Navy Fact File, "Guided Missile Submarines - SSGN," http://www.chinfo.navy.mil/navpalib/factfile/ships/ship-ssgn.html ("These ships will be armed with up to 154 Tomahawk or Tactical Tomahawk land attack missiles."); "SSGN : A Transformational Force for the U.S. Navy," http://www.sublant.navy.mil/SSGN.HTM (Web site of Commander, Naval Submarine Force).

83. It has been reported that the Navy wished to retire its nuclear sea-launched cruise missiles, but was overruled by civilian Defense Department officials. See Amy Wolf, *U.S. Nuclear Weapons: Changes in Policy and Force Structure,* Congressional Research Service Report to Congress, Updated January 13, 2005, p.CRS-24.

84. *Report of the Defense Science Board Task Force on Future Strategic Strike Forces,* 2004, p.1-8.

85. For an overview of these "Global Strike" programs, see *Missiles of Empire: America''s 21st Century Global Legions,* WSLF information Bulletin, Fall 2003 (hereafter *Missiles of Empire)* http://www.wslfweb.org/docs/missiles03.pdf In 2004, Congress expressed concern that "nations possessing nuclear weapons capabilities" might "misinterpret the intent or use of the FALCON/CAV programs." Congress directed that funds appropriated for hypersonics research could not be used "to develop, integrate, or test a CAV variant that includes any nuclear or conventional weapon," or "to develop, integrate, or test a CAV for launch on any Intercontinental Ballistic Missile or Submarine Launched Ballistic Missile." The Conference Report noted, however, that " The Committees on Appropriations will consider expanding the scope of this program in subsequent years if safeguards negotiated among our international partners have been put in place." House Rpt.108-622 - Making Appropriations for the Department of Defense for the Fiscal Year Ending September 30, 2005, and for Other Purposes.

The Administration duly acknowledged these restrictions, changing the name of the Common Aero Vehicle to the "Hypersonic Technology Vehicle" in its February 2005 FY2006 budget request. Department of the Air Force, Fiscal Year (FY) 2006/2007 Budget Estimates, Research, Development, Test and Evaluation (RDT&E), Descriptive Summaries, Volume II, Program Element 0604856F Common Aero Vehicle. It is noteworthy, however, that a February, 2005 solicitation for advisory support for the Air Force Global Deterrence and Strike Program Office still includes among the Program Office activities a Common Air Vehicle "integrated product team" to support "development of CAV concepts for a CONUS [continental United States]-based, space-traversing, precision accuracy, unpowered conventional weapon delivery system to engage enemy targets from long ranges without deploying forces." Air Force Global Deterrence and Strike Program Office, Solicitation #FA8204-04-R-7012, LMX A&AS Contract, Section L, February 11, 2005, p.5. The Commander of Air Force Space Command also touted the CAV in March 2005 Congressional testimony as "an incredible capability to provide the warfighter with a global reach capability against high payoff targets" that the Air Force is "diligently working to develop." Statement of General Lance W. Lord, Commander, Air Force Space Command, to the House Armed Services Committee Subcommittee on Strategic Forces, Subject: FY06 Defense Authorization Budget Request for Space Activities, March 9, 2005.

86. A document distributed on the web to inform potential contractors interested in the September 2003 Air Force Space Command "Request for Information/initial Delivery Vehicle Concept Call for the next generation Land Based Strategic Deterrent (LBSD) Analysis of Alternatives (AoA)" (hereafter LBSD AoA RFI) stated, for example, that

> "The Common Aero Vehicle (CAV) is currently a specific conventional-only delivery vehicle with high lift-over-drag characteristics. A high lift-over-drag vehicle can be designed and built that can carry nuclear weapons." (At p. 4) "Technology & Alternatives Working Group , "Concepts to Alternatives," 2003.

This document, along with the above Request for Information and other relevant documents, have been archived on the Western States Legal Foundation Government Military Space web page, at http://www.wslfweb.org/space/spacedocs.htm.

87. Statement of General James E. Cartwright, USMC, Commander, United States Strategic Command, Before the Senate Armed Services Committee Strategic Forces Subcommittee On Strategic Forces and Nuclear Weapons Issues in Review of the Defense Authorization Request for Fiscal Year 2006, April 4, 2005, p.4.

88. *National Security Strategy of the United States of America,* 2002, p.18.

89. U.S. Joint Chiefs of Staff, *The National Military Strategy of the United States of America,* 2004, P.2.

90. U.S. Department of Defense, *Strategic Deterrence Joint Operating Concept,* February 2004,http://www.dtic.mil/jointvision/sd_joc_v1.doc , p.37.

91. D. L. Byman, M. C. Waxman, E. V. Larson, *Air Power as a Coercive Instrument,* Rand Corporation, 1999, p. 132.

92. *Id.*

93. U.S. Department of Defense, *Strategic Deterrence Joint Operating Concept,* February 2004,http://www.dtic.mil/jointvision/sd_joc_v1.doc , p.37.

94. U.S. Department of Defense, *Strategic Deterrence Joint Operating Concept,* February 2004, http://www.dtic.mil/jointvision/sd_joc_v1.doc , p.33. Identical language can be found in the *U.S. Air Force Transformation Flight Plan–2004,* p. D-14.

95. *National Security Strategy of the United States of America,* p.30

96. "Regionally oriented defenses will protect fielded U.S. forces and allies, and will seamlessly integrate with homeland defenses to provide overlapping and complementary global protection. Additionally, the ISR [intelligence, surveillance and reconnaissance] and C2 [command and control] elements of active missile defenses will enable a robust offense/defense integration, to include long- or very-long range counter-battery fires aimed at destroying the adversary's missile launch capabilities. The ability to thwart adversary missile attacks prior to launch as well as to shoot missiles down in flight is key to achieving effective strategic deterrence while enhancing a JFC's [joint force commander's] economy of force efforts. Near-peer nation-state adversaries may seek to defeat such active defenses in order to hold the American homeland hostage and constrain U.S. freedom of action." *Strategic Deterrence Joint Operating Concept,* February 2004, pp.34-35.

"When combined with U.S. force projection, Global Strike..., and nuclear capabilities, active and passive defenses have a synergistic effect on deterrence by imposing costs. By reducing U.S. vulnerability to a wide range of asymmetric attacks, defenses increase adversaries' perceived probability of incurring costs from U.S. military intervention, and from American counterstrikes on key assets." *id,* p.33.

97. See, for example, the Preamble of the 1999 *Draft Report of National Security Advisory Board on Indian Nuclear Doctrine,* which states:

> Nuclear weapon states have asserted that they will continue to rely on nuclear weapons with some of them adopting policies to use them even in a non-nuclear context. These developments amount to virtual abandonment of nuclear disarmament. This is a serious setback to the struggle of the international community to abolish weapons of mass destruction....
>
> Autonomy of decision making in the developmental process and in strategic matters is an inalienable democratic right of the Indian people. India will strenuously guard this right in a world where nuclear weapons for a select few are sought to be legitimised for an indefinite future, and where there is growing complexity and frequency in the use of force for political purposes.

And for Pakistan, an address by the Permanent Representative of Pakistan on "Non-Proliferation, Arms Control and Disarmament : A Policy Framework for South Asia" at the Defence Threat Reduction Agency on 2 June 1999, which noted that

> US nuclear diplomacy centres on efforts to strengthen the status quo and to stabilize the balance of power through non-proliferation and arms control. Nuclear disarmament, in the sense of bringing about a material change in the nuclear status quo and world security order, has at best been kept on the back burner, and at worst been used synonymously with non-proliferation. Even arms control efforts appear in practice to be an instrument of strategic policy to get rid of redundant weapon systems while, at the same time, gaining some political capital....
>
> However, the long term goal of de-nuclearization of South Asia can only be achieved with progress on the third track, or global nuclear disarmament. Frankly speaking, the long list of prescriptions and moral sermons addressed to South Asia smack of double standards in the face of almost negligible advances in the field of global nuclear disarmament.
> Unfortunately, some nuclear weapon states have misinterpreted the indefinite extension of the NPT to

> signify an endorsement of their right to retain nuclear weapons indefinitely. Global peace and security is more than threatened by the thousands of nuclear weapons in the inventory of nuclear weapon states. Even more dangerous is the fact that some nuclear weapon states have adopted nuclear war fighting doctrines which even envisage the use of nuclear weapons against conventional threats.

98. Korean Central News Agency, "Spokesman for DPRK Foreign Ministry on expected DPRK-U.S. talks," April 18, 2003.

99. Robert S. Norris, Hans M. Kristensen, Christopher E. Paine, *Nuclear Insecurity: A Critique of the Bush Administration's Nuclear Weapons Policies*, Natural Resources Defense Council, September 2004, p. 10.

100. See 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, NPT/CONF.2000/28, 22 May 2000.

101. Eric Hobsbawm, *The Age of Empire: 1875-1914*, (Vintage Books, New York: 1989), p.10.

102. "U.S. Compliance With Article VI of the Non-Proliferation Treaty (NPT)," Stephen G. Rademaker, Assistant Secretary of State for Arms Control, Remarks at a Panel Discussion at the Arms Control Association Carnegie Endowment Building, Washington, DC, February 3, 2005.

103. International Court of Justice, Legality of the Threat or Use of Nuclear Weapons, General List No.95 (Advisory Opinion of 8 July 1996), sec. 105F (emphasis added). See discussion of this point in John Burroughs, *The (Il)legality of Threat or Use of Nuclear Weapons* (Munster: Lit Verlag, 1997), p.50.

104. International Court of Justice, Legality of the Threat or Use of Nuclear Weapons, General List No.95 (Advisory Opinion of 8 July 1996), paragraphs 98-103; see also Burroughs, *supra,* pp.48-51.

105. Lewis Mumford, "Gentlemen: You Are Mad!" *The Saturday Review of Literature,* March 2, 1946, collected in K. Bird and L. Lifschultz, Hiroshima's Shadow: Writings on the Denial of History and the Smithsonian Controversy (Stoney Creek, Connecticut: Pamphleteers Press, 1998) p.284, at p.286.