
PART II

THE U.S. RECORD

Article VI Non-Compliance

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RECOMMENDATIONS OF THE WMD COMMISSION

Recommendation 2: All parties to the Non-Proliferation Treaty should implement the decision on principles and objectives for non-proliferation and disarmament... adopted in 1995. They should also promote the implementation of ‘the thirteen practical steps’ for nuclear disarmament that were adopted in 2000.

Recommendation 20: ...All nuclear-weapon states parties to the Non-Proliferation Treaty must take steps towards nuclear disarmament, as required by the treaty and the commitments made in connection with the treaty’s indefinite extension. Russia and the United States should take the lead....

Cessation of the Nuclear Arms Race

Recommendation 23: Any state contemplating replacement or modernization of its nuclear-weapon systems must consider such action in the light of all relevant treaty obligations and its duty to contribute to the nuclear disarmament process. As a minimum, it must refrain from developing nuclear weapons with new military capabilities or for new missions. It must not adopt systems or doctrines that blur the distinction between nuclear and conventional weapons or lower the nuclear threshold.

The Comprehensive Nuclear-Test-Ban Treaty

Recommendation 28: ...The United States, which has not ratified the [CTBT], should reconsider its position and proceed to ratify the treaty, recognizing that its ratification would trigger other required ratifications and be a step towards the treaty’s entry into force. Pending entry into force, all states with nuclear weapons should continue to refrain from nuclear testing....

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Cutting off Fissile Materials Production

Recommendation 26: The Conference on Disarmament should immediately open the delayed negotiations for a treaty on the cut-off of production of fissile material for weapons without preconditions....

Recommendation 27: To facilitate fissile material cut-off negotiations in the Conference on Disarmament, the five Non-Proliferation Treaty nuclear-weapon states, joined by the other states possessing nuclear weapons, should agree among themselves to cease production of fissile material for weapon purposes. They should open up their facilities for such production to International Atomic Energy Agency safeguards inspections....

Diminishing Role of Nuclear Weapons in Security Policies

Recommendation 15: All states possessing nuclear weapons should declare a categorical policy of no-first-use of such weapons. They should specify that this covers both pre-emptive and preventive action, as well as retaliation for attacks involving chemical, biological or conventional weapons.

Reduction of Operational Status of Nuclear Forces

Recommendation 17: Russia and the United States should agree on reciprocal steps to take their nuclear weapons off hair-trigger alert and should create a joint commission to facilitate this goal. They should undertake to eliminate the launch-on-warning option from their nuclear war plans, while implementing a controlled parallel decrease in operational readiness of a large part of their strategic forces, through:

- reducing the number of strategic submarines at sea and lowering their technical readiness to launch while in port;
- storing nuclear bombs and air-launched cruise missiles separately from relevant airfields;
- storing separately nose cones and/or warheads of most intercontinental ballistic missiles or taking other technical measures to reduce their readiness.

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Nuclear Arms Reduction and Elimination

Recommendation 18: Russia and the United States should commence negotiations on a new strategic arms reduction treaty aimed at reducing their deployments of strategic forces allowed under the Strategic Offensive Reductions Treaty by at least half. It should include a legally binding commitment to irreversibly dismantle the weapons withdrawn under the Strategic Offensive Reductions Treaty. The new treaty should also include transparent counting rules, schedules and procedures for dismantling the weapons, and reciprocal measures for verification.

Recommendation 19: Russia and the United States, followed by other states possessing nuclear weapons, should publish their aggregate holdings of nuclear weapons on active and reserve status as a baseline for future disarmament efforts. They should also agree to include specific provisions in future disarmament agreements relating to transparency, irreversibility, verification and the physical destruction of nuclear warheads.

Recommendation 21: Russia and the United States should proceed to implement the commitments they made in 1991 to eliminate specific types of non-strategic nuclear weapons, such as demolition munitions, artillery shells and warheads for short-range ballistic missiles. They should agree to withdraw all non-strategic nuclear weapons to central storage on national territory, pending their eventual elimination. The two countries should reinforce their 1991 unilateral reduction commitments by developing arrangements to ensure verification, transparency and irreversibility.

Recommendation 22: Every state that possesses nuclear weapons should make a commitment not to deploy any nuclear weapon, of any type, on foreign soil.

Article VI of the NPT obligates states parties to “pursue in good faith negotiations on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament.” The United States claims to be in compliance with this obligation largely based on the reduction of the size

of its arsenal from the Cold War era.¹ The total of U.S. warheads has declined from its peak of about 30,000 in 1967 to about 10,000, and will further decline to an estimated 6,000 in 2012.² Given that one bomb can devastate a city, and dozens a society, this reduction is essentially meaningless. Further, under current official plans the United States intends to rely on large, modernized nuclear forces for decades to come as a central component of its security posture. Plainly, the reduction in arsenal size is more a matter of efficiency and rationalization than working towards marginalization and elimination of nuclear weapons. Additionally, as detailed in this section, the United States is in flagrant violation of important post-Cold War commitments made under the NPT.

The WMD Commission is in accord with this view, emphasizing the failure to fulfill NPT commitments made in 1995 and 2000. As explained in section 1.2, at the 1995 Review and Extension Conference, in connection with the decision to extend the NPT indefinitely, states parties agreed to Principles and Objectives for Non-Proliferation and Disarmament. The Principles and Objectives record, among others, a commitment to implement Article VI through the “determined pursuit by the nuclear-weapon States of systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons.”³ At the 2000 Review Conference, states parties agreed to 13 “practical steps for the systematic and progressive efforts to implement Article VI” (*see box*). The WMD Commission observes regarding the 1995 promise that “it is easy to see that the nuclear-weapon states parties to the NPT have largely failed to implement this commitment.”⁴ The Commission additionally points to a “loss of confidence in the [NPT] as a result of the failure of the nuclear-weapon states to fulfill their disarmament obligations under the treaty and also to honour their additional commitments to disarmament made at the 1995 and 2000 NPT Review Conferences.”⁵

This section surveys the U.S. record, with some reference to other countries, under two main headings taken from Article VI, first, cessation of the nuclear arms race, and second, nuclear disarmament. The latter is organized with reference to practical steps agreed in 2000.

The 13 Practical Steps

Excerpted from the Final Document of the
NPT 2000 Review Conference

The Conference agrees on the following practical steps for the systematic and progressive efforts to implement Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons and paragraphs 3 and 4 (c) of the 1995 Decision on “Principles and Objectives for Nuclear Non-Proliferation and Disarmament”:

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1. The importance and urgency of signatures and ratifications, without delay and without conditions and in accordance with constitutional processes, to achieve the early entry into force of the Comprehensive Nuclear-Test-Ban Treaty.
2. A moratorium on nuclear-weapon-test explosions or any other nuclear explosions pending entry into force of that Treaty.
3. The necessity of negotiations in the Conference on Disarmament on a non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices in accordance with the statement of the Special Coordinator in 1995 and the mandate contained therein, taking into consideration both nuclear disarmament and nuclear non-proliferation objectives. The Conference on Disarmament is urged to agree on a programme of work which includes the immediate commencement of negotiations on such a treaty with a view to their conclusion within five years.
4. The necessity of establishing in the Conference on Disarmament an appropriate subsidiary body with a mandate to deal with nuclear disarmament. The Conference on Disarmament is urged to agree on a programme of work which includes the immediate establishment of such a body.
5. The principle of irreversibility to apply to nuclear disarmament, nuclear and other related arms control and reduction measures.
6. An unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament to which all States parties are committed under Article VI.
7. The early entry into force and full implementation of START II and the conclusion of START III as soon as possible while preserving and strengthening the ABM Treaty as a cornerstone of strategic stability and as a basis for further reductions of strategic offensive weapons, in accordance with its provisions.
8. The completion and implementation of the Trilateral Initiative between the United States of America, the Russian Federation and the International Atomic Energy Agency.
9. Steps by all the nuclear-weapon States leading to nuclear disarmament in a way that promotes international stability, and based on the principle of undiminished security for all:

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- * Further efforts by the nuclear-weapon States to reduce their nuclear arsenals unilaterally.
 - * Increased transparency by the nuclear-weapon States with regard to the nuclear weapons capabilities and the implementation of agreements pursuant to Article VI and as a voluntary confidence-building measure to support further progress on nuclear disarmament.
 - * The further reduction of non-strategic nuclear weapons, based on unilateral initiatives and as an integral part of the nuclear arms reduction and disarmament process.
 - * Concrete agreed measures to further reduce the operational status of nuclear weapons systems.
 - * A diminishing role for nuclear weapons in security policies to minimize the risk that these weapons ever be used and to facilitate the process of their total elimination.
 - * The engagement as soon as appropriate of all the nuclear-weapon States in the process leading to the total elimination of their nuclear weapons.
10. Arrangements by all nuclear-weapon States to place, as soon as practicable, fissile material designated by each of them as no longer required for military purposes under IAEA or other relevant international verification and arrangements for the disposition of such material for peaceful purposes, to ensure that such material remains permanently outside of military programmes.
 11. Reaffirmation that the ultimate objective of the efforts of States in the disarmament process is general and complete disarmament under effective international control.
 12. Regular reports, within the framework of the NPT strengthened review process, by all States parties on the implementation of Article VI and paragraph 4 (c) of the 1995 Decision on “Principles and Objectives for Nuclear Non-Proliferation and Disarmament”, and recalling the Advisory Opinion of the International Court of Justice of 8 July 1996.
 13. The further development of the verification capabilities that will be required to provide assurance of compliance with nuclear disarmament agreements for the achievement and maintenance of a nuclear weapon-free world.

Cessation of the Nuclear Arms Race and Modernization of Nuclear Forces

The first prong of the Article VI obligation is to negotiate in good faith the “cessation of the nuclear arms race at an early date.” In 1995, France, Russia, Britain, and the United States told the world that “the nuclear arms race has ceased” in a declaration issued at the Conference on Disarmament.⁶ Unfortunately, this optimistic claim is not true.⁷ Research and development is taking place in all states possessing nuclear weapons for purposes of replacing existing systems, increasing reliability over the long term, and enhancing military capabilities.⁸ Among the research and development programs are the following. France reportedly is planning the deployment of new warheads whose concept was tested in 1995-1996 on new versions of its cruise and submarine-launched missiles.⁹ Russia is developing new warheads for its most recent silo-based and mobile missiles, including one involving a maneuverable reentry vehicle.¹⁰ The U.S. “Reliable Replacement Warhead” program aims to yield modified or new-design warheads.¹¹ Britain reportedly has a similar program for warheads deployed on U.S.-supplied Trident missiles based on submarines.¹² In March 2007, its parliament approved a plan to build a new generation of submarines.¹³

As part of its broader efforts to indefinitely maintain global military superiority, the United States continues to upgrade, modernize and replace its nuclear war-fighting capabilities. After Congress denied funding in two consecutive years for the Bush administration’s plan to develop a robust nuclear earth penetrator, more commonly known as the nuclear bunker-buster, U.S. weapons designers have turned to a larger project. The new centerpiece for the future U.S. nuclear stockpile is the Reliable Replacement Warhead (RRW), initially proposed in lieu of funding for research on “advanced concepts” (likely including low-yield weapons) and the nuclear bunker-buster.

The RRW program is examined in depth in section 2.3. In brief, it is intended to produce a family of new warhead designs, the components for which “would be designed to increase margins, provide for ease of manufacture and certification, and . . . improve our ability to ensure long-term confidence in the stockpile and reduce the likelihood of resumption of nuclear testing.”¹⁴ A task force commissioned by the Secretary of Energy “endorses the immediate initiation of the modernization of the stockpile through the design of the Reliable Replacement Warhead. This should lead to a family of modern nuclear weapons, designed with greater margin to meet military requirements while incorporating state-of-the-art surety requirements.”¹⁵ In March 2007, the Department of Energy selected a design for the first RRW warhead, to be deployed on submarine-launched Trident II missiles. Despite current congressional intentions, the U.S. program will enable research on improvement of military capabilities. It has been described by a top official as incubating future “revitalized” scientists able to design, develop, and produce a new warhead design with “different or modified military capabilities” within

three to four years of a decision to do so.¹⁶ Exotic changes are not necessary to achieve significant advances in capability. Under the U.S. “lifetime extension program,” the main warhead for submarine-launched missiles is being given a capacity to destroy “hard targets” with a “ground burst” by modifying a sub-system in its reentry vehicle.¹⁷ None of this is consistent with the NPT obligation of negotiating cessation of the nuclear arms race at an early date, or the unequivocal undertaking to eliminate nuclear arsenals made at the 2000 NPT Review Conference, or the 2000 commitment to a diminishing role of nuclear weapons in security policies. (For the U.S. position, *see box*.)

Although there is much uncertainty regarding the ultimate nature and direction of the RRW program, its implications are clear. The program is an enabler for changes in the U.S. nuclear weapons complex, currently going under the label “Complex 2030,” intended to implement the Bush administration’s “capabilities based” nuclear posture promoted in the 2001 Nuclear Posture Review (*see section 2.3*). The program would eventually lead to the replacement of every nuclear weapon in the U.S. arsenal, and require a return to large scale nuclear weapons production, suspended in the United States since 1989. When taken together with the modernization programs proposed and underway in the nuclear weapons complex and with respect to delivery systems (*see section 2.4*), the United States is set to recreate the Cold War era capacity to produce new nuclear weapons.

The bottom line is that the RRW program manifests an intention to maintain nuclear forces for decades to come. In 2002, the then head of the National Nuclear Security Administration (NNSA), John Gordon, testified that the Nuclear Posture Review “reaffirms that nuclear weapons, for the foreseeable future, will remain a key element of U.S. national security strategy.”¹⁸ The NPR refers to studies on a new land-based intercontinental missile to be operational in 2020, a new submarine launched ballistic missile and nuclear-armed submarine in 2030, and a new heavy bomber in 2040, as well as “refurbished” or modified or new warheads for all of them.¹⁹ This position was reiterated in early March 2006 by the current head of the NNSA, Linton Brooks, who declared that the “United States will, for the foreseeable future, need to retain both nuclear forces and the capabilities to sustain and modernize those forces.”²⁰ The United States and other nuclear weapon states claim in international forums that their modernization programs are intended to and will result in perpetuating existing military capabilities. To the extent this is true, planning and preparing for maintenance of nuclear forces for decades to come is contrary to the obligation to work in good faith for nuclear disarmament, as examined further below.

Nuclear Disarmament

As explained in section 1.2, the 13 practical steps unanimously adopted by the United States and other states participating in the NPT Review Conference in 2000 are an indispensable guide to assessing compliance with the Article VI

U.S. View of Nuclear Modernization under the NPT

According to the U.S. State Department:

- The NPT does not prohibit nuclear weapons states from modernizing their nuclear forces. All of the nuclear weapons states have continued to modernize their nuclear weapons stockpiles during the period in which the NPT has been in effect. Given this history, it would be a novel and unfounded interpretation of the NPT to argue that such modernization is problematic under the NPT.
- One misperception is that work on ‘new’ types of nuclear weapons will necessarily lead to a resumption of nuclear testing. The United States is not planning to resume nuclear testing, nor improving its test readiness posture in anticipation of testing in connection with the development of new nuclear weapons in the future.... As a matter of policy, the United States continues to observe a nuclear testing moratorium and encourages other states not to test. The United States has gone to great expense to develop a Stockpile Stewardship Program to help ensure the safety and reliability of the United States nuclear weapons stockpile without testing. The United States does not support the Comprehensive Test Ban Treaty (CTBT) and will not become a Party to it, but does support the work of the CTBT Organization (CTBTO) Preparatory Commission and its Provisional Technical Secretariat with respect to the International Monitoring System (IMS).
- Another misperception is that, were U.S. research programs to lead to lower yield weapons, this would blur the line between conventional and nuclear weapons and make nuclear weapons use more likely. The United States has had low-yield nuclear weapons in its stockpile since the 1950s. Other nuclear weapons states also possess such weapons. There is no historical evidence that the possession of such weapons has made the use of nuclear weapons more likely.¹

1 “Article VI of the Non-Proliferation Treaty,” U.S. Department of State, Bureau of Arms Control, February 10, 2005.

obligation of good faith negotiations on effective measures relating to nuclear disarmament. This is so both because the practical steps are comprehensive,

sophisticated, and sensible, and because as a matter of international law, under Article 31 of the Vienna Convention on the Law of Treaties, they provide criteria for interpretation of Article VI. In particular, the principles animating those steps, namely those of verification, transparency, and irreversibility, along with the commitments to the CTBT, the FMCT, a diminishing role of nuclear weapons in security policies, and reduced operational status of nuclear forces, are essential to reduction of nuclear forces to low levels, leading to their elimination. That is not to say that every measure identified by the practical steps is necessary for compliance with Article VI; in some cases a step (*e.g.*, a subsidiary body in the Conference on Disarmament to deal with nuclear disarmament) is a reasonable but not a unique means of implementing the obligation. And in the cases of the ABM Treaty and the START process, U.S. actions have rendered the references moot in name, though not in substance. The following measures U.S. policies against key practical steps.

Practical steps 1 and 2 - to achieve the early entry into force of the Comprehensive Nuclear-Test-Ban Treaty; and a moratorium on nuclear-weapons-test explosions or any other nuclear explosions pending [its] entry into force.

Negotiated in 1996, the CTBT has yet to enter into force. In order to so, it must be signed and ratified by 44 listed countries that have commercial or research nuclear reactors. Ten of the 44 states have yet to ratify the treaty. Of the ten, three nuclear weapon states, the United States, China, and Israel, have signed but not ratified the treaty; India, Pakistan, and North Korea, all possessing nuclear weapons, have not taken the first step of signing it. In 1999, the Senate failed to approve its ratification, and the Bush administration opposes its entry into force, though it has adhered to the moratorium on tests. In October 2006, North Korea conducted a test explosion of a nuclear device, the first such test by any country since 1998 tests by India and Pakistan. The North Korean test brought the importance of the CTBT into sharp relief.

The Preparatory Commission for the CTBT Organization has made great strides in developing the International Monitoring System, which will likely be completed in 2007. In a 2002 study, the U.S. National Academy of Sciences concluded that with a fully functioning monitoring system, clandestine nuclear explosions with a yield of more than one to two kilotons are detectable by technical means alone, and further found that any undetected low-yield explosions are not likely to significantly advance weapon development.²¹ The CTBT would help check the spread of nuclear arms, constrain refinement of advanced arsenals, and protect the environment. It already has a substantial organizational and technical infrastructure. It would be an indispensable part of the architecture of a nuclear weapons-free world.

The WMD Commission places a strong emphasis on the CTBT, possibly overstating its value in facilitating nuclear disarmament. The CTBT preamble includes this provision:

Recognizing that the cessation of all nuclear weapon test explosions and all other nuclear explosions, by constraining the development and qualitative improvement of nuclear weapons and ending the development of advanced new types of nuclear weapons, constitutes an effective measure of nuclear disarmament and non-proliferation in all its aspects...

The preamble is correct in claiming that the ban does no more than “constrain” improvement. During 15 years of observing a moratorium on underground explosive nuclear testing, the United States has been able to upgrade its warheads, and in the instance of the B-61-11 it was able to produce a nuclear bomb with enhanced earth-penetrating capability, all without explosive testing. The RRW program promises to be the next step in this evolution, packaging a new series of nuclear weapons, possibly with new military capabilities and missions, designed and manufactured without explosive testing.

The RRW program could directly undermine the CTBT as well. According to Dr. Robert Civiak, a former Office of Management and Budget examiner with responsibility for oversight of spending on the nuclear weapons complex, the Department of Defense might not accept a new warhead design in the arsenal if it had not been tested.²² Additionally, a Congressional Research Service report cites concerns of the National Nuclear Security Administration (NNSA) that, due to the constant changes being made to the current stockpile, the current system of Life Extension Programs, which would likely be replaced by the RRW program, are more likely than the RRW program to result in an eventual return to nuclear testing.²³ Either way, NNSA has not been able to confidently dismiss the possibility that nuclear testing will one day be required.

The United States should ratify the CTBT and work to persuade other countries to do so in order to bring the treaty into force. But it should also be recognized that the durability of the treaty will be in question if the United States and other nuclear weapon states insist on making nuclear weapons central to their security postures for decades to come. In contrast, the CTBT would be unassailable if those countries were on a path of marginalization, reduction, and elimination of their arsenals, as required by their NPT commitments and the disarmament obligation applying to all states.

Practical step 3 - the necessity of negotiations in the Conference on Disarmament on a nondiscriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices.

An FMCT would permanently end production of fissile materials, primarily separated plutonium and highly enriched uranium (HEU), for use in weapons. It would affect most directly the countries possessing nuclear

weapons; NPT non-weapon states already are subject to a verified ban on diverting materials to weapons. Achievement of an FMCT would restrain arms racing involving India, China, and Pakistan, cap Israel's arsenal, and establish ceilings on other arsenals as well. A verified FMCT also would help build a stable framework for reduction and elimination of warheads and fissile material stocks, help prevent acquisition of fissile materials by terrorists, meet a key NPT commitment, and institutionalize one of the basic pillars of a nuclear weapon-free world.

Commencement of FMCT negotiations has been blocked since 1997 due to the failure of the Conference on Disarmament (CD) to agree on a program of work; when this blockage will be overcome remains uncertain (*see section 1.4*). As WMD Commission Recommendation 28 says, a step that would facilitate negotiations would be for countries possessing nuclear weapons to agree among themselves on cessation of production of fissile materials for weapons. This is especially true because there are difficult issues to be faced in negotiations, as outlined below. An informal moratorium on production of fissile materials for weapons already exists among Britain, France, Russia, and the United States; China is also believed to have stopped production.

In May 2006, the United States submitted a draft FMCT to the Conference on Disarmament along with a draft mandate for negotiations. While the draft treaty contains no verification requirements, the draft mandate does not preclude proposing them. It is not necessary that a mandate require that a treaty be verified, so long as this is subject to negotiation. If negotiations do begin, the United States should return to its long-established position that verification is imperative and feasible. The current U.S. position is that extensive verification mechanisms could compromise the core national security interests of key parties, would be so costly that many countries would be hesitant to implement them, and still would not provide high confidence in the ability to monitor compliance.²⁴ However, as the International Panel on Fissile Materials (IPFM) has observed, a verification system could initially focus on declared enrichment and reprocessing facilities in the weapon possessing states.²⁵ They could be monitored just as the same kinds of facilities are monitored through IAEA safeguards in non-weapon countries Brazil, Germany, the Netherlands, and Japan. The WMD Commission also holds that such verification is feasible.²⁶ Later stages of verification could focus on the more difficult task of confirming the absence of clandestine activities.

The U.S. draft is also deficient because it does not bar the conversion of the existing large stocks of civilian materials to weapons use and is silent on the existing large military stocks. As IPFM has demonstrated, these and other matters like HEU used in naval reactors are susceptible to practical approaches, within an FMCT, or in subsequent agreements reached within an FMCT framework, or in parallel negotiations. For example, an FMCT could provide that existing military materials declared "excess" to "military" needs would be subject to a verified ban on weapons use. Finally, due to

the enormity of the risks posed by the nuclear fuel-cycle, the United States should support renewable energy sources and energy conservation, and to this end should consider establishment of an international sustainable energy agency (*see section 3.2*).

The U.S.-India Nuclear Cooperation Deal

In July 2005, President Bush and Indian Prime Minister Manmohan Singh announced the intent to create an arrangement under which India would accept safeguards on civilian but not military nuclear facilities in return for access to civilian nuclear fuel and technology.¹ The proposed deal would lift restrictions in place for three decades on U.S. and international nuclear-related trade with India due to its non-membership in the NPT. In December 2006, the U.S. Congress adopted and President Bush signed legislation that preliminarily approves the deal, pending its approval by the 45-state Nuclear Suppliers Group and negotiation of an agreement between India and the IAEA on application of safeguards.²

Unlike North Korea, now in the spotlight due to its acquisition of nuclear weapons, and Iran, whose nuclear energy program is closely scrutinized for weapons implications, India never joined the NPT. In negotiations on the NPT in the 1960s, India, along with other states such as Sweden and Mexico, sought legally binding provisions on nuclear disarmament applicable to the states then possessing nuclear weapons.³ India proposed an article prohibiting the manufacture of nuclear weapons, and also an article affirming that nuclear weapon states would “undertake” nuclear disarmament measures.⁴ In the end, India declined to join the NPT due to the vagueness of the Article VI disarmament promise and the lack of legally binding assurances of non-use of nuclear weapons against states that accepted the obligation not to acquire them.⁵ In part, India did not regard the NPT as providing sufficient protection against China, which had tested a nuclear weapon in 1964.

The proposed deal with the U.S. would partially engage India in the non-proliferation system, because safeguards would be applied to additional reactors it designates as civilian. However, it undermines a core bargain of the NPT, that only countries renouncing nuclear weapons are promised access to peaceful uses of nuclear technology. Indeed, a provision of the Principles and Objectives for Nuclear Non-Proliferation and Disarmament adopted at the 1995 NPT Review and Extension Conference bars nuclear trade with India. Paragraph 12 states:

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New supply arrangements for the transfer of source or special fissionable material or equipment or material especially designed or prepared for the processing, use or production of special fissionable material to non-nuclear-weapon States should require, as a necessary precondition, acceptance of the Agency's full-scope safeguards and internationally legally binding commitments not to acquire nuclear weapons or other nuclear explosive devices.

The arrangement would also indirectly augment India's capability to produce fissile materials for weapons. India could import uranium for use in the civilian sector and devote its indigenous supply of uranium to weapons production if it so desires.⁶ Thus the deal could promote arms racing between India and Pakistan, and India and China. The need to prevent arms racing in South Asia is highlighted by reports that Pakistan is constructing a new plutonium production reactor⁷ and the announcement that the United States is going ahead with the long-blocked sale of F-16 fighter aircraft to Pakistan.⁸

Also disturbing is that the arrangement as currently configured seems to certify India as a member of a nuclear weapons club that shows few signs of transitioning out of existence. India commits to continue its moratorium on nuclear testing, but the deal does not require the U.S. or India to ratify the Comprehensive Nuclear-Test-Ban Treaty. While India commits to working with the United States for the adoption of a Fissile Materials Cut-off Treaty, pending its entry into force—not in sight since negotiations have not even begun—India is not required to stop producing fissile materials for weapons. In contrast, the United States, along with three other NPT nuclear weapon states (Britain, France, and Russia), has declared a halt to production of materials for weapons. India also does not commit to refrain from building additional nuclear weapons from existing or newly produced fissile material. No mention is made of the obligation to negotiate nuclear disarmament, binding on the United States by virtue of NPT Article VI and accepted by India by voting for UN General Assembly resolutions welcoming the advisory opinion of the International Court of Justice.⁹

Incentives for the United States to enter this arrangement are to build trade and investment involving India and to develop a strategic partnership with India vis-à-vis China. However, the potential for increased U.S.-India commerce exists on a large scale regardless of whether restrictions are ended on nuclear-related trade. And moving towards new alliance arrangements as a basis for international

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security is the wrong direction. It will increase the likelihood of disastrous conflict, even with nuclear weapons, and divert resources to armaments.

The WMD Commission calls for India and the United States to reassure the world about their support for non-proliferation and disarmament by committing to “promote and participate without delay in a verifiable [FMCT] ... and to ratify the [CTBT].”¹⁰ We would go further: Minimal criteria for approval of the deal by the Nuclear Suppliers Group and final approval by Congress should be entry into force of the CTBT and a verified FMCT as well as India’s formal acceptance of the NPT obligation of good-faith negotiation of cessation of arms racing and nuclear disarmament.

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- 1 “Joint Statement Between President George W. Bush and Prime Minister Manmohan Singh,” The White House, Washington, D.C., July 18, 2005.
 - 2 Wade Boese, “Congress Exempts India From Nuclear Trade Rules,” *Arms Control Today*, January/February 2007.
 - 3 *Rule of Power or Rule of Law?* p. 22.
 - 4 Mohamed I. Shaker, *The Nuclear Non-Proliferation Treaty: Origin and Implementation, 1959-1979, Vol. I*, Oceana Publications, New York, 1980, p. 569.
 - 5 *Rule of Power or Rule of Law?*, p. 24.
 - 6 See Zia Mian, A.H. Nayyar, R. Rajaraman, and M.V. Ramana, *Fissile Materials in South Asia: The Implications of the U.S.-India Nuclear Deal*, International Panel on Fissile Materials, Research Report No. 1, September 2006.
 - 7 Joby Warrick, “Pakistan Expanding Nuclear Program: Plant Underway Could Generate Plutonium for 40 to 50 Bombs a Year, Analysts Say,” *Washington Post*, July 24, 2006.
 - 8 Rhea Myerscough, “Update: United States and Pakistan Break F-16 Stalemate, Finalizing \$5 Billion Sale,” Center for Defense Information, Washington, D.C., October 4, 2006.
 - 9 *E.g.*, “Follow-up to the advisory opinion of the International Court of Justice on the Legality of the Threat or Use of Nuclear Weapons,” 2006 GA Resolution A/RES/61/83, adopted by a vote of 125 to 27 with 29 abstentions. The first operative paragraph “[u]nderlines once again the unanimous conclusion of the International Court of Justice 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.” In a separate vote, that paragraph was approved by a vote of 168 to three, with five abstentions. India voted yes.
 - 10 *Weapons of Terror*, pp. 82-83.

*Practical step 5 - the principle of **irreversibility** to apply to nuclear disarmament, nuclear and other arms control and reduction measures; step 7—early entry into force and full implementation of START II and the conclusion of START III as soon as possible; step 9(b) increased **transparency** by the nuclear-weapon States with regard to the nuclear weapons capabilities and the implementation of agreements pursuant to Article V; step 13—further development of **verification capabilities**.*

Perhaps the most serious instance of backsliding on the 2000 commitments is the U.S. abandonment, with Russian acquiescence, of application of the principles of verification, transparency, and irreversibility in bilateral reductions. These principles, explicit in WMD Commission recommendations, were not only endorsed in the practical steps for disarmament and subsequent General Assembly resolutions (*see section 1.2*), they were inherent in the decades-old history of arms control between the two countries, including the START process rejected by the Bush administration. The 2002 U.S.-Russian Strategic Offensive Reductions Treaty (SORT, also known as the Moscow Treaty) requires only that at a single point in time, December 31, 2012, deployed strategic warheads not exceed 2200 on each side. SORT does not require destruction of delivery systems or dismantlement of warheads. In contrast, START I required, and START II would have required had it entered into force, the destruction of delivery systems, and the 1997 Helsinki commitment to START III additionally envisaged accounting for and dismantling of warheads. Beyond the deployed strategic forces, and based in part on the retention of reduced delivery systems and warheads, the United States plans to retain large numbers of warheads in a “responsive force” capable of redeployment within weeks or months. As of early 2007, it is estimated that the United States has about 4,700 deployed nuclear weapons, with about 2,000 in the responsive force, and the remaining 3,000 scheduled for dismantlement.²⁷

Closely related to the abandonment of irreversible reductions is the lack of treaty-required mechanisms for transparency and verification. SORT includes no provisions for verification of reductions or dismantling of warheads or delivery systems, leaving each country free to retain thousands of warheads in addition to those deployed. The two countries declared that they would make use of monitoring mechanisms under START to track reductions. But START expires in 2009, and SORT does not provide any schedule for reductions prior to 2012. A high priority therefore is for the United States and Russia to agree on means to verify and make irreversible the reductions. WMD Commission Recommendation 18 calls for negotiation of a new treaty that would further cut strategic forces and also provide for verified dismantlement of warheads withdrawn under SORT.²⁸ If necessary pending the new agreement, START could also be extended to provide some monitoring of SORT reductions and to continue limits on multiple-warhead land-based missiles.

In negotiating SORT, the Bush administration rejected a detailed

agreement spelling out transparency and verification measures on the grounds that Cold War-style arms control is no longer necessary and that the United States has no interest in determining together with Russia the size and composition of the two countries' arsenals. This approach overlooks that Cold War or no, the two countries need to regulate their nuclear relationship; "partnership" is not necessarily forever. Further, accounting for warheads and verifying reductions are essential to achieving marginalization and elimination of nuclear weapons globally (*see section 3.3*).

Practical step 9(a) - further efforts by the nuclear-weapon States to reduce their nuclear arsenals unilaterally; and step 9(c) - the further reduction of non-strategic nuclear weapons, based on unilateral initiatives and as an integral part of the nuclear arms reduction and disarmament process.

Following the end of the Cold War, Russia withdrew all Soviet-era nuclear weapons back to its territory. While in 1991 the United States and Russia engaged in reciprocal withdrawals of non-strategic weapons, the United States continues to deploy as many as 400 B61 non-strategic nuclear bombs in Europe.²⁹ The United States is the only state to maintain nuclear weapons on foreign territory. This situation persists despite the end of hostilities between the superpowers and repeated calls from Russia for withdrawal of that deployment. In Recommendations 21 and 22, the WMD Commission rightly calls for finalization and verification of the 1991 process and non-deployment on foreign territory. Further, the two countries should negotiate reduction of non-strategic weapons, either separately or together with strategic weapons (in fact, there is little meaningful distinction between the two categories). Other states with nuclear weapons will need to participate in this process as well.

Practical step 9(d) - concrete agreed measures to further reduce the operational status of nuclear weapons systems.

This commitment goes to the core of the nuclear dilemma. So long as the United States and Russia maintain many hundreds of nuclear warheads ready for immediate use and contend that this posture is essential to their security, implementation of the nuclear arms control and disarmament program will be highly problematic. The United States is estimated to maintain more than 1600 warheads ready for delivery within minutes of an order to do so, and Russia more than 1000 warheads similarly ready for launch.³⁰ It is an absolute scandal that, every moment of every day, the two countries remain locked in a Cold War-style nuclear standoff. Non-governmental experts have explained that the standoff can be defused through separation of warheads from delivery systems and other measures that lengthen the time required for a nuclear launch, from days to weeks to months.³¹ An accompanying step is the elimination of the launch-on-warning option that requires nuclear forces

to be on hair-trigger alert. De-alerting would help alleviate risks associated with mistakes, coups, attacks on nuclear weapons facilities, false warnings, unauthorized launches, and hacking into command and control systems.

Practical step 9(e) - a diminishing role for nuclear weapons in security policies to minimize the risk that these weapons will ever be used and to facilitate the process of their total elimination.

The United States claims to be in compliance with this commitment due to development of non-nuclear means for striking enemy targets and for defending against attacks, notably anti-missile systems. However, the increased emphasis in recent years on options for use of nuclear weapons in a widening range of circumstances, detailed in sections 2.2 and 2.4, makes nonsense of this claim. The classified but leaked 2001 Department of Defense Nuclear Posture Review is representative of other policy and planning documents. It states that nuclear weapons will be “integrated with new nonnuclear strategic capabilities” including advanced conventional precision-guided munitions,³² suggesting a view of nuclear weapons as “simply another weapon.”³³ It plans for an enlarged range of circumstances under which nuclear weapons could be used, notably against non-nuclear attacks or threats. The NPR also states that nuclear weapons “could be employed against targets able to withstand nonnuclear attack, (for example, deep underground bunkers or bio-weapon facilities),” and contemplates their use in response to a biological or chemical attack.³⁴ Finally, the NPR refers to nuclear use in response to “surprising military developments” and “unexpected contingencies.”³⁵ Those new catch-all categories are virtually without limit.

The WMD Commission finds that the trends are very much in the wrong direction, observing that evolving doctrines

all risk lowering the threshold for the use of nuclear weapons. They expand the range of scenarios for the military use of such weapons and are an incentive to develop new nuclear weapons, all in direct contradiction of commitments made to strive for nuclear disarmament and all to the detriment of international security.³⁶

In Recommendation 15, the Commission urges reversal of the trends and adoption of policies of no first use. That would be going in the right direction. However, at the end of the day, the United States and other countries with nuclear weapons need to acknowledge that there are no circumstances in which these instruments of terror rightly, lawfully and wisely should be used. That would also help generate the will to act on the undertaking to eliminate nuclear arsenals pursuant to Article VI.

Recommendations for U.S. Policy

- The United States should implement Article VI of the Nuclear Non-Proliferation Treaty by supporting and working for the commencement of multilateral negotiations on the global elimination of nuclear forces, and working in particular with other states possessing nuclear arsenals to set in motion a process leading to such elimination.
- The United States should fully implement the Article VI obligation of negotiating cessation of the nuclear arms race at an early date and the commitment to a diminishing role of nuclear weapons in security policies. To this end, it should abandon the Reliable Replacement Warhead program, and refrain from any activities which may lead to the resumed production of nuclear weapons or development of nuclear weapons with improved military capabilities or for new missions.
- The United States should implement the substance of key commitments made at the 1995 and 2000 Nuclear Non-Proliferation Treaty Review Conferences by taking the following steps:
 - o Ratify the Comprehensive Test Ban Treaty, continue to observe the moratorium on explosive underground nuclear testing pending its entry into force, and work to persuade other countries to ratify the treaty in order to bring it into force.
 - o Negotiate with other countries a verified Fissile Materials Cut-off Treaty.
 - o Negotiate with Russia a new agreement on the deep, verified, and irreversible reduction of nuclear forces, with provisions for the verified dismantlement of warheads withdrawn from deployment under the 2002 Strategic Offensive Reductions Treaty (SORT). If necessary pending the new agreement, the Strategic Arms Reduction Treaty should be extended to provide some monitoring of SORT reductions and to continue limits on multiple-warhead, land-based missiles.
 - o Remove all U.S. nuclear weapons in Europe to U.S. territory pending their dismantlement, and work with Russia to complete and verify the 1991 process of withdrawal and elimination of non-strategic nuclear weapons. The United States and Russia should also negotiate reduction and elimination of all non-strategic nuclear weapons, either separately or together with strategic nuclear weapons.
 - o Stand down (de-alert) U.S. and Russian nuclear forces by

implementing measures, such as removal of warheads from delivery systems, that lengthen the time needed for launch of nuclear missiles or other use of nuclear weapons.

- The United States should acknowledge that in no circumstance may nuclear weapons be rightly or lawfully used.
- The United States should not enter a nuclear cooperation arrangement with India unless both the Comprehensive Test Ban Treaty and a verified Fissile Materials Cut-off Treaty have entered into force and apply to both countries, and India has formally accepted the Nuclear Non-Proliferation Treaty obligation of good-faith negotiation of cessation of arms racing and nuclear disarmament.

Preventive War and Counterproliferation

JACQUELINE CABASSO

RECOMMENDATIONS OF THE WMD COMMISSION

The Commission finds that military doctrines providing for the first or preventive use of nuclear weapons, or for use in retaliation for attacks for weapons other than nuclear, all tend to widen the license in the doctrine of nuclear deterrence for actual nuclear war-fighting. (*Weapons of Terror*, 90)

Recommendation 15: All states possessing nuclear weapons should declare a categorical policy of no-first-use of such weapons. They should specify that this covers both pre-emptive and preventive action, as well as retaliation for attacks involving chemical, biological or conventional weapons.

In its September 2002 National Security Strategy, the White House announced a doctrine of war against “emerging threats” arising from possession or development of NBC weapons by states with links to terrorism, “even if uncertainty remains as to the time and place of the enemy’s attack.”¹ The doctrine was a primary rationale for the United States invasion of Iraq, based on wholly false premises regarding Iraqi NBC weapons programs. It is fundamentally contrary to UN Charter rules on use of force.² Under the Charter, military action is permissible under only two circumstances: when authorized by the Security Council in order to maintain international peace and security; or in individual or collective self-defense “if an armed attack occurs,” until the Security Council has taken appropriate measures. Some commentators interpret the Charter provision (Article 51) regarding self-defense to allow defensive action in anticipation of an *imminent* attack. Such action may properly be called *preemptive*. However, while the Bush administration attempts to claim this term, its doctrine is really one of *preventive war*—military action against “emerging threats” when it is unknown if or when an attack will actually occur. American diplomat and UN official Ralph Bunche denounced this doctrine upon receiving the Nobel Peace Prize in 1950. His remarks are as valid today as they were then:

There are some in the world who are prematurely resigned to the inevitability of war. Among them are the advocates of the so-called “preventive war,” who, in their resignation to war, wish merely to

select their own time for initiating it. To suggest that war can prevent war is a base play on words and a despicable form of warmongering. The objective of any who sincerely believe in peace clearly must be to exhaust every honourable recourse in the effort to save the peace. The world has had ample evidence that war begets only conditions which beget further war.³

The WMD Commission rightly, if diplomatically, condemns the U.S. policy of preventive war against alleged threats posed by NBC weapons or capabilities. The Commission states that it “shares” the view of “a large number of UN members” that “unilateral armed action” is legal only in response to “armed attacks when they are actually under way, or imminent”; otherwise, there is time “to submit the threat to the Security Council for it to judge the evidence and authorize—or not to authorize—armed action or decide on other measures.”⁴ What receives less attention from the Commission is the way that the identification of a category of “weapons of mass destruction” has stimulated and accompanied the development of that policy. What is particularly disturbing is that it has also supported expansion of options for use of nuclear weapons, including in preemptive attacks.

In his background paper for the Commission, “Deconflating ‘WMD,’” George Perkovich recognizes that “the acronym can be dangerous when political leaders, media and citizenry use it in assessing and acting against international threats,” and states that “‘WMD’ mixes threats that should be distinguished.”⁵ He warns that if people blur “the distinctions among ‘WMD’ and begin to see ‘WMD’ itself as the brand, then the heretofore less valuable chemical and biological categories begin to earn the same fear-respect-value as previously unrivalled nuclear weapons.”⁶ However, Perkovich fails to acknowledge the most dangerous element of this equation: by elevating chemical and biological weapons to the status of “weapons of mass destruction,” the evolution of United States “counterproliferation” policy has lowered the threshold for nuclear use in a very significant way.

Almost immediately after the fall of the Berlin wall, U.S. nuclear weapons strategists began justifying a continuing need for nuclear weapons by painting a picture of a world still full of dangerous adversaries. By 1990, the Joint Chiefs of Staff were invoking “increasingly dangerous Third World Threats” as a rationale for retaining both strategic and non-strategic nuclear weapons.⁷ By the mid-1990s, use of nuclear weapons against a broad range of potential WMD targets—nuclear, chemical and biological—was being discussed in detail in the nuclear weapons doctrine documents of the U.S. military services. For example, the 1996 Joint Chiefs of Staff *Doctrine for Joint Theater Nuclear Operations* stated:

As nations continue to develop and obtain WMD and viable delivery systems, the potential for US operations in such a lethal environment increases. In addition to proliferation of WMD among rogue states,

proliferation may also expand to include nonstate actors as well...⁸

Enemy combat forces and facilities that may be likely targets for nuclear strikes include WMD and their delivery systems, ground combat units, air defense facilities, naval installations, combat vessels, nonstate actors, and underground facilities.⁹

As the post-Cold War era took shape without any substantial national debate over the role of nuclear weapons in U.S. policy, nuclear weapons doctrine continued to drift towards broader definitions of the threats that must be deterred, and of the types of actions that “deterrence” might encompass:

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.¹⁰

This passage, from a 1998 Air Force planning document, foreshadows a passage in the Bush administration’s 2002 National Strategy to Combat Weapons of Mass Destruction:

Because deterrence may not succeed, and because of the potentially devastating consequences of WMD use against our forces and civilian population, U.S. military forces and appropriate civilian agencies must have the capability to defend against WMD-armed adversaries, *including in appropriate cases through preemptive measures*.¹¹

While the National Strategy does not declare that nuclear weapons could be used in a preemptive attack, it is not ruled out. Subsequent U.S. planning documents, like the 1990s documents, clearly contemplate such preemptive use. The 2004 Strategic Deterrence Joint Operating Concept states in relevant part:

Nuclear weapons threaten destruction of an adversary’s most highly valued assets, including *adversary WMD/E [weapons of mass destruction/effect] capabilities*, critical industries, key resources, and means of political organization and control (including the adversary leadership itself). This includes destruction of targets otherwise invulnerable to conventional attack, *e.g.*, hard and deeply buried facilities, “location uncertainty” targets, etc....

The use (or threatened use) of nuclear weapons can also

reestablish deterrence of further adversary WMD employment. Alternatively, *nuclear weapons can constrain an adversary's WMD employment through U.S. counterforce strikes aimed at destroying adversary escalatory options.*¹²

In a 1997 report, *The Future of U.S. Nuclear Weapons Policy*, a prestigious committee of the U.S. National Academy of Sciences warned, “the United States does not need and should not want to employ nuclear deterrence to answer CBW threats.” They explained how such a policy would actually encourage nuclear proliferation:

A policy of nuclear deterrence of CBW would provide incentives and an easy justification for nuclear proliferation, which is inimical to U.S. security.... If U.S. policy points to nuclear weapons as the ultimate answer to CBW, other states could have an increased motivation to acquire nuclear arsenals. Highlighting new or continuing missions for nuclear forces could damage the nuclear non-proliferation consensus throughout the world.¹³

Unfortunately, the advice given by the National Academy of Sciences was not heeded. It was largely during the Clinton years, following the window of unprecedented opportunity that appeared with the end of the Cold War, that the use of nuclear weapons to threaten nations suspected of possessing nuclear, biological, or chemical weapons became a central part of U.S. “counterproliferation” policy.¹⁴ Presidential Decision Directive-60 (PDD-60), signed by Bill Clinton in late 1997, recommitted the U.S. to nuclear weapons as the “cornerstone” of its national security and reaffirmed the U.S. policies of threatened first use and threatened massive retaliation. PDD-60 also further institutionalized a policy shift that had been underway for some time: nuclear weapons would now be used to “deter” a range of threats including not only nuclear, but also chemical and biological weapons.¹⁵ Although PDD-60 itself was secret, its existence and general focus were reported in the media. Robert Bell, special assistant to the President for national security, told the *Washington Post* that Clinton’s nuclear targeting directive reflects the “much greater sensitivity to threats” posed by chemical and biological attacks since the previous directive was first issued in 1981. Bell later rejected any possibility of pre-emptive nuclear weapons use against WMD storage or production facilities.¹⁶

Bell’s retraction, however, was made against the background of both the calculated ambiguity of the public face of U.S. nuclear weapons use doctrine and the recent history of U.S. threats to use nuclear weapons. It is generally acknowledged that the United States threatened to use nuclear weapons against Iraq in the 1990-91 Gulf War.¹⁷ The U.S. made ambiguous threats to use nuclear weapons against Iraq again in early 1998, in response to allegations by UNSCOM Chief Inspector Richard Butler that Iraq possessed

biological weapons.¹⁸ Defense Department officials also raised the possibility of nuclear weapons use against an alleged Libyan underground chemical weapons plant in 1996.¹⁹

Although both the 1996 and 1998 threats against Libya and Iraq were later disavowed (or, in modern spin-speak, “clarified”), in essence the damage had been done, and it became clear that the threat or use of nuclear weapons against the chemical, biological, and even conventional forces of regional adversaries was official U.S. policy. As U.S. Secretary of Defense William Cohen reported to President Clinton and the Congress in 2000:

Deterring aggression and coercion on a day-to-day basis requires the capabilities needed to respond to the full range of crises, from smaller-scale contingencies to major theater wars. It also requires the maintenance of nuclear forces sufficient to deter any potential adversary from using or threatening to use nuclear, chemical, or biological (NBC) weapons against the United States or its allies, and as a hedge against defeat of U.S. conventional forces in defense of vital interests....²⁰

When the substance of the December 2001 Nuclear Posture Review (NPR) was leaked to leading newspapers, the story that made the front page in papers across the country was the new U.S. plans to target, with U.S. nuclear weapons, countries that do not have nuclear weapons themselves. Also newsworthy were the plans for the military to develop nuclear weapons with new capabilities to be used for a wide variety of missions far beyond deterrence of nuclear attack. Analyst William Arkin noted that under the NPR nuclear weapons “‘could be employed against targets able to withstand non-nuclear attack,’ or in retaliation for the use of nuclear, biological, or chemical weapons, or ‘in the event of surprising military developments.’”²¹ This was the logical extension of the evolving U.S. counterproliferation policies, and should have come as no surprise.

Culminating this trend, at the highest level of official policy, the December 2002 National Strategy to Combat Weapons of Mass Destruction outlined the U.S. Government’s plan for protection against and response to chemical, biological, and nuclear weapons, which it fully equated as WMD. Described as an integral component of the National Security Strategy of the United States, published a few months prior, the strategy states that the U.S. “reserves the right to respond with overwhelming force—including through resort to *all of our options*—to the use of WMD against the United States, our forces abroad, and friends and allies.” “All of our options” include both “conventional and *nuclear* response and defense capabilities.”²²

On the flimsiest of pretexts and with war hanging in the balance, in late 2002 the president of the United States issued a warning: “America must not ignore the threats gathering against us. Facing clear evidence of peril, we cannot wait for the final proof—the smoking gun—that could come in the

form of a mushroom cloud.”²³ President Bush *didn't* tell us that the mushroom cloud was more likely to emanate from the U.S.

In the run up to the March 2003 U.S. invasion, a “Theater Nuclear Planning Document” was drawn up for Iraq. This plan was disclosed by military affairs analyst William Arkin in the *Los Angeles Times*, as part of a larger story describing how Strategic Command’s (STRATCOM’s) portfolio had been expanded, consistent with provisions of the NPR. Previously limited to nuclear weapons, STRATCOM’s role now encompassed all aspects of assessing and responding to nuclear, biological, and chemical weapons worldwide. Arkin warned that tearing down the firewall that has separated nuclear weapons from other weapons lowers the threshold for U.S. nuclear use, explaining that:

The use of biological or chemical weapons against the U.S. military could be seen as worthy of the same response as a Russian nuclear attack. If Iraq were to use biological or chemical weapons during a war with the United States, it could have tragic consequences, but it would not alter the war’s outcome. Our use of nuclear weapons to defeat Hussein, on the other hand, has the potential to create a political and global disaster, one that would forever pit the Arab and Islamic world against us.²⁴

Again, in the spring and summer of 2006, there were credible media reports that, until the Joint Chiefs of Staff insisted on their removal, U.S. civilian officials at the highest level wanted to keep nuclear use options in plans for counter-proliferation strikes on Iran.²⁵

The consequences of the U.S. policy of preventive war and counterproliferation strikes, not excluding nuclear strikes, and the policy of nuclear response to chemical and biological attacks, are extremely negative. They undermine the UN Charter, spur acquisition of nuclear weapons by other states, and increase the chance of nuclear conflict. What is less noticed is that they have served as a primary rationale for continued U.S. research and development of nuclear weapons (*see section 2.3*), and intensive modernization and improvement of delivery systems with both nuclear and non-nuclear payloads (*see section 2.4*).

Recommendation for U.S. policy

- The United States should renounce the doctrine of preventive war and the associated counterproliferation doctrine, in particular by rejecting the use of nuclear weapons in preemptive strikes and in response to chemical or biological weapons attacks. The United States should not treat biological and chemical weapons as “weapons of mass destruction” equivalent to nuclear weapons.

Nuclear Weapons Research and Development

JACQUELINE CABASSO

RECOMMENDATIONS OF THE WMD COMMISSION

The reduction and elimination of WMD must be pursued through measures at all stages of the life cycle of WMD—from their creation and deployment to their disposal and destruction. (*Weapons of Terror*, 28)

Retiring obsolete weapons while developing replacements cannot be seen as a fulfilment of a commitment to disarm. (*Weapons of Terror*, 44)

The possibility of developing new types of nuclear weapons has been explored in the United States US advocates of new so-called low-yield weapons (often called mini-nukes) claim that such weapons would serve to deter other countries from seeking or using WMD. The Commission believes that developing such weapons, especially those with a lower threshold for use, would provide more of an inducement to other countries to do the same than a deterrent to proliferation. They would also be inconsistent with commitments made to strive for disarmament. (*Weapons of Terror*, 98)

The NPT nuclear-weapon states have an obligation vis-à-vis all states that have voluntarily forsworn nuclear weapons not to develop nuclear weapons with new military capabilities or for new missions. Of particular concern would be the adoption of doctrines and weapon systems that blur the distinction between nuclear and conventional weapons, or lower the nuclear threshold. Such modifications could over time have a domino effect and give rise to a renewed demand to resume nuclear testing. *If research on nuclear weapons is continued, modifications should only be for purposes of safety and security—and demonstrably so.* (*Weapons of Terror*, 99; emphasis supplied)

Recommendation 23: Any state contemplating replacement or modernization of its nuclear-weapon systems must consider

Continued on next page

such action in the light of all relevant treaty obligations and its duty to contribute to the nuclear disarmament process. As a minimum, it must refrain from developing nuclear weapons with new military capabilities or for new missions. It must not adopt systems or doctrines that blur the distinction between nuclear and conventional weapons or lower the nuclear threshold.

Test explosions are a key step in the design, development and refinement of nuclear weapons. They have also been widely regarded as a political message: a signal to the outside world that a country has mastered the technology of nuclear weapons. (*Weapons of Terror*, 105)

The adherence of all states to the Comprehensive Nuclear-Test-Ban Treaty would serve several vital objectives. First of all, it would prevent or inhibit qualitative improvements in existing weapons. Second, all non-nuclear weapon states parties to the NPT would become participants in the global verification system of the treaty and would be formal stakeholders in the treaty. Third, universal support of the CTBT, bringing the treaty into force and operation, would send a strong signal that all the states of the world are once again on the path to disarmament. (*Weapons of Terror*, 106)

Recommendation 28: All states that have not already done so should sign and ratify the Comprehensive Nuclear-Test-Ban Treaty unconditionally and without delay. The United States, which has not ratified the treaty, should reconsider its position and proceed to ratify the treaty, recognizing that its ratification would trigger other required ratifications and be a step towards the treaty's entry into force. Pending entry into force, all states with nuclear weapons should continue to refrain from nuclear testing....

Recommendation 29: All signatories should provide financial, political and technical support for the continued development and operation of the verification regime, including the International Monitoring System, the International Data Centre and the secretariat, so that the CTBTO is ready to monitor and verify compliance with the treaty when it enters into force. They should pledge to maintain their respective stations and continue to transmit data on a national basis under all circumstances.

One of the most important contributions made by the WMD Commission is its emphatic linkage of nuclear non-proliferation and disarmament, and its clear recognition of the dangers posed by *vertical* proliferation:

*The question of how to reduce the threat and the number of existing nuclear weapons must be addressed with no less vigour than the question of the threat from additional weapons, whether in the hands of existing nuclear-weapon states, proliferating states or terrorists.*¹

In his preface, Hans Blix rightly declares, “*The weapons that exist today are bad enough.*”² And he states his belief that bringing the Comprehensive Test Ban Treaty (CTBT) into force, “would significantly impede the development of new nuclear weapons.”³ With respect to both the CTBT and a fissile material cut-off, Blix unequivocally states, “*the US has the decisive leverage. If it takes the lead the world is likely to follow. If it does not take the lead, there could be more nuclear tests and new nuclear arms races.*”⁴

Indeed, the Commission places supreme importance on the CTBT, concluding, “The single most hopeful step to revitalize non-proliferation and disarmament today would be ratification of the CTBT by all states that have nuclear weapons.”⁵

The Commission recognizes the risks arising from vertical proliferation, which it describes as “the expansion or refinement of existing nuclear-weapon capabilities.”⁶ It expresses concern that, “an endless competition to produce improved weapons fosters new suspicions over military intentions and capabilities. In such a climate, what one state might claim is a prudent safety improvement, another state might view in a more sinister light.”⁷ And it observes, “great controversies have arisen in recent years over demands in the United States to develop mini-nukes and bunker busters—initiatives that would be likely to lower the threshold for using nuclear weapons.”⁸ As the Commission briefly acknowledges, “domestic political pressures or advocacy from within government bureaucracies or *specialized weapons labs,*” could be a factor in states’ pursuit of WMD.⁹ However, the Commission fails to examine how the United States’ approach to negotiation and ratification of the CTBT, under the powerful political influence of its nuclear weapons laboratories, decisively repudiated the treaty’s historic disarmament objective, and laid the groundwork for a revitalized nuclear weapons research and development infrastructure, not dependent on full-scale nuclear explosive tests. Nor does the Commission provide any critical assessment of the central role of a constantly reinforced infrastructure in making possible, and even in driving, new arms races.

In an essay written after the round of Indian and Pakistani nuclear tests in 1998, Dr. Amulya Reddy, an eminent Indian scientist, described how his visit in September 1999 to the former Nazi concentration camps in Poland intensified his opposition to the nuclear tests:

The most powerful impression that persisted was of detailed engineering resulting in “the immense technological complex created for the purpose of killing human beings.” The meticulous organization and rigorous management were characteristic of mega-industries. The camps were “gigantic and horrific factories of death.” The main gate of Auschwitz displayed the inscription “Arbeit macht frei” (Work brings freedom). Perhaps “Technology completely decoupled from values” would have been more appropriate....

Walking through the scene of genocide in Auschwitz, one begins to think of historical parallels. In particular, one wonders whether there is a difference between the Nazi concentration camps and the development of the atom bombs at Los Alamos, the test at Alamogordo, and the bombing of Hiroshima and Nagasaki (which resulted in the virtually instantaneous annihilation of hundreds of thousands of people). Of course, the Allies in World War II were not driven by the racism of the Nazis, and they were not pursuing the final solution of extermination of any particular religious group. But with regard to the scale of the killing, the recruitment of capable minds, the harnessing of science and technology, the extent of organization, the resort to efficient project management methods, and the choice of targets to maximize annihilation of Japanese civilians—the *Manhattan project and its follow-up were like the concentration camps, in fact, even more horrendous in their impact.*¹⁰

When talking about nuclear weapons we are not dealing with just a particularly destructive type of weapon, but rather with what President Dwight Eisenhower originally wanted to call the *congressional-military-industrial complex*,¹¹ to which we would add the category, “academic.” In a well-known line from the movie, *Field of Dreams*, the protagonist declares, “If you build it, they will come.” He was talking about a baseball field and the sports fans it would attract. In the same way, as we’re now seeing all too clearly, *if you build a new nuclear weapons infrastructure, it will produce new nuclear weapons.*¹²

The Manhattan Project in the 21st Century

In its current Strategic Plan, the Department of Energy (DOE) proudly traces its lineage “back to the Manhattan project and the race to develop an atomic bomb during World War II.”¹³ The DOE’s Lawrence Livermore National Laboratory (LLNL) in California was founded in 1952 to compete with its Los Alamos National Laboratory (LANL) in New Mexico—the original home of the Manhattan Project—to develop a hydrogen bomb, orders of magnitude more powerful than the U.S. atomic bombs that destroyed Hiroshima and Nagasaki in 1945. Today, the Livermore and Los Alamos National Laboratories—the *direct descendants of the Manhattan Project*—are

engaged in a new arms race with each other to develop a new generation of hydrogen bombs, euphemistically called “Reliable Replacement Warheads” (RRWs).

After a protracted design competition, the DOE’s National Nuclear Security Administration (NNSA)¹⁴ has given the green light to the Livermore Lab to proceed with development of a replacement for the 100-kiloton W76 warhead¹⁵ (some 1,600 of which are currently deployed on U.S. Trident II D-5 submarine-launched ballistic missiles). The Nuclear Weapons Council, a joint Department of Defense (DOD)-DOE agency, has directed the NNSA to begin another design competition for a second RRW. The first RRW is due for production in 2012; the production goal for the second warhead is 2014.¹⁶ A DOD “Stockpile Transformation” table, outlining the future of the nuclear stockpile, forecasts that the U.S. will “develop warheads for next-generation delivery systems” between 2010 and 2020. The “long term vision” includes “possible new DoD platforms and delivery systems” along with “2-4 types of RRWs.”¹⁷

During the Cold War years, a weapons designer at the Livermore Lab reportedly posted a sign that read, “*Remember: the Soviets are the competition. Los Alamos is the enemy.*” The internal U.S. nuclear arms race continues today. In April 2006 testimony to Congress, Thomas D’Agostino, Deputy Director for Defense Programs at NNSA bragged:

Progress on RRW has been remarkable. Last year, the DoD and DOE jointly initiated an RRW competition in which two independent design teams from our nuclear weapons laboratories—LLNL and LANL both in partnership with Sandia and the production complex—are exploring RRW options. A competition of this sort has not taken place in over 20 years, and *the process is providing a unique opportunity to train the next generation of nuclear weapons designers and engineers.* Both teams are confident that their designs will meet established requirements and be certifiable and producible without nuclear testing.¹⁸

This testimony was proffered in support of the NNSA’s “Complex 2030” plan for the future of the nuclear weapons complex. Under this proposal, rolled out in April 2006, “NNSA’s future path is to establish a smaller, more efficient Nuclear Weapons Complex that is able to respond to changing national and global security challenges.”¹⁹ The RRW Program is identified as a principal element of Complex 2030, “to ensure the long-term reliability and safety of the nuclear weapons stockpile and enable a more responsive supporting infrastructure while reducing the possibility that the United States would ever need to return to underground testing.”²⁰ While claiming that “RRW is not a new weapon providing new or different military capabilities and/or missions,” NNSA indicates that this possibility has certainly not been ruled out. “Once it is demonstrated that replacement warheads can be

produced on a timescale in which geopolitical threats could emerge, or the nuclear weapons complex can respond in a timely way to technical problems in the stockpile, further reductions can be made in non-deployed warheads.”²¹ *This approach also renders meaningless the disarmament objective implicit in further reductions.*

NNSA chief Linton Brooks was very clear:

In 2030, our Responsive Infrastructure can also produce weapons with different or modified military requirements as required. *The weapons design community that was revitalized by the RRW program can adapt an existing weapon within 18 months and design, develop and begin production of the new design within 3-4 years of a decision to enter engineering development ... goals that were established in 2004. Thus, if Congress and the President direct, we can respond quickly to changing military requirements.*²²

Brooks spelled out the purpose of the responsive infrastructure:

The current nuclear weapons complex was built in the 1950s and 60s for the Cold War. Unless this infrastructure is improved, we will not be suited for 21st century challenges. As outlined in the 2001 *Nuclear Posture Review*, we are moving towards a nuclear deterrent that is smaller, more capable and better able to respond to changing needs. Our *Complex 2030* plan ... puts NNSA on a path to achieve this necessary national security goal.... *In short, I see a future world where a smaller, safer, more secure and more reliable stockpile is backed up by a robust industrial and design capability to better respond to changing technical, geopolitical or military needs.*²³

This work is already in progress. Under the existing Stockpile Stewardship program, “Life Extension Programs” to render the U.S. nuclear arsenal reliable for decades to come are underway for the B61 bomb and the W76 SLBM (Sea Launched Ballistic Missile).²⁴ Although the Robust Nuclear Earth Penetrator no longer appears in the NNSA’s unclassified budget, upgrades to the B61-11, a “bunker buster” already in the U.S. stockpile, are continuing.²⁵ The NNSA budget’s official policy guidance is the once-secret 2001 Nuclear Posture Review, widely dismissed by arms control analysts as a mere “wish list” when it was leaked to the press in January 2002. (*See box.*)

DOE spending on nuclear weapons has climbed steadily from \$4.1 billion in FY 1998 to \$6.5 billion requested for FY 2008.²⁶ Accounting for inflation, this is more than one-third higher than the average annual spending on nuclear weapons during the Cold War.²⁷ The NNSA’s “Future-Years Nuclear Security Program” projects continuing annual increases that will raise the nuclear weapons budget to \$7.4 billion by 2012.²⁸ This does not

include tens of billions of dollars more for delivery systems and command and control technology provided for in the DOD budget. Nor does include the classified “black” budget.

The NNSA’s FY 2008 budget request “maintains current commitments to the nuclear deterrence policies of the administration’s Nuclear Posture Review.”²⁹ It also identifies “[t]ransforming the nuclear weapons stockpile and infrastructure while meeting Department of Defense requirements, through the Reliable Replacement Warhead and other Complex 2030 initiatives,” as a “key investment.”³⁰

The Nuclear Posture Review

The classified Nuclear Posture Review (NPR) presented to Congress by the Department of Defense on December 31, 2001, and subsequently leaked to the media, underlines the fundamental policy and technological underpinnings for the Bush administration’s aggressive “preventive war” doctrine, and has served as the administration’s primary justification for all subsequent budget requests for nuclear weapons research, development, and testing activities.

The NPR expanded the role of nuclear weapons in U.S. national security policy, including the possible use of nuclear weapons in “immediate, potential, or unexpected contingencies” against a number of named countries including Iraq, Iran, and North Korea, called for indefinite retention of a large, modern, and diverse nuclear force, and rejected ratification of the Comprehensive Test Ban Treaty (CTBT). Significantly, the NPR also elevated the weapons research and development infrastructure—including the nuclear weapons laboratories—to one leg of a “New Strategic Triad,” intended to support both “offensive” and “defensive” integrated nuclear and non-nuclear high-tech weapons systems that will enable the U.S. to project overwhelming global military force. The NPR specified: “*the need is clear for a revitalized nuclear weapons complex that will... be able, if directed, to design, develop, manufacture, and certify new warheads in response to new national requirements; and maintain readiness to resume underground nuclear testing if required.*” To accomplish this, the NPR called for the “transfer of warhead design knowledge from the current generation of designers to the next generation” through an “Advanced Concepts Initiative.”³¹ The Advanced Concepts Initiative has been superseded by the Reliable Replacement Warhead (RRW) Program.

Viewed as part of a continuum, these NPR requirements closely

Continued on next page

track testimony to Congress by one of the most powerful and influential nuclear weapons scientists, then-Sandia National Laboratory Director C. Paul Robinson. In March 1996—six months before President Clinton signed the CTBT—Robinson argued the need to maintain laboratory nuclear weapons competencies to Congress:

New designs for components and subsystems will be a continuing requirement which will require all the original core competencies we needed to make new weapon designs, as well as contemporary capabilities in advancing technology.... *The engineers and scientists who will do that work are probably entering kindergarten this year...* They have to design whole systems with real deliverables to fully develop their capabilities... *It is my belief that nuclear weapons will remain important for a long time to come.*²

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- 1 “Nuclear Posture Review [Excerpts], Submitted to Congress on 31 December 2001,” January 8, 2002 (emphasis supplied). Online at <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>. For a more detailed analysis of the Nuclear Posture Review and current U.S. nuclear weapons policies and their relationship to other high-tech weapons programs, see Andrew Lichterman and Jacqueline Cabasso, “The Shape of Things to Come: The Nuclear Posture Review, Missile Defense, and the Dangers of a New Arms Race,” Western States Legal Foundation, April 2002. Online at <http://www.wslfweb.org/docs/shape.pdf>. For additional information about the NPR from a variety of sources, see the WSLF NPR information page, online at <http://www.wslfweb.org/nukes/npr.htm>.
 - 2 C. Paul Robinson, “Statement of the Director Sandia National Laboratories,” Statement to the United States House of Representatives Committee on National Security, Joint Hearing of the Subcommittee on Military Procurement and Subcommittee on Research and Development, March 12, 1996 (emphasis supplied).

The FY 2008 budget request of \$89 million for the RRW program—a 220 percent increase over FY 2007—reflects the NNSA’s expectation that Congress will approve the transition from warhead design to the next phase of implementation. This figure does not include the DOD’s requested share of the RRW program, \$30 million for FY 2008.³¹ Under the RRW program, virtually every warhead component will be redesigned, including the physics packages—which include the spherical plutonium cores commonly referred

to as “pits.” The new warheads aren’t supposed to require full-scale explosive testing, but just in case, the Nevada Test Site is being maintained in a state of 24-month readiness. The FY 2007 budget provided for demonstrating the ability to produce tritium—radioactive hydrogen used to “boost” the yield of nuclear weapons—by 2007. Sure enough, on December 4, 2006, NNSA announced that its new Tritium Extraction Facility at the Savannah River Site in South Carolina “has begun operations and tritium can now be extracted from target rods, ensuring a sustainable supply of tritium for the nation’s nuclear weapons stockpile.”³² Tritium production in the U.S. was halted in 1988, and plutonium pit production in 1989, due to environmental and public health hazards.

In April 2003, the Los Alamos Lab announced that it had successfully manufactured the first plutonium pit in 14 years that meets specifications for the U.S. stockpile. The newly made pit was for the 475-kiloton W88 warhead, carried on the Trident II D5 Submarine-Launched Ballistic Missile, and described in the Los Alamos press release as “a cornerstone of the U.S. nuclear deterrent.”³³ The NNSA is asking for \$43.6 million for pit manufacturing and certification in FY 2008, an 18.4 percent increase over the FY 2007 level. According to the budget documents, this program, which has focused on the manufacturing and certification of W88 pits, is “working to establish the capability to manufacture replacement pits other than the W88 pit.”³⁴ The NNSA hopes to begin manufacturing pits at LANL in FY 2008. Approximately 40 W88 pits would be produced over the first 3 years. After the W88 production run, pre-production activities for the first RRW pit would begin. If the program is approved, the RRW is expected to enter production at LANL in FY 2012.³⁵ Meanwhile, more than 12,000 pits from dismantled weapons languish at the Pantex nuclear weapons assembly/disassembly plant in Texas, available for reuse, if desired by the weaponeers.³⁶

The Los Alamos Lab is one of five sites under consideration in the Complex 2030 proposal for a consolidated plutonium center for long-term research and development, surveillance, and pit manufacturing operations, with a baseline capacity of 125 “qualified” pits per year.³⁷ Initial funding for this program is included in the FY 2008 budget request.³⁸ Other actions proposed by the NNSA to “transform to a more modern, cost-effective nuclear weapons complex,” under the Complex 2030 moniker, include consolidating duplicative facilities and programs in order to improve operating efficiencies for tritium research and development, high-explosives testing, and nuclear materials storage.³⁹ Complex 2030 plans also anticipate identifying sites for joint flight testing operations in which “NNSA and DOD hardware is tested to assure compatibility between NNSA and DOD hardware interfaces for current and *future* ... weapons,”⁴⁰ along with accelerated dismantlement activities. In other words, *fewer but newer nukes forever*.

A government study on plutonium aging, released in late 2006, created a flurry of national media attention. The study, conducted by nuclear scientists at the Livermore and Los Alamos Labs and reviewed by an outside panel of

nuclear weapons experts known as the JASONS, concluded that plutonium pits degrade at a much slower rate than was previously believed. The study found that plutonium in the U.S. nuclear arsenal remains viable for as long as 100 years, more than twice as long as had been previously thought. Some critics of the RRW and Complex 2030 seized on the report, claiming it “proved” that a new pit factory and new warheads are “completely unnecessary” because the existing warheads will last for a century.⁴¹ However, Ellen Tauscher, the Democratic Congressional Representative whose district includes the Livermore Lab, welcomed the study, claiming that plutonium aging is a “side matter” that will not influence the RRW decision, which she characterized as “an opportunity to rejuvenate the complex” and attract the “smartest scientists in the world” to the weapons labs.⁴² Indeed, the NNSA issued a press release two days later, reaffirming its commitment to the RRW program as the best strategy “for sustaining the nation’s nuclear weapons stockpile for the long-term without underground nuclear testing.”⁴³

In April 2006, around the same time the NNSA announced its proposal for Complex 2030, the U.S. Government Accountability Office (GAO) assessed a Secretary of Energy Advisory Board task force report entitled, “*Recommendations for the Nuclear Weapons Complex of the Future.*” The October 2005 report, which had been mandated by Congress, “provided a systematic review of the requirements for the weapons complex for the next 25 years and offered its vision for an agile and responsive weapons complex.”⁴⁴ According to the GAO, the task force estimated costs ranging from \$155 billion to \$175 billion for the NNSA to support its current baseline operations and modernize the current weapons complex until 2030. However, the GAO cautioned that the “NNSA has established over 70 plans with associated performance measures to manage the Stockpile Stewardship Program,” and concluded, “until NNSA develops a credible, defensible method for estimating life-cycle costs and performs detailed cost analyses ... it will not be possible to objectively evaluate the budgetary impact of any path forward.”⁴⁵ By any estimate, indefinite maintenance of the U.S. nuclear weapons infrastructure, *with or without Complex 2030*, will be an enormously expensive undertaking.

With virtually no national debate about the *purpose* nuclear weapons serve, the advent of the RRW has given rise to an increasingly narrow and distorted public discourse about the *future* of nuclear weapons. For example, Joseph Martz, a leading nuclear weapons designer at Los Alamos and self-proclaimed critic of how U.S. nuclear weapons policy is being discussed in Washington, has proposed a plan, purportedly for the elimination of nuclear weapons. In an interview with the *San Francisco Chronicle*, Martz explained how the numbers of warheads would be slowly reduced over a period of years. During that time older weapons would be replaced by new RRWs as an interim measure. The ultimate goal, he said, would be the elimination of the entire arsenal. But the United States would retain in its place the technology to assemble warheads from stockpiled materials in case of a grave threat to

its national security. Martz explained, “I’m trying to offer solutions that say, ‘How can we get the benefits of deterrence without having to put thousands of warheads on hair-trigger alert?’” In his Orwellian version of disarmament, *Martz is suggesting that the United States should build new nuclear weapons in order to eliminate its old ones, decades from now, and to retain a credible “virtual stockpile” indefinitely.* Moreover, Martz admits that the Labs already have the capability to rapidly assemble warheads from stockpiled materials.⁴⁶

In a document entitled, “Complex 2030: An Infrastructure Planning Scenario for a Nuclear Weapons Complex Able to Meet the Threats of the 21st Century, ‘Getting the Job Done,’” the NNSA set forth its planning assumption: “*Start with the end in mind.*”⁴⁷ Considering the scenario that follows, that could be interpreted as a reference to the end of the world. Clearly, the meaning of “the end” needs to be unambiguously defined as the verifiable, irreversible reduction and elimination of all nuclear weapons, in compliance with the Nuclear Non-Proliferation Treaty (NPT) disarmament obligation, with measurable milestones along the way.

The Deal for the CTBT

Conclusion of CTBT negotiations by 1996 was the most solid commitment the United States and the other nuclear weapon states made in exchange for the acquiescence of the non-nuclear weapon states to the indefinite extension of the NPT in 1995. Ironically, it was this commitment that the U.S. nuclear weapons establishment exploited to fuel the absurd argument that whatever it took to conclude a CTBT—even if it meant building a new nuclear weapons complex to buy their support—would be good for non-proliferation. The NPT, which entered into force in 1970, established a direct link between nuclear non-proliferation and disarmament: those states without nuclear weapons promised not to get them; those states with nuclear weapons promised to give them up. The CTBT was viewed by most of the world as a means to cut off the development and modernization of nuclear weapons, and thus, as a meaningful disarmament measure. The CTBT deal brokered with the nuclear weapons labs flew in the face of the NPT’s central bargain.

In August 1995, citing the promise made in connection with indefinite extension of the NPT, President Clinton announced his support for a “zero” yield CTBT by 1996, in order to “reduce the danger posed by nuclear weapons proliferation.”⁴⁸ He also announced the U.S. intent, “as part of our national security strategy,” to “retain strategic nuclear forces...” and in this regard considered “the maintenance of a safe and reliable nuclear stockpile to be a supreme national interest of the United States.”⁴⁹ Clinton strongly endorsed the nuclear weapons labs’ “Science Based Stockpile Stewardship” program as a means of maintaining the U.S. “nuclear deterrent” without nuclear testing, and he appealed to Congress for bipartisan support for the program “*over the next decade and beyond.*”⁵⁰ Clinton also set forth a set of conditions

for U.S. agreement to a CTBT including, “The conduct of a Science Based Stockpile Stewardship program to insure a high level of confidence in the safety and reliability of nuclear weapons in the active stockpile...” and “The maintenance of modern nuclear laboratory facilities and programs ... which will attract, retain, and ensure” a continuing supply of nuclear weapons scientists. He also directed that the capability to resume underground nuclear testing be maintained.⁵¹ (*See box.*)

This trade-off reprised the deal struck in 1963, when the U.S., Great Britain, and the Soviet Union negotiated the Partial Test Ban Treaty (PTBT), which banned nuclear tests in the atmosphere, in space, and under water. The weapons laboratories are credited with keeping underground tests out of the treaty. Then, as in 1995, there were concerns that the Senate might not ratify the treaty—at that time, because they feared that the U.S. would be unprepared if the Soviet Union broke out of the treaty and resumed testing. Therefore, in 1963 the Joint Chiefs of Staff and their allies in the Senate insisted as a condition for ratification that the U.S. pursue certain initiatives, referred to as the “four safeguards.” These included an extensive underground nuclear weapons testing program, maintenance of “modern nuclear weapons laboratories and programs which will attract and retain ‘human scientific resources,’” and maintaining the capacity to quickly resume atmospheric testing.⁵² In the years immediately following the PTBT, the weapons labs were strengthened, U.S. nuclear testing increased, and the arms race surged ahead. Yet in 1995, with the former Soviet Union splintered both geopolitically and economically, the labs and the military made essentially the same arguments they put forth at the height of the Cold War, and President Clinton duly updated and expanded the 1963 safeguards.

As Secretary of State Madeline Albright explained:

We simply do not need to test nuclear weapons to protect our security. On the other hand, would-be proliferators and modernizers must test if they are to develop the kind of advanced nuclear designs that are most threatening. *Thus, the CTBT would go far to lock in a technological status quo that is highly favorable to us.*⁵³

When Clinton submitted the CTBT to the Senate for ratification in September 1997, his transmittal letter made clear that his endorsement of the Treaty was conditioned on Senate support for the Stockpile Stewardship program as a central requirement of “*our national security strategy.*” Clinton repeated the conditions he first announced in August 1995, and added a new “certification” procedure that gave the labs even more power.

The link between control over nuclear weapons-relevant information and influence over nuclear weapons policy was formally institutionalized by this procedure, in which the directors of the weapons laboratories “certify” the safety and reliability of the nuclear arsenal once a year. There is no apparent

external check on this process, and the certification is essentially a judgment call by the labs. If it is determined “that a high level of confidence in the safety or reliability of a nuclear weapon type ... critical to our nuclear deterrent could no longer be certified,” Safeguard “F” provides that “the President, in consultation with the Congress, would be prepared to withdraw from the CTBT under the standard ‘supreme national interests’ clause in order to conduct whatever testing might be required.”⁵⁴ The “safeguards” provide an opportunity for the weapons laboratories to threaten an administration with termination of the CTBT regime if they are not given what they consider adequate resources to “certify” the reliability of the stockpile.

The Livermore Lab Director, Bruce Tartar, indicated how the demand for funding would work, when he warned Congress in 1997:

*My greatest concern regarding the success of the SSMP [Stockpile Stewardship and Management Program] is the possibility of a lack of timely and sustained support.... Program support must be timely because we must get on with the task before existing experienced people retire or leave to pursue other endeavors. In addition, the support must be sustained at an adequately funded level because every element of the SSMP is needed for the success of the program as a whole. The technical risks in SSMP will be significantly greater if we are forced to stretch out activities in time or reduce the scope of planned research activities to meet more constrained budgets.*⁵⁵

Tartar’s reference to “technical risks” in the Stockpile Stewardship program was meant as an implied threat that if the labs didn’t get everything they wanted, they would find themselves unable to certify the stockpile without conducting full scale nuclear tests. Then-Secretary of Energy Federico Peña emphasized the contingent nature of the CTBT commitment: “[L]et me stress that if I am advised by the nuclear weapons laboratory directors that there is a problem with the stockpile that is critical to our nuclear deterrent and that we are unable to correct without returning to underground testing, I will not hesitate to advise the President of such.”⁵⁶

In her book, *The Game of Disarmament*, Alva Myrdal, a Swedish minister of disarmament and 1982 winner of the Nobel Peace Prize, wrote about the “inside story of how progress towards arms limitation was stymied.”⁵⁷ She described how, during the early 1960s negotiations on the CTBT, a politically favorable climate emerged in the aftermath of the Cuban Missile Crisis and the nonaligned delegates, “encouraged ... by the rhetoric of the great powers,” worked out a practical formula to resolve the remaining small differences between the United States and the Soviet Union.⁵⁸ But at the last minute the comprehensive test ban was abandoned in favor of a partial ban:

What happened? Both Moscow and Washington started to exert diplomatic pressure in our capitals, undercutting our work through

intimations to our own governments that we were jeopardizing important progress towards an agreement by the two superpowers. Such pressure, which has never been exerted *in favor of disarmament*, led to the abandonment of plans for the total test ban on 1963. What was achieved instead was a partial and ineffective test ban.... which actually legitimized the continuation of testing underground.⁵⁹ [Emphasis in original.]

By providing for the preservation and expansion of U.S. nuclear weapons capabilities through underground testing, the 1963 safeguards represented a tragic lost opportunity to stem nuclear proliferation and move toward disarmament. Similarly, the substitution of a laboratory-based infrastructure for underground testing in the 1990s recapitulated the profound failure of the PTBT to end the nuclear arms race, and strengthened the nuclear weapons labs, as a driving force.

In February 2007, it was reported that a *new* deal might be in the making, with Democrats in Congress linking support for the RRW program with ratification of the CTBT and reductions in the overall nuclear arsenal. At a Washington, DC conference on Strategic Weapons in the 21st Century, keynote speaker Representative Ellen Tauscher (a Democrat representing Livermore), the new chair of the House Armed Services subcommittee on strategic forces, expressed her strong support for the RRW and the weapons labs that were hosting the conference. Warning that if new warheads can't be fielded without testing, she stated, "I see no alternative but to terminate funding for the program." But, she added, "*if new warheads can be deployed without live explosive testing, then ratifying the CTBT should be the central objective of our nation.*"⁶⁰

Stockpile Stewardship

Nuclear Weapons Research and Production for the 21st Century

*"If 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."*¹

-General Cartwright, U.S. Strategic Command

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A significant part of the “revitalized defense infrastructure” called for by the 2001 Nuclear Posture Review is the complex of DOE/NNSA nuclear weapons research, testing, and production facilities. To sustain this vast complex, the U.S. is spending over six and a half billion dollars a year on the “Stockpile Stewardship” program. Originally called “Science Based Stockpile Stewardship” (SBSS), the term was coined to describe the transition from an engineering-based understanding of how nuclear weapons work to a scientifically-based understanding. Legislation passed by Congress in 1993 called on the Secretary of Energy to “establish a stewardship program to ensure the preservation of the core intellectual and technical competencies of the United States in nuclear weapons.” In 1994, the JASON group, a think tank of top physicists and other scientists who advise the Pentagon and the Energy Department on applying science and technology to military problems, issued a report on SBSS at the request of the DOE. “The basic principle of this plan,” they wrote, “is to compensate for the termination of the underground testing program by improved diagnostics and computational resources that will strengthen the science-based understanding of the behavior of nuclear weapons, thereby making it possible for the United States to maintain confidence in the *performance* and safety of our nuclear weapons during a test ban.”²

Under the Stockpile Stewardship Program, an array of new nuclear weapons research facilities of unprecedented sophistication—some already completed, some currently under construction, and some still on the drawing board—will allow the continued testing of many aspects of nuclear weapons.³ These include:

- The multi-billion dollar National Ignition Facility (NIF), newly built at the Lawrence 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,

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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 yield⁴ and the archived data from over 1000 past U.S. nuclear tests, will be integrated via the Advanced Simulation and Computing Program. This multi-billion dollar super-computing 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.

While considering options for a new large-scale factory for warhead components, the U.S. is establishing significant “interim” capacity to make bomb parts at its existing facilities.

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- 1 General James Cartwright, Commander, U.S. Strategic Command, remarks delivered at the Air Warfare Symposium, Orlando, Florida, February 18, 2005.
 - 2 Dr. Sidney Drell, et al., *Science Based Stockpile Stewardship*, JASON/The Mitre Corporation, November 1994 (emphasis supplied). The JASON “think tank” was founded in response to the Soviet Union’s successful Sputnik program in the late 1950’s, in order to strengthen the collaboration, begun during the Manhattan Project, between top U.S. physicists and the U.S. military.
 - 3 For a lavishly illustrated description of the Stockpile Stewardship

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program and how the DOE/NNSA views its future development, see, “DOA/NNA-0014: Fiscal Year 2007-2011 Stockpile Stewardship Plan Overview,” National Nuclear Security Administration, Washington, D.C., November 13, 2006.

- 4 Between 1997 and 2006, the U.S. conducted 23 “subcritical” underground nuclear tests at the Nevada Test Site. In these experiments, chemical high explosives and plutonium are exploded underground without creating a self-sustaining nuclear reaction. In 2007 a series of four smaller scale subcritical tests have been conducted. Two subcritical tests have been conducted jointly with the United Kingdom, under the terms of the 1958 Mutual Defense Agreement.

The Role of the Nuclear Weapons Laboratories

In 1946, Congress created the Atomic Energy Commission (AEC) “to take control over the scientific and industrial complex supporting the Manhattan Project and to maintain civilian government control over atomic research and development.” The AEC was superseded by the DOE, established in 1977 under legislation that brought together for the first time energy, science and technology programs with “defense responsibilities that included the design, construction, and testing of nuclear weapons.”⁶¹ The Los Alamos and Livermore National Laboratories are operated under the auspices of the National Nuclear Security Administration of the DOE. Until recently, both labs were managed under contract, exclusively by the University of California (UC), which provided a fig leaf of academic respectability for their central mission, the research and development of nuclear weapons. Last year, a consortium made up of Bechtel and other corporations, in partnership with UC, took over management of LANL under the name Los Alamos National Security, LLC. The same consortium is expected to bid for the Livermore contract in the near future.⁶² The Los Alamos and Livermore Labs are augmented by the Sandia National Laboratories, established in New Mexico in 1949 as an outgrowth of the Manhattan Project. Sandia’s original mission was to turn the nuclear physics packages created by LANL and LLNL into deployable weapons. A second Sandia Lab was built in California in 1956, across the street from Livermore’s main site. Sandia is a government owned, contractor-operated facility, managed by Lockheed Martin Corporation for the NNSA.⁶³

According to the Los Alamos Lab Director, Sig Hecker, in 1997 testimony to the Senate:

Our job is to help the U.S. Government ensure that no one in the world doubts that the United States has the capability to project

*overwhelming force in the defense of its vital interests... Nuclear weapons are the 'big stick' that defends our homeland and are the ultimate deterrent force against any potential aggressor.*⁶⁴

It is difficult to overestimate the labs' historical influence on the proliferation of nuclear weapons. Since their inception, the U.S. weapons labs have competed with each other to develop ever more sophisticated nuclear weapons systems, "selling" their ideas to presidents, congresses, and the Pentagon, and actively opposing an end to nuclear testing.

The laboratories' successful opposition to a nuclear test ban dates back to the late 1950's when lab representatives talked President Eisenhower out of putting a halt to nuclear tests.⁶⁵ Reflecting the labs' hostility toward placing limits on research and development of nuclear weapons, the Livermore Lab deliberately stockpiled plutonium above its authorized limit, in anticipation of the end of the Kennedy-era nuclear testing moratorium in 1961. According to then-Lab Director John Foster:

The Lab's view was that the test ban was not likely to continue indefinitely. So we chose to be ready to test once the ban was lifted. We decided to staff up and procure materials above the authorized levels. These moves were a little at odds with the administration in Washington.... *I guess it is an example of the value of a relatively independent Laboratory, one that could execute actions at slight variance to the consensus in Washington.*⁶⁶

During the Carter administration, the Los Alamos Lab Director Harold Agnew, and his Livermore counterpart Roger Baetzel, each took pride in claiming that they had personally talked President Carter out of a comprehensive test ban. In September 1992, Robert Barker, Deputy Associate Director at the Livermore Lab, told a group of lab employees, "one of the major jobs this institution has is to help the country realize this legislation [the Nuclear Testing Moratorium Act] was a mistake."⁶⁷

In March 1994, Livermore Lab Director John Nuckolls reinforced the terms of the impending deal for the CTBT in lurid testimony to Congress, advocating massive funding increases over the next decade for defense programs at the weapons labs. Unless funding is provided for "vastly more advanced computational and experimental facilities" for nuclear weapons research, development, and testing, he warned, "the building blocks of modern civilization" will be put at risk by the "incalculable and catastrophic threats" posed by nuclear proliferation and nuclear terrorism.⁶⁸

Even that sector of the nuclear weapons community professing to support the CTBT contributed to its demise and helped lay the groundwork for a resurgent arms race by promoting technical solutions to what are fundamentally political problems. A letter sent to key members of Congress in May 1996 by three of the most prestigious members of the nuclear weapons establishment,

physicists Hans Bethe, Herbert York, and Henry Kendall, urged congressional support for Science Based Stockpile Stewardship (SBSS) in the strongest possible terms, arguing that “the implementation of the [SBSS Program] can help achieve a CTBT” and that “there must be strong and sustained support for the entire [SBSS Program] so that the U.S. and other nuclear weapons states can undertake a true CTBT without sacrificing security, safety and reliability in the remaining weapons.” They also declared: “*achieving a CTBT will signal the real end to the nuclear arms race and demonstrate that the nuclear weapons states are fulfilling their obligations under the recently extended [NPT].*” Almost in the same breath, the authors completely contradicted themselves: “*these new elements—advanced computer capabilities and new experimental facilities—do not detract from the core weapons science capabilities, they strengthen and sustain them.*”⁶⁹

It can't be both ways. First, the claim that SBSS was necessary to achieve a CTBT was a baseless assumption, premised on political speculation about how the United States Senate might vote regarding ratification of the CTBT. *It had nothing to do with science or technology.* And indeed, it proved to be wrong. The Clinton administration relied on the Stockpile Stewardship deal it had made with the labs to secure Senate ratification of the treaty. But in the end, the lab directors raised questions about whether Stockpile Stewardship would “work” and on October 13, 1999, the U.S. Senate voted down the CTBT. Thus the weaponeers got everything they wanted—no CTBT *and* a massive infusion of funding and prestige, while the U.S. Senate signaled to the world that the United States has little interest in the elimination of nuclear weapons.

Secondly, laboratory testing and other signs of ongoing reliance on nuclear weapons were matters of great controversy at the NPT Review and Extension Conference in 1995 and the 2000 and 2005 Review Conferences. Non-nuclear countries *rightly* expect the nuclear states to meet their obligations under Article VI of the treaty to negotiate an end to the arms race and nuclear disarmament. More than thirty five years after the NPT went into effect, they *should* be concerned that the United States is spending billions of dollars on a new generation of laboratory facilities in order to replace underground testing and augment an already extensive nuclear weapons research and development infrastructure. What does this demonstrate, other than a “nukes forever” attitude?

However, some in the U.S. weapons establishment have little regard for the NPT. According to the Sandia National Laboratory Director, Paul Robinson:

In truth, I believe that the NPT was intended more as a confidence-building measure than as a real arms control treaty that we were willing to bet our country's survival on. We would never have negotiated an arms control treaty with the ridiculous verification inspections by the International Atomic Energy Agency prescribed

in the NPT, which missed the programs in Iraq and Iran and even Israel. Where has the IAEA spent the most money in terms of inspections? In Germany, Canada, and Japan. Why? Because it is a confidence-building measure among friendly countries eager to prove they are not violating it. It was never set up to catch cheaters. *That's why I disagree with people who infer that the NPT is a real arms control treaty. It's not.*⁷⁰

In late 2003, Congress repealed a law that put restrictions on research and development that could lead to the production of new low-yield nuclear weapons. Then-NNSA chief Linton Brooks sent a very revealing memo to the directors of the nuclear weapons labs, thanking them, on behalf of the administration, for their support in getting the ban repealed. In the memo, Brooks declared to the nuclear scientists, “[W]e are now free to explore a range of technical options that could strengthen our ability to deter, or respond to new or emerging threats without any concern that some ideas could inadvertently violate a vague and arbitrary limitation.” And he urged:

Along these lines, I expect your design teams to engage fully with the Department of Defense to examine advanced concepts that could contribute to our nation's security. Potentially important areas of such research include agent defeat and reduced collateral damage.

In addition, we must take advantage of this opportunity to ensure that we close any gaps that may have opened this past decade in our understanding of the possible military applications of atomic energy—no novel nuclear weapons concept developed by any other nation should ever come as a technical surprise to us.⁷¹

If the world's leading nuclear state continues to insist “do as we say, not as we do,” while openly threatening to preemptively attack—including *with nuclear weapons*—any country that even thinks about acquiring nuclear, chemical, or biological weapons in order to defend *its* “national security,” can the non-proliferation regime last? And, how is it that the Bush administration can so easily make that threat credible? Because of its overwhelming nuclear capabilities, *unimpeded by the end of the Cold War and augmented by the Stockpile Stewardship deal.*

The Shape of Things to Come

In spring 1996, the year President Clinton signed the CTBT, Sandia Director Paul Robinson forecast the future of nuclear weapons in testimony to Congress:

New designs for components and subsystems will be a continuing requirement which will require all of the original core competencies

we needed to make new weapon designs, as well as contemporary capabilities in advancing technology.... *The engineers and scientists who will do that work are probably entering kindergarten this year....*⁷²

One of the most troubling aspects of the revitalized nuclear weapons infrastructure is its dependence on and aggressive pursuit of young scientists and engineers, manifested through an increasingly close relationship between the nuclear weapons laboratories and leading universities. Early on, the DOE established the “Academic Strategic Alliance Program” (ASAP) as a “key component” of the Stockpile Stewardship Program. In 1997, DOE awarded \$250 million to five major American universities to work collaboratively with the Livermore, Los Alamos, and Sandia National Laboratories “to help advance high-performance computer simulation capabilities needed to make an historic leap in large-scale computer modeling and simulation.” The Assistant Secretary of Energy for Defense Programs, Dr. Victor Reis, emphasized the central importance of the Accelerated Strategic Computing Initiative (ASCI) in simulating nuclear weapons tests:

*ASCI is an enormous challenge and is such a demanding consumer of intellectual resources that the significant capabilities of our national laboratories need to be augmented with expertise in the academic community. Together with our university and private-sector partners, we are confident we can achieve the kind of dramatic advances in computing and simulation capabilities that will make science-based stockpile stewardship a reality.*⁷³

That same year, the DOE announced plans to provide \$10 million to Washington State University to establish a “Shock Physics” institute “as part of DOE’s strategic investment in selected scientific disciplines important to science based stockpile stewardship.”⁷⁴ And, the DOE’s Office of Defense Programs began soliciting proposals from “all segments” of the U.S. private sector—including universities—through the “Inertial Fusion Science in Support of Stockpile Stewardship Financial Assistance Program.” This program offered grants of up to \$1 million a year to small research projects at universities and other private sector institutions in order to “promote interactions between such investigators and scientists at the Department of Energy weapons laboratories,” and assist in training scientists in areas relevant to stockpile stewardship.”⁷⁵

Based on the success of this program, in April 2006, the same month it made public its plans for Complex 2030, the NNSA announced a new phase of its Academic Computational Science (ASC) Partnership Program, with an emphasis on “predictive science.” According to the NNSA’s deputy administrator for defense programs:

Since the 1992 moratorium on underground nuclear testing, large-scale computational science has provided an essential methodology to the scientific discovery and understanding of physical and engineering phenomena. ASC's academic alliances have played an important role in developing these technologies. *They have also provided valuable training opportunities in graduate students and post doctoral candidates for future employment in laboratory, academic and industrial settings.*⁷⁶

The Predictive Science Academic Alliance Program consists of both very large scale research centers and much smaller research projects tightly integrated with the NNSA Laboratories. Goals of the new program include improving "the relevance of this program to stockpile stewardship and the NNSA Laboratories," and focusing "on discipline areas of critical interest to the stockpile stewardship program and NNSA Laboratories." As the Program Statement notes, "the academic community can provide key research and development expertise in many of the disciplines critical to the Predictive Science." Among other requirements, proposals must specifically include:

A plan for interacting with the NNSA Laboratories; for example, students supported by the program may be required to spend summers at NNSA Laboratories, and Post Docs and other staff supported by the program may be required to spend some designated period like 2-4 weeks.

A plan for attracting US citizen graduate students and post docs and associating them or involving them with the NNSA Laboratories.⁷⁷

The NNSA is making its recruiting intentions more explicit, noting in its application guidelines that in contrast to the earlier ASAP, "the applications and associated sub-disciplines require a stronger direct connection to NNSA interests."⁷⁸

The Responsibility of Scientists

Ted Taylor was a brilliant young nuclear weapons designer working at Los Alamos in the early 1950s. Although upon hearing news of the Hiroshima bombing he had written to his parents that he would never work on atomic bombs, working side by side with world renowned scientists such as Enrico Fermi, John von Neumann, Hans Bethe, Edward Teller, and Stan Ulam, he quickly became fascinated by all aspects of nuclear weaponry. While others worked on the H-bomb, Taylor focused on increasing the explosive power of fission bombs, while reducing their size and weight. He later wrote:

Over the months, I learned that I was good at my work; and that gave

me a sense of personal power over events of global significance. Our work at Los Alamos was strongly encouraged by the president of the United States, the Congress, the entire military establishment, and most of the general public.⁷⁹

In 1964, Taylor became deputy director of the Defense Atomic Support Agency:

It was during the next two years, working most of the time in the bowels of the Pentagon, that my peacemaking rationalizations collapsed. I became privy to the actual characteristics and deployments of what, by then, were thousands of nuclear weapons. And I discovered willful deception at all levels of government concerning the effects of nuclear weapons on people, on buildings, on military equipment, on everything. The nuclear arms race had a force and a momentum I had never dreamed of. All proposals for major, verifiable disarmament actions had been rejected not only by the Soviet Union, but also by the United States. *I eventually resigned, and I have worked since then to rid the world of nuclear weapons.*⁸⁰

Unfortunately, the Taylors and Rotblats⁸¹ were and are the exceptions to the rule. After several generations of “normalization” of nuclear weapons and the scientific, military, and academic institutions which spawn, modernize, and sustain them, there are almost no inside voices demanding genuine disarmament measures. Instead of questioning the fundamental legitimacy, legality, and morality of these most destructive weapons of all, the scientists and engineers are for the most part devising methods to ensure that nuclear weapons remain “reliable” for the coming decades, or even worse, exploring ways to make nuclear weapons “more useable” in a constantly changing geopolitical context.

While it is not fair to lump all scientists together, there is no basis for believing that the scientists who brought us into the nuclear age have any special qualifications to lead us out of it. To the contrary, it is the scientists who have time and time again imposed *technical* solutions onto the *political* problems of war and peace, often exacerbating those political problems in the process. At the same time, it is undeniable that *technological* problems resulting from the design, testing, production, and deployment of nuclear weapons will require, in part, technological solutions. Only by working *with*, and taking guidance *from*, the people asking the *right* questions, will scientists be able to make a unique and invaluable contribution to a world without nuclear weapons and war.

At an event celebrating the conclusion of CTBT negotiations in 1996, Ted Taylor warned: “*The signing of this treaty must not cause the relaxation or postponement of worldwide actions to rid the world of these terrible weapons that have moved the human capacity for destruction clear off the human scale.*”⁸²

Recommendations for U.S. Policy

- The United States should terminate nuclear weapons research and development, and limit “Stockpile Stewardship” programs to securing the existing arsenal in a safe condition as it awaits verifiable and irreversible disablement and dismantlement, in compliance with the Nuclear Non-Proliferation Treaty’s disarmament obligations.
- The United States and other states possessing nuclear arsenals should halt research, development, testing, and component production while reductions of arsenals are in progress, not afterwards, with production and research facilities subject to an intrusive verification regime at the earliest possible time.⁸³
- The United States should accompany ratification of the Comprehensive Test Ban Treaty with commitments to permanently close the Nevada Test Site and warhead component production plants, and to phase out the nuclear weapons laboratories, with specified, measurable milestones.
- Scientists and engineers, and students in those fields, should refuse to participate in the design, development, testing, production, maintenance, targeting, or use of nuclear, biological, or chemical weapons or their means of delivery, or in research or engineering they have reason to believe will be used by others for those purposes.⁸⁴

Delivery Systems

ANDREW LICHTERMAN

RECOMMENDATIONS OF THE WMD COMMISSION

Missiles encompass a range of types and technologies, from ground-, sea- and air-launched cruise missiles to land- and sea-launched ballistic missiles, and they are often dual-use—that is, they can deliver conventional weapons or WMD, which greatly complicates their control. Because of the difficulty of achieving accurate missile flight paths, most long-range ballistic missiles that have been developed outside the technically advanced states are not considered suitable for the delivery of conventional warheads. (*Weapons of Terror*, 141)

Around 40 states are known to have acquired or developed ballistic missiles, but most have only short-range (<1,000 km) delivery capability. Fewer than a dozen states possess medium-range (1,000–1,300 km) missiles. In addition to the five NPT-defined nuclear-weapon states, India, Iran, Israel, Pakistan and North Korea also have such capabilities. Only the five NPT nuclear weapon states have long-range (intercontinental) missiles.” (*Weapons of Terror*, 141)

Recommendation 43: MTCR member states should make new efforts to better implement and expand export controls on relevant materials and technology. States subscribing to the Hague Code of Conduct should extend its scope to include cruise missiles and unmanned aerial vehicles. They should establish a multilateral data exchange centre, based on the Russian-US initiatives for the exchange of data on missile launches from early-warning systems. Regional and international non-proliferation measures should include information exchanges, launch notification, and restrictions or bans on specific items or capabilities.

The Commission’s recommendations concerning delivery systems are notably weak. Unlike those for the nuclear, chemical, or biological weapons that these systems might deliver, the delivery systems recommendation neither calls for disarmament nor even for universal measures for meaningful control of further missile development. The Commission’s recommendations are limited to strengthening non-proliferation measures and to modest sta-

bility-enhancing mechanisms, such as missile launch notification and data exchange.

The Commission's meager prescription reflects the state of existing initiatives for the control of missiles and other strategically capable delivery systems. It notes that "[w]hile the Preamble of the NPT cites a goal of eliminating both nuclear weapons 'and the means of their delivery', there is no multilateral treaty requiring missile disarmament."¹ And as one of the expert papers informing the Commission's work ruefully noted:

Of all the normative arrangements surrounding WMD, missile norms remain the most chronically under-developed. An international network of supply-side constraints, an attempt to establish 'rules of the road' through a Code of Conduct, two utterly fruitless studies in the UN, and, frankly, a great deal of hair-tearing and finger-wagging have failed to produce any identifiable consensus beyond an amorphous sense that international demand-side norms would be a Good Thing.²

The limited scope of these recommendations, however, also marks the decline of arms control prospects over the last decade. They are haunting reminders of the opportunities lost in the post-Cold War period when the interests driving "security" achieved through endless pursuit of high-tech military technology were in disarray, an interregnum that in retrospect appears all too brief. They stand in stark contrast to the recommendations made only a decade ago by the Canberra Commission, a similarly constituted expert panel focused on the elimination of nuclear arsenals. The Canberra Commission, whose members included such figures as Robert McNamara, who had served as U.S. Secretary of Defense, and General Lee Butler, who had been commander of U.S. Strategic Command, as well as ex-diplomats and military officials from several other nuclear weapons states, stated:

A global treaty controlling longer range ballistic missiles would provide a universal means of addressing the dangers to international security posed by ballistic missiles; it would also avoid the potential destabilising effect of ballistic missile defence systems. It would increase the confidence of nuclear weapon states that nuclear disarmament will not damage their security, and it would improve the security environment in a number of regions by eliminating destabilising missile arms races. Pending development of such a regime, confidence building measures such as a multilateral ballistic missile launch notification agreement and a ballistic missile flight test ban could be explored.³

Prospects will remain dim for reducing, rather than merely slowing the growth, of missile threats so long as those states that already possess sophis-

ticated missile capabilities continue to improve them. And in missiles and other long-range delivery systems, as in most areas of military technology, the United States far outstrips all other states in the scope and ambition of its efforts. Further, the United States remains the preeminent military power in several of the regions where missile proliferation is of greatest concern, capable of targeting adversaries in Northeast Asia and the Middle East with its own unparalleled arsenal of nuclear-capable missiles and long-range bombers, while confronting them directly with superior conventional forces.⁴ U.S. insistence on refining not only its nuclear bombs and warheads but its “triad” of systems capable of delivering nuclear weapons from the land, the air, and the sea sets the standard for global arms racing. India, for example, has invoked U.S. actions as both model and as political cover for its own weapons development, including ambitions to develop a “strategic triad” resembling that of the United States.⁵

Compounding all of this is the U.S. policy and practice of preventive war. “As seen in the war to eliminate WMD in Iraq, and in official statements regarding North Korea and Iran,” the Commission Report notes, “the US has claimed a right to take armed action if necessary to remove what it perceives as growing threats, even without the authorization of the UN Security Council.”⁶ The Commission’s analysis, however, remains firmly within the ambit of conventional “non-proliferation” analysis. Its criticism of U.S. policy and actions is couched as objections to over-reliance on the use of military force in “counterproliferation” efforts, and to U.S. rejection of multilateral solutions for WMD threats in favor of a “selective multilateralism” – an increased US scepticism regarding the effectiveness of international institutions and instruments, coupled with a drive for freedom of action to maintain an absolute global superiority in weaponry and means of their delivery.”⁷

Little more is said about the U.S. “drive for freedom of action to maintain an absolute global superiority in weaponry and means of their delivery,” although this arguably is the single most important factor limiting the possibility for meaningful arms control efforts of any kind. This is particularly so as evidence accumulates that U.S. “counterproliferation” efforts and preventive war policies are stalking horses for a far more ambitious political and economic agenda. The invasion and occupation of Iraq on the basis of an exaggerated “proliferation” threat, followed by occupation policies apparently designed with more thought to dividing up the spoils among Western corporations than to establishing stable self-government or even providing basic services, is only Exhibit A. Equally worrisome is the current campaign, also framed as a counterproliferation effort, against Iran and those portrayed as its proxies. It is a campaign being conducted by a regime that too often seems to view diplomacy only as a tiresome but necessary preliminary for military action, and that appears eager to create a “New Middle East” by force of arms.⁸

It is against this background that we must view the wide-ranging U.S. effort to develop the next generation of long-range delivery systems, from

bombers and intercontinental ballistic missiles to new kinds of reentry vehicles deliverable by missile or perhaps in the future from versatile re-useable launch vehicles. Although some of these systems currently are envisioned as exploiting advances in accuracy to deliver conventional weapons by missile at heretofore impracticable distances, they will also be capable of being used to deliver nuclear weapons. The development of conventional weapons with global reach, furthermore, will give the United States a capability to inflict devastation from afar that few states if any can match. This will make the elimination of nuclear weapons and other weapons of mass destruction—viewed by many as a relatively cheap equalizer for superior conventional power—yet more difficult.

While explicitly retaining a spectrum of “[n]uclear attack options that vary in scale, scope, and purpose,”⁹ 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. To this end, the U.S. is both modernizing existing forces and, with the aim of achieving a capability of “prompt global strike,” taking the first steps towards development of next-generation delivery systems. 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.¹⁰

Modernization of Existing Nuclear Forces

While development of next generation strategic weapons is in its early stages, the existing “nuclear triad” of nuclear weapons delivered by land and sea launched ballistic missiles and by aircraft is being modernized, with incremental gains in military capabilities. Research on ballistic missile propulsion, guidance, and reentry vehicle technologies is ongoing,¹¹ contributing both to the modernization of existing nuclear delivery systems and to development of next-generation delivery systems. These next-generation systems are intended to be capable of delivering weapons 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.¹²

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.”¹³

Over the last several years, the Air Force conducted an analysis of alternatives for the future 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.”¹⁴

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, making these warheads more effective against hardened targets.¹⁵ Attack submarines are being provided with new portable fire control systems for launching nuclear Tomahawk cruise missiles, designed to provide “increased flexibility and retargeting capability.”¹⁶

The nuclear-capable B-2 long-range bombers are being upgraded as well,¹⁷ and the Air Force is beginning concept studies for a nuclear-armed enhanced cruise missile, examining potential capabilities such as increased range, accuracy, and survivability in difficult “anti-access” environments.¹⁸

The Next Generation of Strategic Weapons

In late 2005, the Air Force issued a “Prompt Global Strike Request for Information,” beginning the process of examining alternatives for new weapons capable of hitting targets anywhere on earth. Supporting materials state that the Prompt Global Strike Analysis of Alternatives will examine “a range of system concepts to deliver precision weapons with global reach, in minutes to hours,”¹⁹ and that “Global is defined as the capability to strike any target set in the world.”²⁰ A “Study Plan Draft” provided along with the RFI provides a laundry list of possible concepts to be considered:

- High Speed Strike Systems. This approach requires development/adaptation of a piloted, remotely controlled, or autonomous subsonic/supersonic/hypersonic vehicle (aircraft, sea craft, or missile) to deliver precision standoff or direct attack subsonic/ supersonic/hypersonic munitions.
- Operationally Responsive Space. An expendable and/or reusable launch vehicle that can deliver precision guided munitions.
- Military Space Plane. A reusable launch vehicle that could directly deliver precision guided munitions.
- Ground or Sea-based Expendable Launch Vehicle. This approach consists of either modification of current space launch vehicles, conversion of deactivated intercontinental ballistic missiles or sea-

launched ballistic missiles, or building a new launch vehicle to deliver weapon payloads; such as small launch vehicle or submarine launched intermediate range ballistic missiles. An advanced reentry vehicle/body; such as, a common aero vehicle could be developed to accompany these missile systems.

- Air-Launched Global Strike System. This concept consists of an aircraft that air-launches Pegasus-like space launch vehicles configured with weapons and/or an aircraft delivering supersonic or hypersonic long-range cruise missiles.”²¹

Several of these concepts already are in the initial stages of development, including the Air Force effort to develop next-generation delivery systems to replace existing land-based ICBM's (e.g. the Land Based Strategic Deterrent Analysis of Alternatives and the Force Application and Launch for the Continental United States (FALCON) program).²² A key component of the FALCON effort is the Common Aero Vehicle (CAV), a maneuverable gliding re-entry vehicle that could carry a wide range of munitions and that could be delivered by missile or, further in the future, by a reusable launch vehicle of some kind.²³ Congress, mainly driven by concerns that conventionally armed missiles could be mistaken for a nuclear attack by another nuclear power, has placed some limits on the FALCON program and the CAV. Congress is allowing applicable research on hypersonic flight technology to go forward, but has limited testing of an actual weapons delivery system until the nuclear ambiguity problem can be resolved.²⁴ New long-range weapons, however, remain a high priority to the Bush administration, which announced in the recently released Quadrennial Defense Review that it plans to “begin development of the next generation long-range strike systems, accelerating projected initial operational capability by almost two decades.”²⁵

While these plans for new kinds of strategic weapons are ramping up, the Pentagon also wants to convert some existing nuclear delivery systems to conventional use. In the near term, the Department of Defense this year requested funding for the conversion of 24 Trident submarine launched ballistic missiles to carry conventional payloads. Central to this program are guidance system improvements for the Trident re-entry vehicle.²⁶ Congress has expressed similar concerns about the dangers that a conventional Trident could be mistaken for a nuclear launch, and is likely to require additional information before allowing this program to go forward, but appears prepared to provide at least some initial funding.²⁷

Although the “Prompt Global Strike” concepts under consideration currently are slated to deliver only non-nuclear weapons, such technologies as more maneuverable and accurate missile re-entry vehicles and delivery of weapons with some variety of re-useable launch vehicle could, if developed, be used to deliver nuclear weapons should the government decide to do so. This has been acknowledged in other planning documents. The 1997 Air Force Space Force Application Mission Area Development Plan noted that:

Common Aero Vehicles (CAVs) can deliver both nuclear and non-nuclear weapons to targets anywhere on the globe from CONUS [continental U.S.] bases with appropriate deployment systems. The CAV can be deployed from multiple deployment vehicles including missiles, Military Spaceplanes (MSPs), or space based platforms. The inherent maneuverability of the CAV, provides increased accuracy, lethality, and enemy defense evasion.²⁸

These programs—a number of which began in the 1990s, before Bush took office—threaten to blur the distinction between nuclear and conventional weapons from both ends. There has been considerable discussion of the dangers posed by making nuclear weapons more useable, for example by improved accuracy allowing lower yields on long range missiles. There has been far less attention given to the dangers that may arise if the United States is able to develop non-nuclear weapons with global reach that are able to inflict severe damage on an adversary—for example, destroying air defenses in preparation for an overwhelming U.S. air offensive or even killing leadership—in a world where the only “strategic” weapons other states possess are nuclear weapons.

All of this is taking place in a context where the U.S. has declared its willingness to engage in preventive warfare against unilaterally declared “threats.” “Global Strike” is envisioned as a primary instrument for initial strikes in such preventive warfare, designed to hit quickly, without warning, at global range:

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. Simultaneous attacks against all the major targets in a given category (*e.g.*, all division headquarters, all WMD facilities) may be required against more capable adversaries, although the total scope and duration of operations will remain dramatically less than those associated with major combat.²⁹

The 2006 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.³⁰

This public reference to possible new, covertly developed strategic weapons should not be allowed to escape notice, particularly in the context of a Pentagon “black budget” for secret programs that has returned to Cold War levels,³¹ and an administration in power that has shown itself willing to ignore express statutory limits on executive authority in military matters. In order to allow such preemptive strikes, furthermore, the Pentagon wants Congress to further delegate its war making authority to the president. Among the desired “capabilities” identified by the 2006 Quadrennial Defense Review is:

Prompt and high-volume global strike to deter aggression or coercion, and if deterrence fails, to provide a broader range of conventional response options to the President. This will require broader authorities from the Congress.³²

According to the Quadrennial Defense Review, the aim of this new round of strategic arms development, of which the “Global Strike” technologies are only a part, is to “possess sufficient capability to convince any potential adversary that it cannot prevail in a conflict and that engaging in conflict entails substantial strategic risks beyond military defeat.”³³ This passage—threatening adversaries with “strategic risks beyond military defeat”—calls into question U.S. commitment to fundamental principles of international law, particularly those, as stated by the International Court of Justice, limiting the use of force to measures of self-defense “which are proportional to the armed attack and necessary to defend against it.”³⁴

For over half a century, American military and political elites have wrestled with the dilemmas at the heart of nuclear “deterrence”—that nuclear weapons by their nature inflict such horrific damage that a war between nuclear-armed adversaries is likely to constitute mutual suicide, and that using nuclear weapons against an adversary that has none is likely to inflict damage so great that it far exceeds anything permissible under the laws of war. Both the Quadrennial Defense Review and the path of U.S. weapons development suggest that those in power in the United States now have chosen to fully embrace the technological capacity to destroy societies as a first principle of warfare *outside the context of deterring a major power possessing nuclear weapons*. In this view, U.S. conventional expeditionary forces, backed by the threat of societal destruction, whether inflicted with nuclear or non-nuclear strategic weapons, will be able to operate freely worldwide. As a recent Air Force long term planning directive put it:

The NR [Nuclear Response] CONOPS [Concept of Operations] will provide a credible deterrent umbrella under which conventional forces operate and, if deterrence fails, strike a wide variety of high-value targets with a highly reliable, responsive and lethal nuclear force.... Desired effects include: Freedom for U.S. and Allied forces to operate, employ, and engage at will...³⁵

Aside from its general wisdom, morality, and legality, one may doubt the practicality of this approach, given U.S. experience in Iraq, Vietnam, and Korea. Nonetheless, that it is a dominant trend in U.S. planning is not in question.

There is no way to predict what mix of nuclear weapons and high-tech “global strike” technologies the United States will develop and deploy. Near term military spending priorities may shift significantly towards conventional ground forces as the United States attempts to sustain costly large-scale military occupations for long periods of time, reducing funds available for new strategic weapons. Expensive, high technology strategic weapons systems, however, have the support of constituencies that wield great economic and political power (the nature and effect of which receives little close analysis, impairing the ability of both arms control professionals and the decision-makers they advise to understand either the present or any likely future). And the fundamental commitment to a new generation of more capable strategic weapons with the ability to deliver either nuclear or conventional weapons anywhere on earth with greater precision is reflected in a broad range of U.S. policy and planning documents. Finally, it is clear 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. As the 2006 Quadrennial Defense Review states, future U.S. military forces “will include a wider range of non-kinetic and conventional strike capabilities, while maintaining a robust nuclear deterrent, which remains a keystone of U.S. national power.”³⁶

Missile Defenses

RECOMMENDATIONS OF THE WMD COMMISSION

Other specific causes for concern include the June 2002 withdrawal from the ABM Treaty by the United States, its pursuit of a multi-layered ballistic missile defence system, and various research and development activities under way in the US and other states that may lead to the testing and deployment of weapons in space. Another cause of concern is that the Conference on Disarmament has for many years been unable to agree to commence negotiations on a treaty to prevent an arms race in outer space.

Illustrating the lack of an international consensus to move forward in addressing these threats, the report of the first UN

Continued on next page

panel on missiles noted that its participants held different views on ‘the implications of missile defences for arms control and disarmament; the effects of missile defences as well as of missile defence cooperation on the further spread and refinement of missiles; the effects of missile defences on the weaponization of space; and the effects of missile defences in addressing growing vulnerabilities to missile threats and attacks.’ (*Weapons of Terror*, 144)

Recent US defence budget requests have envisaged parallel paths to acquire both a ground-based and a space-based intercept capability. Described in various official US statements as the ‘ultimate high ground’, outer space is characterized as offering options not only for missile defence but also for a broad range of interrelated civil and military missions. The US Congress has been reluctant to allocate funding as requested and thus has slowed down developments, but this has not resulted in the abandonment of the objective of space-based interception. Concerns have continued to grow internationally that the US pursuit of ballistic missile defences is likely to increase nuclear dangers and reduce international security. The potential value of these systems is not in proportion to the risks they pose to the international community, including to the states possessing such systems. (*Weapons of Terror*, 145)

Recommendation 44: States should not consider the deployment or further deployment of any kind of missile defence system without first attempting to negotiate the removal of missile threats. If such negotiations fail, deployments of such systems should be accompanied by cooperative development programmes and confidence-building measures to lower the risk of adverse effects on international peace and security, including the risk of creating or aggravating arms races.

Given the weakness of the Commission’s recommendations on ballistic missiles and other long-range delivery systems, its prescription for missile defenses is about as strong as it could be—meaning not very. Only the most advanced military powers are capable of developing meaningful missile defenses in the foreseeable future. With universal controls on long-range missiles (not to mention controls on other weapons systems carrying great strategic weight, such as advanced aircraft armed with accurate conventional

and nuclear stand-off weapons) already ruled out, the chance that those who might be attacked by missile defense-capable great powers will be willing to limit their missile programs is small. In context, the Commission's recommendation at best is a faint reiteration of appeals to sustain "stability," despite the facts that such appeals have little record of success, and that the country with by far the most ambitious missile defense programs, the United States, has largely abandoned "stability" as a strategic goal in favor of "full spectrum dominance."³⁷ Viewed more darkly, this recommendation could be seen as acceptance of a two-tiered world where major nuclear powers exchange data and "build mutual confidence" while accepting the use of missile defenses, together with overwhelming conventional expeditionary forces operating beneath the "umbrella" of increasingly capable nuclear and conventional missiles and other long-range delivery systems, essentially turning the rest of the world into a free fire zone.

There can be little doubt that this is the goal of the United States, which sees missile defenses as a further means of assuring that other states have no effective response should the U.S. choose to impose its will by force of arms. Their importance in offsetting other states' missile capabilities was underlined by the Director of the U.S. Missile Defense Agency in testimony before a Senate committee in March 2006:

Ballistic missiles provide a way for our adversaries to attempt to achieve some degree of strategic equality with us, *especially at a time when ballistic missile defense is still striving to catch up with the progress made by ballistic missile offense over the past four decades.*³⁸

Largely sold to the U.S. public as defense against a "bolt from the blue" attack by a "rogue state," ballistic missile defenses 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.³⁹ 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."

As stated by a 2006 Defense Department planning document:

When combined with US force projection and Global Strike capabilities, active and passive defenses have a synergistic effect on deterrence by enhancing the credibility of US threats to impose costs. By reducing US vulnerability to a wide range of asymmetric attacks, active and passive defenses increase adversaries' perceived probability of incurring costs from counterstrikes on key assets. In other words, effectively integrating offensive and defensive

operations can powerfully influence an adversary's perception of the likelihood of their aggression or coercion will elicit an extremely costly military response.⁴⁰

Similarly, in the words of the 2001 Nuclear Posture Review, "Defense of the U.S. homeland and protection of forward bases increase the ability of the United States to counteract WMD-backed coercive threats and to use its power projection forces in the defense of allies and friends."⁴¹ The aim is to counter the limits to U.S. use of force that a regional adversary might be able to impose if it has chemical, biological, or nuclear weapons. The concern is that the adversary might be willing to run risks for interests it sees as vital against "an over-the-horizon power that often makes the choice to disengage when costs begin to outweigh interests."⁴²

Especially worrisome to U.S. military thinkers are short and medium range missiles, already in the arsenals of many countries that the United States sees as potential adversaries. As the Naval Studies Board of the National Research Council noted in 1997:

Ballistic missiles with ranges from 200 to over 1,000 miles are proliferating among large and small nations around the world. Even if they do not deliver the weapons of mass destruction that they are capable of delivering, their use with conventional warheads—and often even their presence alone—can have a profound political as well as military impact on regional conflict. As evidenced during the Gulf War, the application of even a limited defense against such attacks can also have important political and military significance. Defenses against ballistic missile attack will, in the future, be an even more important part of our developing, joint military capability. The theater missile defense (TMD) systems will ultimately cover the gamut of defense possibilities, from finding and destroying command centers and launchers, through destruction of missiles in boost and ascent phase to prevent dispersal of chemical and bacteriological submunitions and to prevent damage by nuclear warheads either detonating within damage range or following purely ballistic trajectories to their targets after intercept, to terminal defense against weapons that leak through. The imperative of preventing effective attacks by ballistic missiles that may carry warheads of mass destruction leads to the concept of placing a 'cap' over an aggressor state to prevent such attacks from reaching beyond the aggressor's borders, with terminal defense as final 'insurance.' In this sense, TMD enhances overall offensive capability.⁴³

Even before the Iraq war and the Bush administration's doctrine of preventive war, many in the military saw defenses against short and medium range missiles as a more pressing priority than national missile defense.⁴⁴ They

understood that the U.S., at least in the near term, is far more likely to fight wars against countries with shorter range, relatively unsophisticated missiles than against those having long-range missiles that what were called “national” missile defenses are designed to counter. The debate in the U.S. has focused mainly on the technical merits, cost, and effects on arms control regimes of defenses against intercontinental ballistic missiles. The implications for arms control efforts of dominant conventional forces combined with partially effective defenses against shorter range missiles, all backed by a devastating nuclear arsenal, has received little attention.

There are other aspects of the enhanced “overall offensive capability” that missile defenses together with other weapons systems imply, which affect not only regional powers seeking some kind of counter to overwhelming U.S. conventional forces, but the broader strategic relationship with Russia and China as well. The extensive array of new space-based sensing systems being developed to support global missile defense systems also is likely to have additional applications that further increase U.S. advantages in targeting and coordinating precision offensive weapons, both conventional and nuclear.⁴⁵ At the same time, U.S. nuclear warheads, delivery systems, and supporting infrastructure continue to be modernized. China in particular, with its small number of nuclear missiles capable of reaching the United States, may see the combination of missile defense and the broader U.S. high-tech weapons build up as capable of nullifying its nuclear forces. With the U.S. developing forces that might be able to destroy all or most of China’s command structure and nuclear arsenal in a preemptive strike, a multi-tiered missile defense system may need only to be effective enough to deal with the possibility that a few missiles may make it off the ground. These developments are occurring in a context where the U.S. Nuclear Posture Review lists China as a country that “could be involved in an immediate or potential contingency.”⁴⁶

U.S. military planners sometimes do acknowledge the potentially destabilizing effect of missile defenses, especially if combined with programs like Global Strike designed to make strategic weapons more useable.⁴⁷ These concerns, however, have had little discernible effect on U.S. missile defense development. And although military planners still couch their arguments in the language of “deterrence” and countering “aggressor” states, the weapons and doctrine they are developing now are deployed not only to defend against attack, but in the service of what are politely described in arms control-speak as “preventive” wars or “wars of choice.”

Weapons in Space

RECOMMENDATIONS OF THE WMD COMMISSION

The stationing of nuclear weapons or any other WMD in outer space or placement of such weapons in orbit are both prohibited under the 1967 Outer Space Treaty (OST), but nuclear warheads on BMD interceptors launched from terrestrial bases are not prohibited, nor is the sub-orbital transit of outer space by nuclear warheads on ballistic missiles. (*Weapons of Terror*, 147)

Recommendation 45: All states should renounce the deployment of weapons in outer space. They should promote universal adherence to the Outer Space Treaty and expand its scope through a protocol to prohibit all weapons in space. Pending the conclusion of such a protocol, they should refrain from activities inconsistent with its aims, including any tests against space objects or targets on earth from a space platform. States should adapt the international regimes and institutions for space issues so that both military and civilian aspects can be dealt with in the same context. States should also set up a group of experts to develop options for monitoring and verifying various components of a space security regime and a code of conduct, designed inter alia to prohibit the testing or deployment of space weapons.

Recommendation 46: A Review Conference of the Outer Space Treaty to mark its 40th year in force should be held in 2007. It should address the need to strengthen the treaty and extend its scope. A Special Coordinator should be appointed to facilitate ratifications and liaise with nonparties about the reinforcement of the treaty-based space security regime.

The Commission's recommendations on weapons in space are stronger than those for either delivery systems or for missile defenses, calling for an outright prohibition of space weapons to be implemented by an expansion of the Outer Space Treaty (*see section 1.4*). It is easier to call for stringent controls on space-based weapons for several reasons. First, so far as we know, no state currently deploys weapons in space. Second, placing weapons in space for any purpose remains extremely expensive, and making space-based weapons platforms of any kind both effective and defensible still poses significant technical challenges. Third, for many purposes, the effects

achieved by weapons based in space largely can be accomplished far more cheaply with weapons based on the ground.⁴⁸

All advanced military powers, and the United States most of all, increasingly rely on satellites for surveillance, communications, navigation, and the targeting of weapons. Even terrestrially-based U.S. ballistic missile defense programs call for massive upgrades in space-based sensing, and the United States has ambitious plans to expand the advantages it already derives from its global network of satellites and ground stations. A main justification for exploring space weapons in the near term is to defend “space assets” that U.S. ground forces depend on, purportedly requiring technologies with the capability to detect and if need be destroy anti-satellite weapons that might operate in or through space. The second application for space-based weapons that the U.S. appears to be seriously considering is missile defense, employing either kinetic-kill devices or directed energy.

Attack on terrestrial targets from space occasionally is mentioned in long-range planning documents, attracting a disproportionate amount of attention due to its sci-fi glamour. However, other new capabilities for weapons delivery to ground targets are emerging, with greater range and global coverage for nuclear or highly accurate conventional payloads. This implies that attacks on terrestrial targets likely can be accomplished more easily with upgraded ballistic missiles and re-entry vehicles, perhaps supplemented by re-useable launch vehicles that could either place satellites in orbit or deliver several weapons payloads at once from a sub-orbital trajectory.

The combination of increased use of space technologies for surveillance, communication, and navigation by terrestrial military forces, additional sensing and targeting demands from evolving missile defenses, and the extremely profitable nature of high-end military space technologies are likely to drive the continued development of fundamental space technologies—cheaper and more reliable space launch, space-hardened materials, efficient means of generating and storing energy in space, etc. All of this increases the potential for space-based weapons of some kind to become practical at some time in the future. A prohibition on space weapons thus is a worthwhile goal.⁴⁹

It should not be allowed to distract our attention, however, from more easily achievable improvements of ballistic missiles and other long-range delivery systems that are far more likely to be developed and deployed in the next decade or two, and that hence present a greater real threat.

And at least so long as U.S. military R&D budgets remain nearly unlimited, there is a dangerous synergy at work. Missile defenses, after decades of being sold as an “alternative” to the terrible dilemma of nuclear “mutually assured destruction,” carry an ideological weight virtually independent of any rational argument. At the same time, the everyday use of satellite-based technologies by U.S. military forces at war around the world continues to grow, providing credibility to claims that further development of military space technologies is both essential and practical. The high-tech appeal of

both missile defenses and military space generally as “the ultimate high ground” help to sustain budgets for technologies such as space launch and hypersonic flight, contributing to a steady flow of incremental improvements in already highly dangerous and inherently de-stabilizing strategic weapons, such as highly accurate long-range missiles.

Recommendation for U.S. Policy

- The United States should abandon the quest to maintain long-term military supremacy through modernization and development of missiles and other strategic delivery systems as well as anti-missile systems and possible deployment of space-based weapon systems. It should instead support the establishment of international controls on delivery systems and anti-missile systems as part of a global process of reducing and eliminating nuclear forces, banning weapons in space, limiting strategic weapons generally, and implementing a policy of “non-offensive defense.”

Understanding U.S. Policy

JOHN BURROUGHS

RECOMMENDATIONS OF THE WMD COMMISSION

[G]overnments and world public opinion are paying less attention to the global regimes for arms control and disarmament. One reason is the intense and justified focus on the war on terrorism and the handling of specific cases of actual or potential nuclear proliferation. Another reason may be that global treaties did not help to prevent the terrorist attack on the United States on 11 September 2001 and constituted insufficient barriers against the efforts of Iraq, North Korea and Libya to acquire nuclear weapons and against Iran to conceal a programme for the enrichment of uranium.

While the reaction of most states to the treaty violations was to strengthen and develop the existing treaties and institutions, the US, the sole superpower, has looked more to its own military power for remedies. (Chairman's Preface, *Weapons of Terror*, 13)

Some of the current setbacks in treaty-based arms control and disarmament can be traced to a pattern in US policy that is sometimes called 'selective multilateralism'—an increased US scepticism regarding the effectiveness of international institutions and instruments, coupled with a drive for freedom of action to maintain an absolute global superiority in weaponry and means of their delivery.

The US is clearly less interested in global approaches and treaty making than it was in the Cold War era. (*Weapons of Terror*, 25)

Why is the United States, as the WMD Commission says, “less interested in global approaches and treaty making than it was in the Cold War era”? That question must be answered if U.S. policy is to be set on a new course. While not seeking to provide a full explanation, the WMD Commission report does posit “that NPT violations by Iraq, Libya, and North Korea resulted in a severe loss of confidence in the effectiveness of the treaty.”¹ It adds that “weakness and difficulties” regarding the lack of universality of the regimes, the option of withdrawal, verification, and compliance “may have contributed to some scepticism of the treaty regimes—even a shift of approach—on the part of

some policy makers. This is especially true of the United States.”² WMD Commission chairman Hans Blix has emphasized this point, reflecting his experience as Director General of the IAEA when it was criticized for not having uncovered the 1980s Iraqi nuclear weapons program.³

From our perspective as U.S.-based NGOs closely attuned to U.S. politics, these reasons for the U.S. aversion to multilateralism seem to be rationalizations rather than major causes. The U.S. obsession with the problem of “rogue” states seeking WMD is in large measure an ideology of the military and the nuclear weapons establishment. After the disintegration of the Soviet Union, these mammoth institutions had to construct new enemies to justify their continued existence on a huge scale. In addition to the sheer momentum of those institutions, other factors underlying present U.S. policy include the rise of nationalism and “fundamentalist” religious identities and the demise of the Cold War international system.

As to the first factor, nationalism and religious fundamentalism are by their nature incompatible with or least inhospitable to the universalism and rationalism inherent in the effort to build and sustain global regimes founded upon an acceptance of a diverse and pluralistic world order. What is less well understood than it should be is that nationalism and fundamentalism have been dominant elements in U.S. politics over the last 15 years. Ever since the collapse of the Soviet Union and then the new-right Republican Party sweep of the 1994 Congressional elections, U.S. policies have been strongly shaped by a triumphalist nationalism and variants of fundamentalist Christianity. In the Bush administration, these elements have combined lethally with an elite faction closely aligned with petrochemical and military-industrial interests.⁴ After the September 11 terrorist attacks, the “war on terror” provided a compelling frame for packaging desired policies. The 2006 Congressional elections may signal a shift away from this configuration of power and ideology.

As to the second factor, the prevailing assumption was that the end of open hostility between the United States and the Soviet Union would make global law-making more feasible. That was indeed so for a few years in the 1990s, but the momentum of those years faded quickly, not altogether to the surprise of those of us familiar with the resurgent nuclear weapons complex in the United States and the 1994 Nuclear Posture Review, which essentially reaffirms Cold War-style nuclear doctrines and capabilities. Now it can be seen that the extreme dangers of nuclear “deterrence” as practiced between the Soviet Union and United States gave rise to a corresponding need to develop structures of stability. They included bilateral arms control to manage a rivalry between superpowers capable of destroying each other, and multilateral agreements, notably the NPT aimed at preventing the spread of nuclear weapons. Bilateral talks in the early 1960s about a non-proliferation agreement initially sought to prevent acquisition of nuclear weapons by states including Germany, Japan, Israel, China, and India;⁵ in the event, the last three states were not captured by the effort.

Now the United States is facing a new strategic context, with China and India emerging as major powers. U.S. planners appear to have concluded that the United States should not build up a relationship of “deterrence,” stability, and arms control with China, but rather should maintain military superiority vis-à-vis China and build a strategic partnership with India. A passage entitled “Moving Beyond Vulnerability” from a 1999 paper by research institutes at the National Defense University and Lawrence Livermore National Laboratory is revealing on this score. In promoting reliance on missile defenses, it more broadly states the aim of never again allowing the United States to become vulnerable to nuclear attack:

A policy that holds American society totally vulnerable to nuclear attack is not in the security interest of the United States or Russia. Emphasis on a policy of mutual vulnerability inhibits the long-term positive evolution in the relationship between these two states. Moreover, *the United States should not allow a mutual vulnerability relationship to emerge with other states, either intentionally or otherwise.* The ability of the United States to develop and deploy effective defenses against smaller-scale attacks will establish a firmer foundation for deterrence in the future and provide protection for forces and populations.⁶

In this approach, arms reductions, control of missiles and missile defenses, and strengthening global institutions are not the chosen policy instruments. Put another way, in the transition away from the Cold War bi-polar system featuring opposing superpowers and their alliances, the United States has chosen to seek to build a uni-polar system, centered on U.S. military superiority and expanded U.S. alliances. That is an exceedingly dangerous path; the United States should work instead to develop a pluralist international system managed through norms and regimes.

In analyzing post-Cold War U.S. policy, it is worth pondering as well the lack of warfare among advanced industrial powers since World War II. Some attribute this to the U.S.-Soviet nuclear stand-off and associated military alliances; others point to factors such as economic interdependence, the rising number of democracies, and the development of global and regional norms and institutions; some embrace both explanations.⁷ However, what if the causes were instead, or also, war-weariness following World War II, a global economy growing rapidly and steadily until the 1970s, and relatively moderate competition over resources like oil, natural gas, and water? Those conditions facilitated cooperation on arms control, norms, and institutions and discouraged resort to war or threat of war among major powers. But to the extent it is foreseen that they will not persist, emphasis on national military capabilities and de-emphasis of universalist structures for governance and arms control/disarmament is one possible response.⁸ Indeed, it is profoundly unwise to assume that the current environment of relative stability and

cooperation among major powers will last indefinitely absent strenuous efforts to maintain and improve that environment. But U.S. military and nuclear superiority is not a safe or moral strategy. In particular, absent far-reaching disarmament measures there is no escape from the unprecedented and unspeakable risks posed by nuclear weapons. The United States must seize the present opportunity—the “gift of time,” as Jonathan Schell titled a book⁹—that has existed since the breakup of the Soviet Union and still exists, and work together with other states to marginalize and eliminate nuclear weapons and to improve and utilize the United Nations and other tools for the prevention of war.

Recommendation for U.S. policy

- The United States should work to develop a pluralist international system managed through norms and regimes and improve and utilize the United Nations and other tools for the prevention of war.