



NUCLEAR INSECURITY

*A Critique of the
Bush Administration's
Nuclear Weapons
Policies*

September 2004

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NATURAL RESOURCES DEFENSE COUNCIL

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The Natural Resources Defense Council is a national nonprofit environmental organization with more than 1 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City, Washington, D.C., Los Angeles, and San Francisco. Visit us at www.nrdc.org.

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EXECUTIVE SUMMARY

The collapse of the Soviet Union created an historic opportunity for the United States to reduce the role of nuclear weapons in our national security policy. Instead of realizing this promise, however, the Bush administration's aggressive nuclear weapons policies have missed opportunities and in many instances turned back the clock. These policies have diverted money and resources away from combating terrorism and instead spent them on refining Cold War-era nuclear war plans and devising new nuclear weapons to build.

By reaffirming and in some cases expanding the role of nuclear weapons, the Bush administration has made the United States more vulnerable, not more secure. Specifically, the following features of the administration's position have in fact exposed the country to greater risk from nuclear threats:

► **The administration is undermining the U.S. effort to combat terrorism by diverting resources from the real threat and squandering billions of dollars on Cold War-era weapons.** Last year alone, the administration spent \$10 billion on a missile defense system that will do nothing to stop the most dangerous security risk of our time: terrorists releasing a nuclear weapon in an American city. Furthermore, the Department of Energy is spending billions of dollars each year to extend the life of thousands of nuclear warheads and delivery systems that were designed to fight World War III with the Soviet Union.

► **The administration has adopted dangerous policies to enable the use of nuclear weapons in a wider range of conflict situations.** The administration's Nuclear Posture Review increases the number of contingencies in which nuclear weapons could be employed against non-nuclear states, and it expands the list of targets that could be bombed with a nuclear warhead. It also advocates shifting to a planning and command structure that will make it faster and easier to execute limited nuclear attacks.

► **The administration is increasing potential access by terrorists or rogue nations to knowledge about nuclear materials and methods.** The administration has launched programs that assist non-nuclear weapons states—several of which had clandestine weapon programs in the past—to develop the capability to produce nuclear weapons-usable materials for use in advanced nuclear power reactors, thus increasing the potential for nuclear materials and expertise to fall into the hands of terrorist groups or aspiring nuclear weapons states.

► **The administration is perpetuating an arms race, mainly technological and qualitative in nature, which encourages and provides political or moral cover for other states to retain, improve, or expand their nuclear arsenals.** The administration is spending record sums to revive nuclear weapons research, modernize the U.S. nuclear weapons production complex, reactivate design teams to develop new nuclear weapons, and accelerate deployment of a rudimentary national missile defense system. These provocative measures, enlarged by the Bush administration's hostility to a permanent global treaty banning nuclear test explosions, undercut U.S. nuclear

nonproliferation efforts and undercut further progress with Russia and China in nuclear arms reductions.

A RESPONSIBLE NUCLEAR POLICY FOR THE 21ST CENTURY

While the ostensible goal of the new policy is increased deterrence against potential adversaries armed with chemical and biological weapons, this is achieved at the cost of weakening the taboo that has prevented the use of nuclear weapons since World War II.

The nuclear strategy map the administration is following is actually an old one, originally devised during the Cold War to inhibit the use of the Soviet Union's massive conventional armies by threatening to disperse and disable such an attack with limited nuclear strikes. We live in a different world, where the dangers come from unstable nuclear-armed states in areas of ongoing regional conflict, from the threat of terrorist attacks with a wide range of deadly weapons, and from the possible accidental launch of nuclear weapons. Yet the administration's nuclear weapons policies amount to little more than repackaging the old Cold War doctrine and rhetoric into a new box labeled "counter-proliferation."

Indeed, these policies actually heighten global security risks by: increasing access to nuclear materials and technology that could be diverted to weapons; perpetuating popular and elite misperceptions that making nuclear threats can enhance national security; limiting the scale and extent of international cooperation and resources needed to reduce nuclear dangers.

A responsible nuclear policy for the 21st century would look very different and would require at a minimum the following steps:

Honor the United States' commitment to the Nuclear Nonproliferation Treaty. The administration should take seriously its obligation to uphold Article VI of the Nuclear Nonproliferation Treaty (NPT), which commits the United States and the other declared nuclear weapons states to pursue nuclear disarmament. It should begin talks with the other nuclear powers about eliminating nuclear weapons. The 2005 NPT Review Conference should become the forum to honestly address the deficiencies in the present treaty, propose ways to strengthen its terms, and encourage participating states to honor its requirements.

Scrap the development of nuclear bunker busters and other programs intended to widen the range of targets that could plausibly be struck preemptively with nuclear weapons. The military should reverse the trend toward an integrated "global strike" strategy involving a continuum of conventional and nuclear capabilities for destroying hardened and deeply buried targets. Nuclear threats and capabilities should be invoked only when the very survival of the nation is at stake. Developing capabilities and plans for nuclear use in lesser contingencies undercuts nuclear nonproliferation efforts. Rather than accede to lasting U.S. military superiority, some potential adversaries are likely to build weapons to combat our shifting arsenal, especially if

The department should cancel programs that could aid potential proliferators or terrorists in gaining access to nuclear weapons knowledge and materials.

we create warheads that appear to lower the threshold for using nuclear weapons, such as earth-penetrating and low-yield weapons.

Abolish the U.S. permanent nuclear war plan. It is time to replace the U.S. military's outdated, Cold War planning system with a contingency model that would allow the military to assemble attack plans in the event of hostilities with another nuclear state. This would take thousands of nuclear warheads off alert and allow the Russians to do the same, thereby decreasing the likelihood of accidental launches.

Do not deploy an unproven "national" missile defense system. Rather than pursue an untested defense system, the administration should seek alternative and more direct diplomatic and arms control measures for reducing the threat of long-range ballistic missiles. Congress should drastically limit research funding for this deeply flawed project and redirect the majority of the money toward addressing the far more pressing threats posed by terrorists and proliferation. At the very least, deployment of the first stage of the system should not proceed until there has been adequate and realistic testing.

Accelerate the implementation of the Moscow Treaty. Congress should strengthen the treaty by passing legislation that would advance the timetable and require the reduced arms to be destroyed under verifiable conditions, and not just stored for another day.

Increase Congressional oversight and accountability of DOD and DOE nuclear weapons programs. Congress should call for investigations into several projects at the nation's nuclear weapons laboratories that are billions of dollars over budget and years behind schedule. To institute greater accountability and oversight, Congress should establish a detailed public record that fully discloses the current programs' objectives and spending and sets the stage for a smaller, more affordable, and sustainable DOE weapons complex that reflects this nation's—and the world's—nuclear nonproliferation objectives.

Cancel the Department of Energy's international nuclear energy programs. The department should cancel programs that could aid potential proliferators or terrorists in gaining access to nuclear weapons knowledge and materials. Specifically, the department should cancel programs that help non-weapon states to develop the expertise and facilities to build nuclear power reactors and reprocess plutonium.

Focus on weapons systems that meet genuine needs. The administration should stop using capability-based planning, which shortchanges immediate needs, such as body armor and improved tactical navigation and communications on the battlefield. The nation's nuclear weapons and delivery systems continue to be "modernized" while American soldiers in Humvees lose their way in Iraq and become vulnerable targets for ambush by insurgents. The better approach is to identify genuine military needs and meet them.

UNSETTLING ALLIES AND ADVERSARIES: THE NUCLEAR POSTURE REVIEW



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Shortly after taking office, President Bush ordered the Pentagon to conduct a review of the U.S. nuclear posture, for the purpose of devising an approach that reflected the new realities of the post–Cold War era—the demise of the Soviet Union, the breakup of the Eastern European Soviet bloc, and what one Pentagon aide described as “a completely new relationship with Russia.”¹

The Bush administration’s December 2001 Nuclear Posture Review (NPR) was the result, and it is the defining document of the administration’s current and long-range nuclear weapons policy and plans. A year in the making, the lengthy classified report was presented to Congress at the end of 2001, and soon leaked to the media.² In important ways, the NPR cuts through the administration’s public rhetoric, providing a blueprint for its plans in language clearly not intended for public consumption.

Not since the resurgence of the Cold War in Ronald Reagan’s first term has there been such an emphasis on nuclear weapons in U.S. defense strategy. In fact, the NPR reverses a post–Cold War trend by:

- ▶ Expanding the range of potential conflicts in which nuclear weapons might be employed
- ▶ Calling for the design and building of a new generation of warheads to meet these perceived needs
- ▶ Putting in place a planning and command structure that would make it faster and easier to plan and actually launch nuclear attacks

The administration is confident that this reinvigorated nuclear posture will strengthen national security by deterring adversaries from using or even acquiring nuclear and other weapons of mass destruction. Yet the evidence from the Russian, Chinese, and North Korean responses to this assertive nuclear posture is not encouraging.

UNSETTLING ALLIES AND ADVERSARIES ALIKE

The NPR asserts that an aggressive nuclear policy makes America safer. Examples from both history and current developments suggest that, in fact, the administration's assumptions about nuclear weapons make America more insecure.

To articulate the expanded role that nuclear weapons should play in defending U.S. security, the NPR adopts the terminology used in the Quadrennial Defense Review issued in 2001.³ According to the review, the Department of Defense builds its strategic nuclear framework around four policy goals: to assure allies and friends, to dissuade future military competition, to deter threats and coercion against U.S. interests, and to defeat any adversary if deterrence fails.

The NPR uses similar language to justify the country's continued reliance on nuclear weapons: "U.S. nuclear forces will continue to provide assurance to security partners" and may "serve to reduce the incentives for friendly countries to acquire nuclear weapons of their own. . . . Systems capable of striking a wide range of targets throughout an adversary's territory may dissuade a potential adversary from pursuing threatening capabilities," according to the NPR.⁴ The vast conventional forces of the United States and the certainty of its ability to retaliate reinforce U.S. security guarantees that deter attacks in the first place. But should deterrence fail, the full range of military forces, nuclear and non-nuclear, will decisively defeat any enemy.

But whether U.S. nuclear weapons actually fulfill these purposes in the minds of allies, competitors, aggressors, or enemies is unclear. In fact, the results of possessing the weapons and the provocative articulation of new policies about them are just as likely to produce the opposite effect. In certain cases, U.S. possession may cause doubt and skepticism among allies, rather than assurance. After all, deploying nuclear weapons or missile defense systems in another country could make it a target. Historically, the United States had nuclear weapons in 18 countries, making each of them a target for Soviet missiles. Now the United States houses nuclear weapons in just six European countries, but the collapse of the Soviet Union has not assuaged fears of being targeted. Greece recently asked the United States to remove all of its nuclear weapons from Greek bases. This decision could create a domino effect as other allies weigh the risks and benefits of storing American nuclear weapons on their soil.

Moreover, it is already clear that the U.S. intention to retain vast stockpiles of nuclear weapons, and its plans for new and presumably more usable weapons, are causing competitors to respond with countermeasures of one kind or another. Russia and China are looking closely at American plans and will size and configure their forces accordingly. Russia has already begun to adjust its nuclear forces in response to the NPR, retaining heavy multiple warhead missiles to penetrate the prospective U.S. missile defense system. China is likely to build more missiles and warheads than it originally had planned and possibly deploy MIRVed (multiple independently targeted reentry vehicles) missiles in response to a U.S. ballistic missile defense system. Similarly, aggressive U.S. posturing with reduced-yield weapons, so-called mininukes, may prompt certain nations to seek weapons of mass destruction as leverage against U.S.

In fact, the NPR reverses a post-Cold War trend by increasing the number of situations in which nuclear weapons might be employed.

dominance or for national or regional prestige. North Korea provides an example of how U.S. nuclear posturing may have spurred proliferation rather than deterring it.

RETAINING EXCESSIVE NUMBERS OF NUCLEAR WEAPONS

To meet its perceived deterrence goals, the NPR urges the United States to retain thousands of existing nuclear weapons as well as develop new ones. Publicly, the administration has pledged to reduce the nuclear arsenal to a level of 1,700 to 2,200 “operationally deployed strategic warheads” by 2012. These operationally deployed weapons are the visible portions of a larger arsenal. For the first three years, the Bush administration policy called for retaining a total stockpile of approximately 10,000 intact nuclear weapons. This policy fell under steady criticism from arms control organizations, certain foreign governments, and members of Congress, and finally the administration has modified it.

In June 2004, the Bush administration announced that it was going to significantly reduce the stockpile over the next eight years. The specific elements of the plan remain secret, but National Nuclear Security Administration Administrator Linton F. Brooks submitted a classified Stockpile Plan to Congress detailing what the Departments of Energy and Defense have agreed to retire and ultimately dismantle. While this is a welcome and positive step, several issues need further discussion.

For instance, how large a stockpile will be left after these new reductions? The administration continues to impose unwarranted Cold War levels of secrecy on the changes it is making in the size of the active and reserve nuclear stockpile.

VIEWING NUCLEAR WEAPONS POLICIES ON THE GROUND

Commercial satellite imagery offers the American public a chance to see how the Bush administration’s nuclear weapons policies get enacted on the ground. Included in this report are commercial satellite images of seven important U.S. nuclear weapons bases and the missile defense site at Fort Greely, Alaska. These photos provide us with a unique perspective on U.S. nuclear facilities that consume vast government funds, possess huge destructive capabilities, and yet are usually off-limits to nearly everyone.

High-resolution satellite imagery became commercially available in 1999 through the Space Imaging Corporation’s Ikonos satellite. In 2001, the DigitalGlobe Corporation emerged as a second supplier of meter and even submeter resolution data from its QuickBird satellite.

Thanks to these images, the American public can see gigantic ballistic-missile-carrying submarines, nuclear-capable military aircraft bases, and row upon row of nuclear weapons storage bunkers, many of which are near large urban centers, such as Albuquerque, Las Vegas, and Seattle.

While these photographs shed light on the scale of our nuclear arsenal, they provide no assistance to terrorists. The photos show only the general layout of U.S. nuclear facilities but do not provide any details about physical security, such as the strength of protective barriers or guard patrol areas. Nor do they provide important information such as the precise locations of fissile material, nuclear weapons, or missile components. The images serve to educate the public about our nuclear arsenal and do not reveal any compromising information to enemies.

Administrator Brooks has stated only that the reductions would be “almost half” of the current stockpile. Based on the current stockpile, we estimate that approximately 4,600 warheads of six types are slated for retirement and disassembly.

The reductions will take eight years to implement, two presidential terms from now, but they could be speeded up and achieved well before 2012. Of course there is a limit as to the number of disassemblies that can be accomplished annually at the Pantex Plant, where a large-scale program is underway to extend the service life of several warhead types. What will likely occur is that warheads removed from active status will be stored in Department of Defense depots to await their turn at Pantex.

Unfortunately the Bush administration seems not to have taken advantage of the reductions to challenge the Russians to follow suit by cutting—and securing—their

TABLE 1
The Projected U.S. Nuclear Stockpile of 6,000 Warheads in 2012

Type	Warheads per Launcher	LAUNCHERS		WARHEADS			Total
		DEPLOYED		DEPLOYED		Reserve & Spares	
		Operational	Overhaul	Operational	Overhaul		
Strategic Forces:							
ICBMs							
MM-III							
W78	1	300		300		100	400
W87	1	200		200		345	545
Subtotal (ICBM)		500	0	500	0	445	945
SSBN		12	2				
SLBM							
W76	5	216	48	1,080	240	520	1,840
W88	5	72	0	360		40	400
Subtotal (SLBM)		288	48	1,440	240	560	2,240
Strategic Bombers							
B-52H	16	56	20				
B-2	16	16	5				
B61-7				70		360	430
B61-11				20		15	35
B83-0						300	300
B83-1				80		240	320
W80-1 (ACM/ALCM)				90		735	825
Subtotal (Strategic Bombers)		72	25	260	0	1,650	1,910
Subtotal (Strategic)				2,200	240	2,655	5,095
Non-Strategic Force:							
F-16C/D							
F-15E							
B61-3-4-10				500		80	580
SLCM/W80-0				100		160	260
Subtotal (Non-strategic)				600	0	240	840
Total Warheads				2,800	240	2,895	5,935

arsenal as well. While Russia has been dismantling nuclear weapons since the end of the Cold War, it too has retained excessive numbers. The large U.S. reserve stockpile has been a source of irritation to the Russians, who felt as though they needed a hedge against our arsenal, and thereby retained large numbers of weapons. Portions of the Russian stockpile are poorly secured and may be susceptible to theft or seizure by an armed group. The Bush administration missed an opportunity to curb this threat when it did not use its arms reduction to leverage further reduction and consolidation of the Russian nuclear stockpile.

While the stockpile reductions represent a move in the right direction, their benefits will be undermined if the administration replaces the old weapons with new ones. The Department of Energy and the Pentagon have been wrestling for quite some time about what course to take regarding the future stockpile. For the past decade, the policy has called for maintaining what was referred to as the “enduring stockpile,” that is, a large subset of the warheads that were in place when the Cold War came to an end. A stockpile stewardship program was established to guarantee the weapons’ reliability and to extend their service lives if necessary.

A contrary view, held by many in the current administration, envisioned creating a different kind of nuclear arsenal. The weapons in this new arsenal would have lower yields offset by greater accuracy, greater usability in limited conflicts, and the ability to hit different targets than those found in the Soviet Union. The cost of maintaining thousands of Cold War–vintage warheads has until now stood in the way of taking this new path. Congress has also presented a roadblock by pressuring the two departments to make up their minds about which course to take. Without knowing the details of the new Stockpile Plan, it would appear that the advocates of creating new weapons have gained ground, though it will take some time before new proposals become known.

All indications—from the recommendations in its NPR to the funding requests for bunker buster warheads—suggest that the administration envisions a new mix of weapons in a future arsenal. While a new arsenal cannot be created overnight, the Pentagon and the Department of Energy are laying the groundwork for a new generation of nuclear weapons. Through an extensive and expensive series of programs, they have begun soliciting a new intercontinental ballistic missile to be operational in 2018, a new submarine-launched ballistic missile and a nuclear-powered ballistic missile submarine for 2030, and a new heavy bomber ready in 2020, all presumably needing new or modified warheads. (See Chapter 2 for more information about the planned expansion of nuclear forces.)

While 10,000 was a grossly excessive amount to retain, it can still be argued that 6,000 is excessive and more than enough for any conceivable situation. The magnitude of destruction in an arsenal of this size remains stunning. The United States could inflict almost 50 million Russian casualties by targeting cities with the 24 missiles on just one Trident submarine.

So for whom are the 6,000 weapons intended? The U.S. nuclear war planning process requires that every defined target of a nuclear attack option—many of which are in or near population centers—have a warhead available and assigned to hit it.

While the stockpile reductions represent a move in the right direction, their benefits will be undermined if the administration replaces the old weapons with new ones.

Therefore, the target list helps drive the weapons stockpile. The Bush administration's NPR has endorsed significant revisions to the nuclear war planning process, including broadening the scope of targets. For instance, this administration is the first to make an official policy out of explicitly targeting non-nuclear states, such as Syria and Iran. The NPR also adds chemical and biological weapons sites to the target lists for nuclear weapons.

MAKING IT EASIER TO GO FROM NUCLEAR PLAN TO ACTION

A central goal of the NPR is to make nuclear war planning more rapid and adaptive. The virtue of adaptability in nuclear war fighting is that it permits quick, on-the-fly changes in plans, even after a mission has begun. For example, a plane may have its mission changed in midflight as a result of some new piece of intelligence. The vice of adaptive planning is that it encourages split-second decision making in matters of when and where to ignite nuclear destruction. It makes a greater number of nuclear strike options available to the president, and it makes it possible to move quickly from target identification to target destruction.

Up until the early 1990s, the military used the strategic warfare planning system (SWPS) to create highly choreographed strike missions. Soviet development of an increasingly mobile intercontinental ballistic missile force, the 1991 Gulf War, initiatives to reduce the number of nuclear weapons, and a new focus on the proliferation of weapons of mass destruction all combined to trigger a major modernization of the SWPS in the mid-1990s. The most important shift involved moving from largely preplanned nuclear strike options to more adaptive ones that developed strike options on an ad hoc basis. The modernization programs were completed in 2003, and can reduce comprehensive planning timelines by two-thirds, enabling war planners to develop limited options in just 24 hours. The SWPS is also capable of planning new or enhanced missions for regional and nonstrategic nuclear forces.

Not satisfied with these improved capabilities developed during the 1990s, the Bush administration wants to further upgrade the SWPS.⁵ Contracts and notices for future solicitations were issued in 2003 for the new SWPS modernization (called SWPS-M) to implement initiatives outlined in the NPR.⁶ The SWPS-M will allow government war planners to dramatically shorten the time between developing a strike plan and executing it.

In a troubling trend, the SWPS-M will also encourage the military to rely less on human analysis and decision making and more on computerized models. The planning system itself will automatically determine many of the factors that influence which strike option is chosen. Lockheed Martin's own description of the modernized plan explains that "the system will assess a given situation and present DOD decision makers with potential courses of action. For each option, the war planning system will determine the probability of success, potential collateral damage, timing, and other details. Military officials can then execute one of the options, or change the planning parameters to see a new set of options based on different requirements."⁷

Despite the dramatically altered political landscape, the SWPS-M (which has since been renamed the Integrated Strategic Planning and Analysis Network) will provide the military and political leadership with a nuclear war planning and execution tool that vastly surpasses the capabilities in place during the final phases of the Cold War to fight a global war with the Soviet Union. It is an irony of the Bush administration's nuclear vision that its announced efforts to decrease the importance of nuclear weapons will in fact increase what military planners can do with them and the number of strike options available to the president.

BLURRING THE LINES BETWEEN CONVENTIONAL AND NUCLEAR WEAPONS

In another step toward making the nuclear arsenal easier to use and disarmament harder to achieve, the NPR calls for merging the forces that carry out nuclear and conventional "global strikes." After this merger, for instance, an intercontinental ballistic missile could carry either a nuclear warhead or a conventional warhead. This integration breaks down the boundaries that currently hold nuclear weapons in a special category by themselves—a classification that reserves their use for the gravest and most extreme circumstances. The more the military planning system comes to view nuclear weapons as just another step on the continuum of capabilities for target destruction, the more likely the United States—or some other nation—will be to use them.

Combining nuclear and conventional weapons also poses very specific dangers. In a crisis situation, it may be difficult for other countries to distinguish what kind of weapon a plane or missile is carrying, thus increasing the possibility of miscalculation and escalation. Even more troubling, nuclear warheads may be called upon in a regional conflict to destroy a facility that conventional weapons cannot. For instance, the NPR calls for building nuclear earth-penetrating and low-yield weapons to enhance the capability—meaning utility—of the strike force. The language that surrounds these weapons—bunker busters, mininukes, micronukes, collateral-damage-limiting nukes—suggests a political and strategic shift that could lower the threshold for employing them. Regardless of what they are called, they are still nuclear bombs: a one kiloton earth-penetrating weapon used in a city such as Baghdad would release enough radioactive fallout to kill tens of thousands of civilians.⁸ Yet the end of the Cold War should mean greater, not fewer, obstacles to planning the use of nuclear weapons, fewer, not more, strike options available to the president, and a wider, not narrower, gap between nuclear and conventional weapons.

Today, intercontinental ballistic missiles are the only exclusively nuclear system in the U.S. arsenal. But even here, the NPR proposes incorporating conventional capabilities into strategic ballistic missiles for global strike missions. Conventional warhead prototypes have been tested on ballistic missiles in the past but have not yet been deployed, in part because missiles have not been sufficiently accurate to ensure target destruction using a conventional warhead. The Air Force and the Navy have programs under way to increase the accuracy of their missiles. The Navy's proposed submarine-launched intermediate-range ballistic missile has options for nuclear and

conventional payloads.⁹ The Air Force says it still has a long way to go before making a final determination on a conventional ICBM.¹⁰

A second example of merging conventional and nuclear systems is the Navy's program to convert four older Trident missile submarines to cruise missile platforms. The cruise missile submarines will carry 150 conventional Tomahawk cruise missiles and teams of special operations forces, beginning in 2006. Once converted, the cruise missile submarines will be externally indistinguishable from their ballistic-missile-carrying cousins. Similarly, the conventional Tomahawks, once launched, cannot be distinguished from their nuclear-tipped counterparts.

COMBINING OFFENSE AND DEFENSE

The clearest example of blurring the line between nuclear and conventional weaponry is the composition of the new U.S. Strategic Command (STRATCOM). On October 1, 2002, the Pentagon formally merged the U.S. Space Command (SPACECOM) with STRATCOM, creating a "new USSTRATCOM." The merger was the most important organizational command change in a decade, and resulted in the assignment of four missions:

- ▶ Global Missile Defense
- ▶ Global Strike (the ability to quickly hit any target anywhere on earth)
- ▶ Department of Defense Information Operations
- ▶ C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance)¹¹

Most of these new missions are non-nuclear, and it remains to be seen how they will affect the nuclear responsibilities of STRATCOM, its traditional priority. As the missile defense systems expand, they will likely be integrated with offensive missile and bomber forces to provide additional advantages to U.S. nuclear strike plans. The United States had a modest missile defense system for a few months in the early 1970s that was loosely linked with offensive forces, but under separate command. By contrast, the SPACECOM-STRATCOM merger promises to truly integrate offensive and defensive forces, fostering the impression in the minds of potential adversaries that missile defense could be employed as an adjunct to offensive military operations. In other words, it is conceivable that war planners could design an attack plan in which the United States strikes an enemy first, knowing that the enemy's retaliation will be blunted by our missile defense system or that key facilities could be protected. Merging the offensive and defensive command structures broadcasts to the world that this type of first-strike option could be considered.

Merging the offensive and defensive command structures broadcasts to the world that this type of first-strike option could be considered.

THE RELENTLESS DRIVE FOR NEW AND IMPROVED NUCLEAR WEAPONS

More than a decade after the collapse of the Soviet Union, the United States retains a formidable arsenal of nuclear weapons and plans to build more. Even after planned stockpile reductions take effect in 2012, the United States will still possess 6,000 nuclear weapons. Considering that fewer than 200 warheads on just 24 nuclear missiles could kill more than one-third of the Russian population, one might ask why we need so many weapons.¹²

To a large extent, the number of weapons in our arsenal is based on the interplay between the recommendations in the Nuclear Posture Review (NPR) and the war planning process. The NPR is the administration's overarching blueprint for the future of the nation's nuclear forces. The U.S. nuclear strike plans, including the Single Integrated Operational Plan (SIOP) against Russia and China and the more limited strike options against regional opponents, are the concrete plans that bring the NPR policies to life. If the NPR calls for targeting more countries, then those targets will appear in the war plans. If the NPR calls for also targeting biological weapons, then they will be targeted in the plans. The war plans are not an outline of possibilities for the future but a directive of what weapons must be put in place: for key targets identified in the plan, a warhead must be available and assigned to hit it at all times.

Because the Bush administration has expanded the types of targets to be struck with nuclear weapons, the war plans will demand that we have more specialized weapons to destroy them. The guidance and the nuclear war plans that flow from it thus become an engine that drives the stockpiling of weapons. We could slow this engine down by shifting planning to contingency scenarios as we do for conventional forces. Instead of having a permanent war plan in place that demands widespread and continuous target coverage with thousands of weapons on high alert at all times, contingency war planning would allow planners to scrap large-scale permanent nuclear strike plans and instead assemble attack plans in the event of hostilities with another nuclear state. Given the destructive power of nuclear weapons, having fewer warheads in place at all times would not diminish their perceived power to deter



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enemies. As the NPR makes clear, however, the Bush administration has no intention of abolishing the planning infrastructure left over from the Cold War. Instead, it plans to reenergize the nuclear posture and build new types of weapons.

Not only does this put us at greater risk, as other nations will no doubt respond, but it will also cost taxpayers untold billions of dollars. Approximately \$40 billion, or about 10 percent of the annual military budget, is spent on U.S. nuclear weapons.

STOCKPILE NEAR URBAN CENTER: NELLIS AIR FORCE BASE, NEVADA

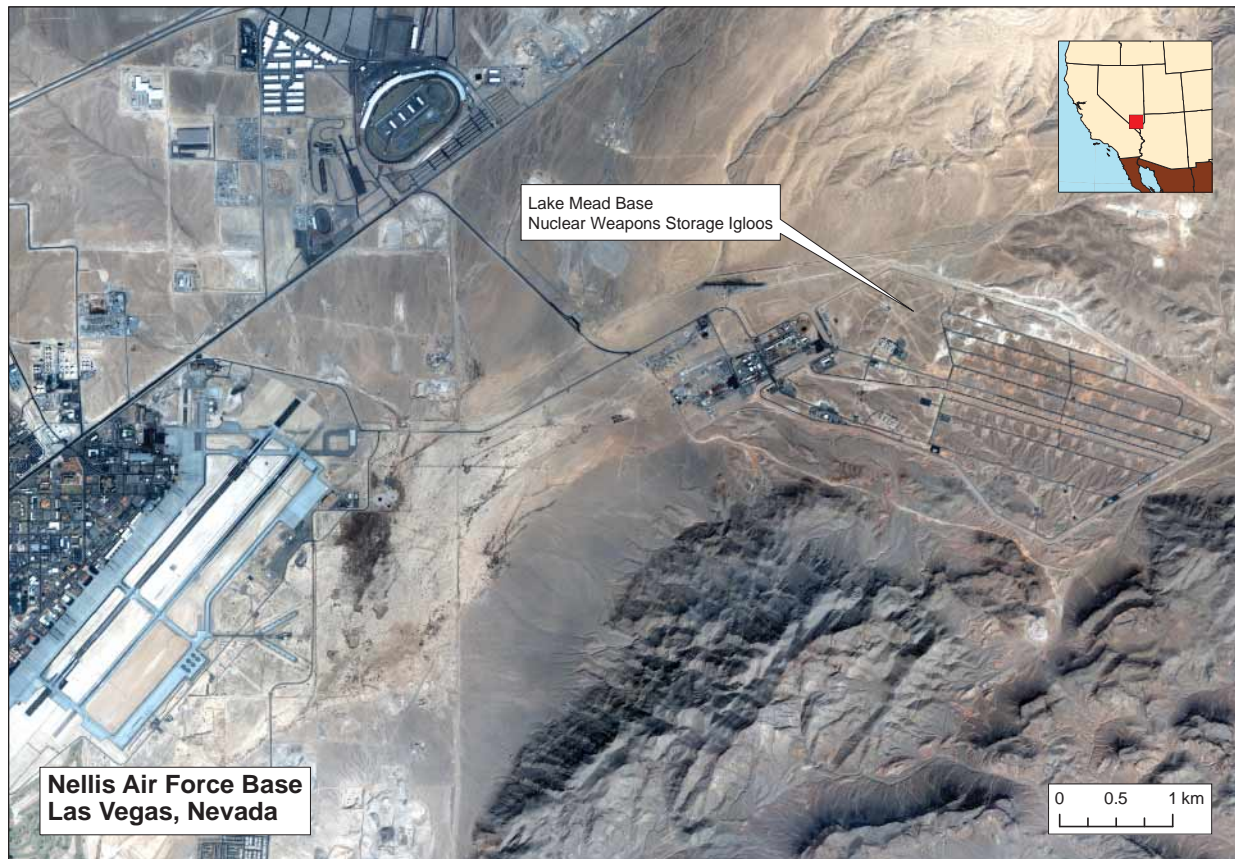
In June 2004, the Bush administration announced that it would reduce the nuclear stockpile from the current level of 10,000 warheads to approximately 6,000 by 2012. While these reductions are a positive step, an arsenal of 6,000 weapons is still many times larger than what is sufficient to fulfill the limited role of deterrence. Thousands of these weapons will remain on high alert, while the rest will still be stored at bases, some of which are near major urban centers.

Nellis Air Force Base, north of Las Vegas, serves as one of two main Air Force nuclear weapons general depots in the United States (the other is at Kirtland Air Force Base in New Mexico—see above). Nuclear weapons are stored at the Nellis Area 2 (formerly Lake Mead Base) at a remote section of the Nellis

complex. They are overseen by the 896th Munitions Squadron, a unit of the Air Force Materiel Command, though the nuclear facility is operated jointly for the Air Force Materiel Command and the Air Combat Command.

Well over 1,000 nuclear warheads of several types are stored at Nellis, including the B61-4, B61-7, and B83-1 bombs. There are also W80-1 warheads from air-launched cruise missiles.

The satellite photo of Nellis Air Force Base and the Lake Mead Base was acquired on March 22, 2002. The circular structure in the northern end of the image is the Las Vegas Motor Speedway, a NASCAR racetrack where more than 100,000 fans gather just four miles away from nuclear weapons.



COMMERCIAL SATELLITE PHOTO PURCHASED FROM DIGITALGLOBE (ACQUIRED MARCH 22, 2002)

Under the Bush administration's plans, this amount is likely to increase, forcing the American taxpayer to pay for a host of redundant or unnecessary weapons.

THE NUCLEAR WAR PLAN

In October 2003, the new Single Integrated Operational Plan took effect, the first SIOP since the Moscow Treaty agreement entered into force on June 1, 2003. The focus of the new SIOP remains basically the same as the previous one: holding Russian and Chinese nuclear, command, control, communications, and leadership targets at risk with thousands of nuclear warheads ready to launch at a moment's notice.

The new SIOP reflects several modest reductions and redeployment of forces. These include the removal of one nuclear-powered ballistic missile submarine with 24 missiles (144 warheads) and 17 Peacekeeper ICBMs (170 warheads).¹³ These changes, however, represent routine modifications to the SIOP that occur annually as new or upgraded weapon systems are deployed and older ones retired. While President Bush justified the NPR and the Moscow Treaty with the need to end the doctrine of mutual assured destruction, no new guidance has yet been issued by the president or the secretary of defense that orders the reductions necessary for such a change in U.S. nuclear strike planning. President Bill Clinton issued the latest presidential guidance in November 1997 (PDD-60), and Secretary of Defense William Cohen issued the latest Department of Defense guidance in 1999. Thus, despite its rhetoric about reducing the role of nuclear weapons, the Bush administration has done little to move U.S. nuclear planning decisively out of the Cold War. The following descriptions of just a few of the plans to reshape the nuclear forces demonstrate that the administration intends to maintain vast stockpiles of nuclear weapons far into the future at a significant cost to the American public.

The risk that a conventional ICBM attack against a rogue state could be misunderstood by Russia or China as a preemptive nuclear strike is a dangerous gamble.

INTERCONTINENTAL BALLISTIC MISSILES

Despite inherent design limits, plans are now under way for a new intercontinental ballistic missile (ICBM). In 2002, the Air Force issued a "mission need statement" and began soliciting conceptual designs for a missile to be deployed in 2018. Some of these new ICBMs may be conventionally armed. An ICBM has the advantage of being able to strike a target anywhere in the world in less than 30 minutes. But it suffers from several important drawbacks. First, the missiles are not as accurate as some precision-guided munitions. Second, they are an expensive way to attack a target, by comparison with other alternatives. Third, and most significantly, current technology and procedures make it impossible for Russia or China to distinguish between ICBMs with conventional payloads and those carrying nuclear warheads. The risk that a conventional ICBM attack against a rogue state could be misunderstood by Russia or China as a preemptive nuclear strike is a dangerous gamble.

In accordance with the START II Treaty signed in 1993, earlier plans called for converting all ICBMs with multiple warheads to carry only one warhead. But the

HIGH ALERT LEVELS: NAVAL SUBMARINE BASE KINGS BAY, GEORGIA

The U.S. nuclear strike plans form a directive of what weapons must be deployed. For every target identified in the plan, a warhead must be available and assigned to hit it at all times—regardless of our current relationship with Russia or the other identified countries. Since the Bush administration’s nuclear weapons policies call for expanding the list of potential targets, the number of weapons on high alert will expand as well. This means a significant number of weapons will be deployed with active forces.

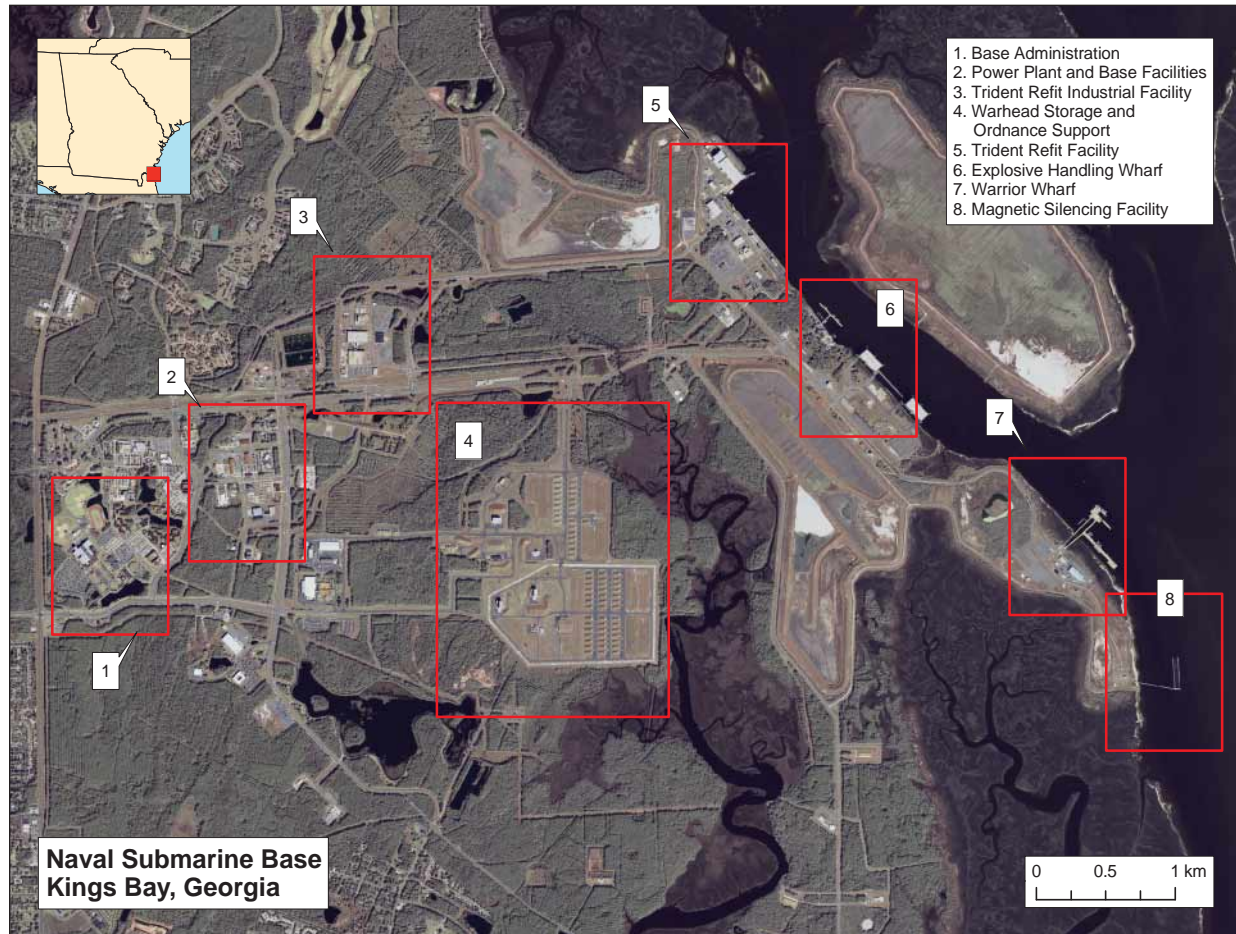
There are already 1,500 nuclear warheads assigned to the Naval Submarine Base Kings Bay, Georgia, near Jacksonville, Florida. The base is the homeport for the Navy’s Atlantic-based Trident II–equipped (Ohio class) ballistic missile submarine force.

The Strategic Weapons Facility Atlantic is responsible for storage, handling, and maintenance of nuclear weapons at Kings Bay. Because the number of manufactured W88 Trident II warheads was not sufficient to arm the original 10 Trident II–capable submarines,

W76 Trident I warheads from retired Atlantic fleet Poseidon submarines arm the force as well. There are also W80-0 warheads for sea-launched cruise missiles that could be redeployed on attack submarines.

The satellite photo of Kings Bay Naval Submarine Base was taken by the DigitalGlobe Corporation’s QuickBird satellite on October 23, 2003. The training and base administration facilities stand in the western section of the naval base. Industrial and missile/warhead storage are located in the central portion of the base, and the piers are some 5 kilometers east of the base entrance. No submarines are visible in the satellite photo, but likely there are several submarines within the covered refit dry dock or explosive-handling wharf.

The base is home to 42 nuclear weapons storage vaults. They presumably lie within a double-fence enclosure that also houses the vertical-missile packaging buildings where warheads are mounted atop missiles. In the satellite photo, a single 18-foot-long white truck is parked in front of one of the warhead storage vaults.



COMMERCIAL SATELLITE PHOTO PURCHASED FROM DIGITALGLOBE (ACQUIRED OCTOBER 23, 2003)

Bush administration scuttled the START II Treaty in 2002 and is now considering reversing course and leaving more than one warhead on a number of these missiles.¹⁴ Because we scrapped the treaty, Russia has decided to retain its large SS-18 and SS-19 missiles with MIRVs (multiple independently targeted reentry vehicles). With the ongoing phase-out of the U.S. MX ICBM, more warheads are required to cover the Russian targets. One reported plan is to maintain a total of 800 warheads for the 500 missiles. This unfortunate development perpetuates a Cold War–like competition with Russia and illustrates that Russia remains in the crosshairs. It is a direct result of the Bush administration’s abandonment of the START II Treaty, which would have banned MIRVs on land-based ICBMs.

NUCLEAR SUBMARINES

Despite the fact that the United States has a large and functioning class of ballistic missile submarines, the Pentagon is currently studying two options for a new Trident missile submarine (SSBN): a variant of the Virginia class nuclear-powered attack submarine or a dedicated SSBN based on either a new design or a derivative of the Trident. The new project would begin in 2016 for introduction into service in 2029.

To arm these new submarines, the Navy began to solicit proposals from industry in October 2003 for a type of missile that will actually put the submarines in greater danger: the submarine-launched intermediate-range ballistic missile, which includes both nuclear and conventional payload options.¹⁵ The missile would be significantly smaller than the current Trident II, and the shorter range would represent a major change in current operations and policy. Existing SSBNs are equipped with long-range missiles specifically to increase the submarines’ survivability by enabling them to patrol much greater areas to avoid detection. An intermediate-range ballistic missile with a range of 1,000 kilometers to 5,500 kilometers—as opposed to the more than 7,400 kilometers of the Trident II D5—would limit this patrol area considerably and require the submarines to move much closer to land to launch their missiles. This plan emerges at the same time the Navy is otherwise warning that potentially hostile nations are increasingly acquiring more advanced submarines that can threaten U.S. submarines.

Deploying an intermediate-range ballistic missile at sea also breaks with the spirit of the Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles signed by the United States and the Soviet Union in 1987. Although the treaty only banned land-based missiles, deploying a sea-based weapon with the same range would strongly contravene the intentions of the treaty and send the wrong signal to other nuclear powers.

In addition, although the Trident II missile is the most accurate submarine-launched ballistic missile in the world, the Navy began a three-year development program in 2004 to steer warheads delivered by the missile with global-positioning-satellite-like accuracy. This GPS-like accuracy would permit the United States to deploy conventional warheads on submarine-launched ballistic missiles but would also enable existing nuclear warheads to become much more lethal, likely triggering Russian and Chinese concerns and countermeasures.

The administration also calls for increasing the number of Trident II missiles from the 390 missiles initially planned to 568 by 2013, at an additional cost of \$12.2 billion. The total cost of the program is now \$37.5 billion, or \$66 million per missile. In his budget proposal for Fiscal Year 2005, the president requests funds to purchase five Trident II D5 missiles. A total of 396 Trident II missiles had been purchased by 2002.

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COMMAND, CONTROL, COMMUNICATION, AND INTELLIGENCE

The Nuclear Posture Review also proposes spending billions of dollars on a sweeping expansion of command, control, communication, and intelligence programs. It includes several components. As with many of the Bush administration's nuclear programs, the nuclear command and control upgrade seems intended for fighting a global nuclear war with the Soviet Union of the past, rather than addressing the pressing needs of the present.

For instance, a constellation of advanced extremely high frequency (AEHF) military satellite communications (MILSATCOM) satellites is being developed to replenish existing "Milstar" satellites and to provide additional capabilities. These upgrades are designed to allow the systems to survive and communicate during a nuclear war. The launch of the first AEHF, called Pathfinder, is scheduled for 2007, with three more AEHF spacecraft to begin operation in 2008. Cost estimates for the AEHF communications satellite program grew by \$1.2 billion from 1999 through 2001.¹⁶

To integrate the enlarged command and control capabilities, the Air Force MILSATCOM terminals program is developing equipment at a cost of more than \$2.3 billion to enable users to communicate via a number of satellite systems—Milstar, AEHF, Ultra High Frequency, Wideband Gapfiller System, Defense Satellite Communications System, and other military and commercial satellites. The program is design to support aerospace expeditionary force requirements and maintain essential strategic connectivity for nuclear forces.

THE WAR-BUILDING MACHINE

Designing and building all of these new delivery, planning, and communications systems costs billions of dollars. Increasingly, a few giant corporations have come to dominate military spending through the concentration of power via mergers and acquisitions. This trend began in the 1980s but became particularly pronounced in the 1990s. It continues in the new century, with a vengeance.

The growing concentration of military contracting in an ever-shrinking group of contractors can lead to uncompetitive and inefficient practices. With the loss of competition, contractors have little incentive to cut costs or improve their products. Worse, these companies' ongoing, even symbiotic, relationship with the military creates a dynamic whereby security threats are identified to meet the needs of the companies' bottom lines and the needs of certain constituencies in the Pentagon and on Capitol Hill, rather than the real needs of national defense.

Approximately \$40 billion, or about 10 percent of the U.S. military budget, is spent on nuclear weapons. Many of the giants of corporate America are the military's main contractors. The top five companies, in terms of Pentagon prime contract awards, are Lockheed Martin, Boeing, Northrup Grumman, Raytheon, and General Dynamics. Their combined take for Fiscal Year 2002 was \$56.3 billion, 52 percent of the amount spent on the top-grossing 100 contractors and 32 percent of the entire Department of Defense procurement budget. By comparison, in Fiscal Year 1996, the total for the top five was 44 percent of the top 100 total and 25 percent of the Department of Defense total.

For Fiscal Year 2002, the Army, Navy, and Air Force had equal portions of the total, and the same five giant contractors dominated.¹⁷ The top five states receiving Department of Defense prime contracts were California (\$23.8 billion), Virginia (\$18.1 billion), Texas (\$13.7 billion), Florida (\$7.0 billion), and Arizona (\$6.7 billion), which accounted for almost 44 percent of the total. The Air Force was first in California, the Navy first in Virginia, and the Army first in Texas. Wyoming was in last place with \$79 million, with Montana, Delaware, Idaho, and West Virginia just above it.

Many of the same corporations manage the Department of Energy facilities that make up the nuclear weapons complex. From the time of the Manhattan Project, the facilities have been managed in government-owned, contractor-operated relationships. For example, Lockheed Martin (the top-grossing contractor) manages Sandia National Laboratories; Bechtel (the 17th highest grossing contractor) is the contractor or co-contractor of the Nevada Test Site, Hanford, and Pantex; and Honeywell (15th highest grossing) is the contractor or co-contractor of the Kansas City Plant and the Pantex Plant.

More than 40 years ago, President Dwight Eisenhower warned the nation to "guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist." In ways that he scarcely could have imagined, this power has become even more concentrated and costs taxpayers even more money.

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NUCLEAR INSECURITY

*A Critique of the
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September 2004

CHAPTER 3

A CRUSADE FOR MISSILE DEFENSE

Since the night 21 years ago that Ronald Reagan first proposed a space-based missile defense system, the futuristic vision dubbed Star Wars has gripped many defense advocates who are now in the Bush administration. Their enthusiasm has not been diminished by the end of the Cold War and the fall of the Soviet Union, nor by the program's many technical and political flaws or exorbitant costs. Nor has the pressing concern of the war on terror, in which missile defense plays no role, distracted its proponents from pursuing this costly endeavor. Indeed, the perceived need for missile defense—perceived at least by its supporters—has been sufficient to overcome many troubling problems and to make the viability of such a system an article of faith, rather than a matter for rigorous scientific and technical assessment.

An objective analysis reveals that going forward with a missile defense system will have a number of undesirable ramifications. The most obvious response is that it will spur certain nations to build more or better offensive weapons to overwhelm the defense. The logic is as old as warfare itself and was the dynamic that the 1972 Anti-Ballistic Missile Treaty was intended to prevent. Yet President Bush unilaterally abrogated that treaty—alarming allies and potential adversaries alike—to pursue a gravely misguided plan that will endanger our national security. The most troubling aspects of missile defense include the following:

- ▶ Russia, China, and other nations will likely escalate their arms development in order to circumvent our defense systems. Our own history provides a powerful example. When the United States was confronted with the threat of a proposed Soviet missile defense system in 1968, U.S. war planners targeted the system with 100 megatons of nuclear firepower.
- ▶ The Bush administration's planned missile defense systems cannot stop the most likely security threat of our time: terrorists smuggling weapons of mass destruction into the United States via ship, airplane, or truck. Nor can it stop a concerted attack by a major nuclear power.

Nonetheless, administration plans call for spending more than \$53 billion on missile defense research and development between 2004 and 2009, in addition to the \$100 billion already spent on missile defense starting in the early 1960s.¹⁸ Congress should redirect the bulk of that money toward the far more pressing threats of terrorism and proliferation.

PIE-IN-THE-SKY PLANS

The administration plans to integrate missile defense into what it calls the new triad. The first leg of the new triad is composed of offensive strike forces, made up of the old nuclear triad of intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and bombers plus conventional forces. The second leg is missile defenses, and the third is a revitalized and responsive defense-industrial infrastructure that will be able to build a new generation of nuclear weaponry. This new triad, the Nuclear Posture Review asserts, will enhance U.S. ability “to use its

MISGIVINGS OVER MISSILE DEFENSE: FORT GREELY, ALASKA

Later this year, the Bush administration is planning to declare that interceptor missiles at Fort Greely, Alaska, are operational, despite the fact that critics inside and outside the government have raised fundamental questions about the technical capabilities of the program. It has not been adequately tested, and some critics say that simply deploying the missile defense system will spur other nations to build enough weapons to overwhelm it. Nonetheless, the administration is moving forward with its missile defense plans.

Construction of the silos at Fort Greely began in July 2002, following the demise of the Anti-Ballistic Missile Treaty. The silos will house interceptor missiles for the U.S. ground-based, midcourse national missile defense system designed to shoot down ballistic missiles that North Korea might deploy sometime in the future. Under current plans, 20 interceptors will be in place at Vandenberg Air Force Base in California and at Fort Greely by the end of 2005.

The satellite photo of Fort Greely was taken on July 24, 2003. It shows the construction site for the defense system as 1.57 square kilometers in area. The complex includes launch silos; an interceptor receiving and processing facility; interceptor storage facilities; headquarters; a silo interface vault; a mechanical/electrical equipment building; an administration and maintenance facility; a backup power generator with fuel storage; security (fencing, lighting, monitoring equipment); sewage treatment (septic field); a steam plant; a substation; a readiness station; a security building; an entry control station; a fuel unloading facility, and a water supply facility.



COMMERCIAL SATELLITE PHOTO PURCHASED FROM DIGITALGLOBE (ACQUIRED JULY 24, 2003)

power projection forces” and improve its “ability to counterattack an enemy.” Missile defense may also provide the president with “an option to manage a crisis” involving “one or more” opponents with weapons of mass destruction. Further, the Nuclear Posture Review says, defenses can have a “dissuasive effect” on potential adversaries by making it “more arduous and costly for an adversary to compete militarily with or wage war against the United States.”¹⁹

In pursuit of its missile defense objectives, the administration is proceeding with a variety of programs. The Airborne Laser Program, begun in 1996, envisions using a high-energy laser aboard a modified 747-400 airplane to shoot down short- or medium-range ballistic missiles. The plane will have to detect the launch of a missile while it orbits outside enemy territory, track it, and then fire a high-energy laser to destroy the missile within three or four minutes while it is still in its boost phase, a formidable technological challenge. The system is not designed at this point to shoot down ICBMs. The program is already \$1 billion over budget, and the Pentagon wants to spend \$3 billion more from 2004 to 2009.

The United States plans to begin deployment of a limited ballistic missile system, known as the ground-based midcourse defense interceptor system, at Fort Greely in Alaska and Vandenberg Air Force Base in California by the end of 2004. The system is intended to grow to 20 silo-based interceptors in the near term, and up to 100 interceptors in the future. A third planned system will be based at sea. Radars and missiles will be deployed on 3 cruisers and 15 destroyers to counter short- to medium-range missile threats. The program calls for equipping 3 Aegis cruisers with 10 SM-3 missiles by the end of 2005 and outfitting 10 Aegis destroyers with radars.

McNamara recognized that the Soviet Union would view an American missile defense as an offensive edge and develop thousands more weapons to overwhelm it.

OFFENSE, NOT JUST DEFENSE

Advocates of these systems profess that they are purely defensive. But in fact, possessing missile defenses grants an offensive advantage. In the Cold War, we struck a balance with the Soviet Union certifying our common predicament of mutually assured destruction. Each nation knew that if one launched a first strike, the other nation could retaliate with devastating consequences. With such a destructive response looming, neither nation took the offensive step of launching weapons. If, however, the United States possessed a missile defense system, we could attack Russia knowing that our missile defense would blunt Russia’s retaliation. In this dramatically altered terrain, a nation could launch a first strike and significantly limit the consequences.

Even some of the boldest Cold Warriors recognized that possessing missile defenses could be viewed as aggressive. In the depths of the arms race with the Soviet Union, Secretary of Defense Robert McNamara took the counterintuitive step of opting not to build an anti-ballistic missile defense system. He recognized that the Soviet Union would view an American missile defense as an offensive edge and develop thousands more weapons to overwhelm it, and what was already a feverish arms race would become worse. The Soviet Union agreed, and together with the United States, it entered into the 1972 Anti-Ballistic Missile Treaty, which severely restricted the deployment and testing of missile defense systems.

Even Ronald Reagan warned in his Oval Office speech proposing development of a missile defense system that “if paired with offensive systems, [missile defenses] can be viewed as fostering an aggressive policy.”²⁰ But the Bush administration’s Nuclear Posture Review nevertheless emphasizes developing missile defense systems to augment offensive capabilities. Indeed, the administration’s relentless pursuit of missile defense systems seems an admission that it believes nuclear deterrence may have lost some of its credibility in the post–Cold War era.

A RECIPE FOR ESCALATION

Despite its well-documented ability to trigger arms escalation, the administration’s plan for missile defense is based on the erroneous assumption that potential foes will do nothing to alter their own offensive plans in the face of our defensive systems. Since the very beginning of the political dialogue around the Reagan Star Wars proposal, opponents of missile defenses have observed that even if a system could be devised that could effectively destroy an incoming missile early enough in flight to render it harmless to U.S. territory, Russian planners would surely build in countermeasures to confuse or defeat American defenses—deceptive measures, more missiles, or more MIRVs, for example. Worse, critics point out, giving potential adversaries fresh incentive to increase their arsenals in anticipation of deployment of American defenses is, on its own, destabilizing.

The administration’s arguments simply ignore the problem, maintaining that missile defenses should be of no concern to the world’s other large nuclear powers. According to Douglas J. Feith, undersecretary of defense for policy, “Our missile defenses will be no threat to Russia. Their purpose will be to protect against limited missile attacks from an increasing number of possible sources—but not against the thousands [*sic*] of missiles in Russia’s arsenal.”²¹ Feith argues that a missile defense system “will have virtually no effect on Russia’s capabilities,” and concludes that “there is no incentive for Russia to spend scarce resources to try to overcome them.”²² Note Feith’s assumption that Russia will continue to retain “thousands” of weapons for the indefinite future, thereby disposing of the joint Russian–U.S. obligation under the Nonproliferation Treaty to eliminate their nuclear arsenals.

Russian nuclear war planners may not necessarily share Feith’s assessment. Prudent military planners work on the basis of capabilities rather than intentions, which are much harder to divine. Actions and hardware speak louder than words when militaries view one another. If we possessed missile defenses, Russian planners would have to assume that our defense and offense systems are integrated. Undoubtedly, they would feel compelled to develop more—or more evasive—weapons to outstrip our offensive advantage.

A similar situation would confront China, which has long had the ability to put multiple warheads on its ballistic missiles and has chosen not to do so. Currently fewer than 24 Chinese single-warhead missiles can reach the United States. A guaranteed way to increase that number would be for the United States to deploy a missile defense system.²³ Proceeding with missile defense could create a domino

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effect. After China reacted to the United States, then India might react to China, and Pakistan might react to India, each building more weapons than they otherwise would—and each adding to the amount of nuclear materials potentially available to interested terrorists.

To gain some insight into a possible response to an American missile defense system, it is useful to examine the U.S. response when it was faced with the prospect of a Soviet anti-ballistic missile system around Moscow in 1968.²⁴ Declassified documents reveal that U.S. war planners at the time targeted all of the components of the Soviet ABM system with more than 100 megatons of nuclear firepower using Minuteman and Polaris ballistic missiles. There is a lesson in this for today, for it is naive to suggest that there will be no countermoves to Bush's missile defense system by Russia and China.

A study group of the American Physical Society examined boost-phase missile defense and concluded that it is not feasible against such potential threats as North Korea or Iran.

NO ROLE IN THE WAR ON TERRORISM

With its focus on Cold War tactics, the Bush administration's plans for missile defense fail to address—and compete with—one of the most significant threats of our time: terrorism. The vastly expensive missile defense system is designed to block long-range ballistic missiles, yet only a handful of nations in the world possess the money, brainpower, and technical ability to produce such missiles. Terrorist groups with shifting bases of operation will not have the capability to build, much less launch, a missile from one place to another. More likely, terrorists would use a merchant ship, airplane, or truck to deliver a nuclear weapon, dirty bomb, or biological weapon to an American city. No national missile defense system can prevent that occurrence.

In the post-September 11 environment, the administration offers a "rogue state" justification for missile defenses, maintaining in the Nuclear Posture Review that defenses are a way to "counteract WMD-backed coercive threats" by defeating small-scale missile attacks. But even rogue states could find ways to circumvent a missile defense system. Rather than overwhelming the system with hundreds of warheads as Russia might, emerging nuclear nations could avoid developing a ballistic missile altogether and instead use ship-launched cruise missiles to deliver nuclear or biological weapons to major American cities.

THROWING MONEY AT TECHNICAL PROBLEMS

As if conceptual and political problems were not enough, the administration's plans for missile defense are beset with substantial technical and financial problems. The ground-based midcourse defense system currently being fielded has not been adequately tested, in the judgment of several prominent critics, including the Pentagon's own director of test and evaluation.²⁵ In addition, several recent reports have raised fundamental questions about the technical capabilities and the cost of various missile defense programs being pursued by the Bush administration. For example, a study group of the American Physical Society examined boost-phase missile defense and concluded that it is not feasible against such potential threats as

North Korea or Iran.²⁶ Even in the face of this and other similar reports, the administration remains emphatic about missile defense, requesting \$10 billion for the system in Fiscal Year 2005, a \$1 billion increase over the 2004 appropriation.

Whether the interceptors will be able to provide a meaningful missile defense capability is unknown, and so far the only real product of the effort to develop a space-based detection and tracking capability has been an enormous bill to the taxpayer. In a highly critical report in January 2004, the General Accounting Office (GAO) decried the Department of Defense's planning and fiscal integrity in the area of space-based systems. After having spent billions of dollars over the past two decades to develop low-orbiting satellites (the space-based infrared system—SBIRS Low) to track ballistic missiles throughout their flight, the GAO said, the Department of Defense has yet to launch a single satellite to perform this capability.²⁷

Research and development into a SBIRS High has so far cost \$8.6 billion. Plans call for four satellites in geosynchronous orbit and two in highly elliptical orbit. The first launch was scheduled for 1999 but has slipped to 2007. Nonetheless, in what many regard as throwing good money after bad, Congress and the president added \$2 billion to the program in 2002, and \$1.4 billion in the following two years. With so little to show for all that money and effort, the Pentagon has reportedly begun to study alternatives to the satellite. The SBIRS is among a special category of weapons systems that has grossly exceeded its budget.²⁸

Buoyed by the hope that more research will solve the serious technological problems, the White House, Pentagon, Congress, and missile defense contractors push ahead. Contractors are happy to receive huge sums of money, and members of Congress are happy for the infusion of dollars and jobs into their states and districts. The White House and the Pentagon continue to promote the fiction of being able to defend against ballistic missiles, no doubt because of the obvious political appeal. But the harsh reality is that after 50 years of research and development, at a price exceeding \$100 billion, the technical challenges have not been overcome, and the hope of an effective defense against ballistic missiles remains a chimera.



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CHAPTER 4

PROLIFERATION AND TERRORISM CONCERNS

U.S. national security rests not only on deterring the use of nuclear weapons by other weapon states but also preventing terrorists from acquiring nuclear weapons. The chances of terrorists obtaining a nuclear weapon increase as stockpiles of nuclear weapons-usable material grow and the knowledge to turn them into weapons expands.

And yet, the Bush administration has launched two international initiatives to develop new nuclear reactors and their fuel. At first blush, the effort may seem worthy, even benign. But a closer examination demonstrates that these initiatives will assist non-nuclear weapons states (some of which formerly had clandestine weapons programs) to develop capabilities that would permit them to rapidly produce large quantities of nuclear weapons-usable materials. Considering the risk that terrorists might purchase or steal these materials and the difficulty of detecting the materials' entry into the United States, this poses a grave threat to American homeland security.

SUPPORTING THE GROWTH OF NUCLEAR WEAPONS MATERIALS ABROAD

The administration's programs will help selected nonweapon nations to identify, design, and ultimately deploy advanced commercial nuclear power reactors and fuel cycle technologies. But these programs would also develop the expertise and facilities useful for producing and recovering plutonium, thus posing potential threats to U.S. national security in the future. The programs, under the Department of Energy's Office of Nuclear Energy, Science, and Technology, are the Generation IV (Gen IV) advanced reactor initiative and the Advanced Fuel Cycle Initiative (AFCI).

Specifically, the programs would help nonweapon states construct pilot reprocessing plants, train experts in plutonium and actinide chemistry and plutonium metallurgy, and encourage them to reprocess nuclear fuel to recover plutonium—the primary ingredient in modern nuclear weapons. Since some regimes may become less stable in the future, the two programs could even lead to the spread of nuclear weapons materials to other states or even to terrorists.

The Department of Energy has expanded the Gen IV and AFCI programs into an international cooperative effort. International partners include five nonweapon states that formerly operated clandestine nuclear weapons programs: South Africa, Argentina, Brazil, South Korea, and Switzerland. In the past, the Department of

Energy required its programs to assist in developing Gen IV reactors only if the reactors could meet safer and more proliferation-resistant standards than current U.S. reactors do. The Bush administration has abandoned those criteria, and has instead decided to jointly develop several nuclear reactor types that had failed previously on technical, security, or economic grounds and that continue to pose increased proliferation risks to the United States.

Three of the six reactor types are “fast reactors” whose fuel cycles typically rely on nuclear fuel reprocessing and the recycling of plutonium, which is sometimes called a closed fuel cycle because the plutonium is theoretically recycled through the reactor before disposal. Four of the reactor types that rely on a closed fuel cycle are grossly uneconomical and are less proliferation resistant than the current light water reactors operating in the United States on an open cycle without reprocessing. Thus, this international research and development effort will not lead to a commercially viable, competitive nuclear fuel cycle. Nevertheless, if nonweapon states begin work on these technologies, they will develop much of the expertise, facilities, and materials to build nuclear weapons if they so choose.

In a troubling sign, Brazil is refusing to sign the International Atomic Energy Agency’s Additional Protocol to strengthen international safeguards. The Department of Energy is also sponsoring research on advanced nuclear fuel cycles in South Korea, even as the United States is trying to curb reprocessing and nuclear weapon development in North Korea.²⁹

It requires only a few kilograms of weapons-usable material to build a powerfully devastating nuclear bomb.

IMPLICATIONS FOR HOMELAND SECURITY

As the amount of nuclear weapons materials expands in the world, so does the likelihood of these materials falling into terrorists’ hands. It requires only a few kilograms of weapons-usable material to build a devastating nuclear bomb. For instance, a crude terrorist bomb might be one kiloton—500 times the explosive power of the Oklahoma City bomb plus radioactive fallout. In comparison, the first-generation nuclear weapons dropped on Hiroshima and Nagasaki had explosive yields of 15 kilotons and 20 kilotons, respectively. Those weapons resulted in the deaths of 140,000 and 70,000 by the end of the year from blast and prompt radiation. Because these weapons were exploded at an altitude of 1,900 and 1,650 feet, the fireball did not touch the ground, and consequently, there was very little local radioactive fallout. Under some scenarios, because of the added fallout, a 1 kiloton nuclear device exploded at ground level could cause casualties that rival those of Hiroshima or Nagasaki.

There are only two types of explosive fissionable materials available to terrorists—highly enriched uranium and plutonium. As discovered during the Manhattan Project, to achieve an explosive yield equivalent to something on the order of a kiloton, it is easier to construct a nuclear weapon using highly enriched uranium than to use plutonium, although the amount of fissionable material is considerably more in the case of highly enriched uranium. The stocks of plutonium spread around the world are typically better secured than the stocks of highly enriched uranium, which

is used to fuel numerous civil research and test reactors and naval reactors. Also, highly enriched uranium is harder to detect than plutonium. Plutonium emits copious neutrons, and the natural background neutron radiation is very low. On the other hand, highly enriched uranium outside of nuclear reactors or critical assembly emits too few neutrons to be picked up by a detector. Moreover, highly enriched uranium has a low radioactivity concentration, and the gamma rays emitted by it and its radioactive daughter products are mostly of low energy and easily shielded.

OUTSIDE OUR BORDERS: AVIANO AIR BASE, ITALY

The United States is the only nation that has nuclear weapons deployed outside its borders. For instance, U.S. nuclear weapons are currently deployed to two air bases in Italy: Aviano in the north and Ghedi-Torre, an Italian base on the Adriatic coast.

With the closure of U.S. operations at Torrejon in Spain in 1992, the 401st Tactical Fighter Wing moved to Aviano and was redesignated the 31st Fighter Wing in April 1994. Two F-16 fighter squadrons (the 510th and the 555th) moved to Aviano from Ramstein Air Base in Germany to permanently equip the wing. Headquarters for the 16th Air Force, also at Aviano, is responsible for the southern region of NATO and the Mediterranean.

Nuclear weapons have been stored at Aviano since at least the late 1950s. They were initially stored at a secluded weapons storage area known as Area D. Weapons storage and security system vaults in selected hangars achieved initial operational capability in January 1996, supplementing Area D. The sole type of nuclear weapon there today is the B61 bomb. We estimate that approximately 50 bombs are housed in Aviano's 18 vaults.

The photograph of Aviano Air Base was taken by DigitalGlobe's QuickBird satellite on October 15, 2003. This central, fenced portion of the base occupies about 5 square kilometers in area. Groups of protective aircraft shelters—51 shelters in all—border a single 3,200-meter runway. Three 400-square-meter hangars sit at the northern end of the base adjacent to the runway. Eleven F-16 aircraft can be seen in this satellite photograph: five in aircraft parking areas at the southwest end of the runway and six farther from the runway near protective aircraft shelters.



COMMERCIAL SATELLITE PHOTO PURCHASED FROM DIGITALGLOBE (ACQUIRED OCTOBER 15, 2003)

At a cost of hundreds of millions of dollars, the Department of Homeland Security's Customs and Border Protection Agency is installing hundreds of radiation portal monitors at seaports and border crossings. These monitors will detect plutonium and numerous types of "dirty bomb" materials hidden in autos, trucks, and cargo containers that pass through the portals. But the probability of detecting lightly shielded, highly enriched uranium is exceeding low. Anyone smart enough to construct even a crude nuclear device with highly enriched uranium is likely to know how to smuggle it through these portal monitors.

We must have a different strategy for protecting against highly enriched uranium. We must get it out of commerce and naval propulsion, reduce the military stocks, and improve security at the source. These are not the responsibility of the Customs and Border Protection Agency. The U.S. government has several programs designed to return foreign stocks of highly enriched uranium and improve security of fissile material inventories in Russia and other states of the former Soviet Union. But in nearly every instance, the programs are not given sufficiently high priority. In some cases, the programs are voluntary. Some Russians, for example, ask why they should convert their research reactors to operate with low-enriched uranium fuel when the United States refuses to similarly convert all of its research reactors.

The United States and the United Kingdom have demonstrated remarkable success in rolling back the Libyan nuclear, biological, and chemical weapons development efforts. The administration, the International Atomic Energy Agency, and our European allies have had less success in curbing the Iranian nuclear weapons development program, and little progress has been made with regard to North Korea, which the Central Intelligence Agency believes could now have eight nuclear weapons. The Bush administration's plans for modernizing the U.S. nuclear arsenal undermine efforts to persuade these countries to refrain from developing their own nuclear weapons, and indeed they encourage those with nuclear weapons, such as Russia and China, to retain and modernize their own arsenals.



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CHAPTER 5

UNILATERALISM AND ARMS CONTROL

From its first days in office, the Bush administration has acted unilaterally where international issues are involved. This approach is evident in its “preemptive war” against Iraq without authorization from the U.N. Security Council, its unilateral withdrawal from the Anti-Ballistic Missile Treaty, and, alone among the declared nuclear powers, its active opposition to the Comprehensive Test Ban Treaty. Operating in this fashion has isolated the United States, fractured long-standing relations with traditional allies, and tarnished the image of the country in the eyes of most of the world’s citizens.

The Bush administration’s intentions in this regard are best articulated in its September 2002 publication, *The National Security Strategy of the United States of America*, and in a companion document, *The National Strategy to Combat Weapons of Mass Destruction*, issued in December 2002.³⁰ Strongly influenced by the terrorists’ attacks of September 11, 2001, the new strategy proclaims that the United States intends to remain preeminent in the world and will act alone to defend itself against any or all enemies.

DECLARING THE RIGHT TO STRIKE FIRST

One significant feature of the new strategy is the emphasis on preemption. The Bush administration has expanded the meaning of preemption by lowering the threshold from a defensive war in response to immediate threat of nuclear attack to include a preventive war against terrorists and rogue states. In the *National Security Strategy*, the administration states that “we will not hesitate to act alone, if necessary, to exercise our right of self-defense by acting preemptively against such terrorists to prevent them from doing harm against our people and our country.”³¹ Of specific concern is the problem of weapons of mass destruction (WMD)—nuclear, biological, chemical, and radiological—that terrorists or dangerous regimes may possess. The U.S. approach to confronting this security challenge “represents a fundamental change from the past. . . . The United States will continue to make clear that it 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.”³²

For decades, of course, preemption has been one of the many contingency strategies of U.S. war plans and weapons policy. Although U.S. leaders never said so

explicitly, the U.S. military always had the option of firing first, that is, of preempting an opponent's expected attack. What has changed is that the once-secret preemption option—never emphasized or announced—has become a central component of declared U.S. policy. It has also been extended to cover not only the prospective imminent *use* of mass destruction weapons, but also their prospective *development or acquisition* as well, along the lines of Israel's preemptive attack on the Hussein regime's Osirak reactor in 1981.

By stating its intent so boldly and openly, the administration hopes to achieve a psychological effect on adversaries. The goal is to dissuade them from taking steps that would give them capabilities to attack or retaliate against U.S. forces, territory, and interests. On the negative side, the declaration has clearly had a detrimental effect on America's image in the world, fraying relations with allies.³³ And while the strategy of preemption is broader than U.S. nuclear policy, it encompasses nuclear warheads, thereby bringing the United States a few steps closer to actually using nuclear weapons in these smaller crises.

Others have proposed alternative approaches to preventing the proliferation of weapons of mass destruction. In lieu of the narrow military perspective of the United States, the European Union proposes a broader approach that encompasses political and diplomatic measures. If in the last resort coercive measures are necessary, then the U.N. Security Council should play a role.³⁴

AN UNSUCCESSFUL FORAY INTO PREEMPTION

The first test case of the new strategy was the preemptive invasion and occupation of Iraq that began in March 2003. The documentary evidence is overwhelming and clear that a faction within the administration prevailed in its determination to go to war with Iraq, leading to a preemptive war. This group initially defended its actions by claiming that Hussein possessed an array of weapons of mass destruction and that he would be inclined to share these weapons with terrorists bent on attacking the United States. When this rationale collapsed for want of evidence on both counts, the fallback then became "we know that Hussein would have sought these weapons again had he remained in power," an even more attenuated form of preemption than either "imminent use" or "imminent acquisition for possible future use." It is a form of preemption that hasn't the remotest sanction in the United Nations Charter or customary international law.

The war and U.S. occupation of Iraq have drained enormous resources from a distinct and more dangerous problem: combating terrorism. Additionally, the intelligence failures to accurately determine the status of Iraqi weapons of mass destruction—the alleged threat to the United States that justified preemption—call into question the wisdom of the new strategy.

UNILATERALLY DISMANTLING ARMS CONTROL

Nowhere has unilateralism been more pronounced than in the area of arms control. The Bush administration's public statements and actions concerning arms control are

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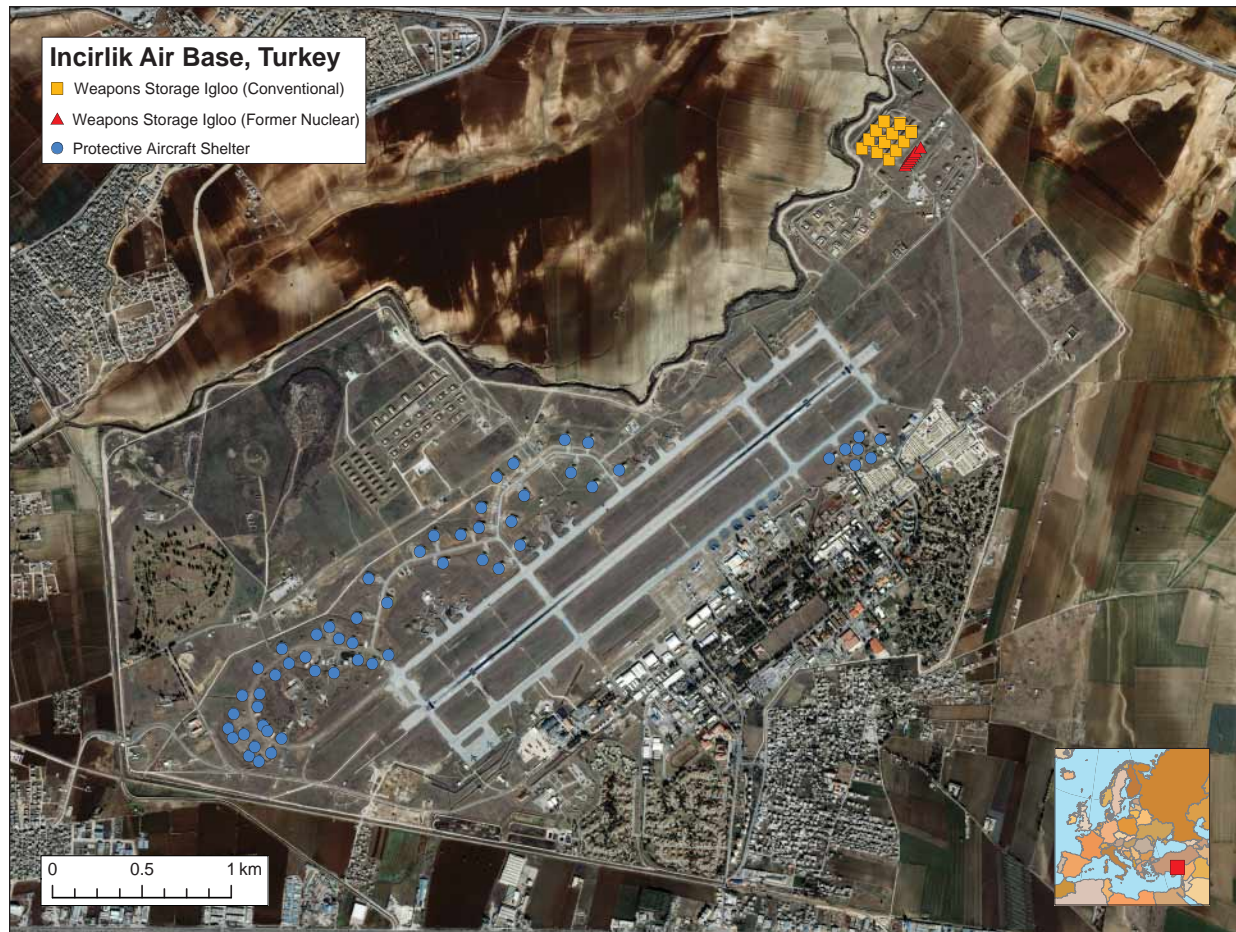
ALLIES IN HARM'S WAY: INCIRLIK AIR BASE, TURKEY

When the United States deploys nuclear weapons in other countries, these nations become potential targets of attack. During the Cold War, the United States had nuclear weapons in 18 countries, making each of them a target for Soviet missiles. Now the United States houses nuclear weapons in just six European countries, but the collapse of the Soviet Union has not assuaged fears of being targeted. Greece recently asked the United States to remove all of its nuclear weapons from Greek bases. This decision could create a domino effect as other allies consider the high cost of storing American nuclear weapons on their soil.

Meantime, Incirlik Air Base, located seven miles east of the city of Adana on the northern Mediterranean coast, remains the sole storage location for nuclear weapons in Turkey. The 39th Wing is the host and nuclear custodian at Incirlik. Twenty-five weapons storage and security system vaults are operational at Incirlik.

The satellite photo of Incirlik Air Base was acquired on December 13, 2002, by the Space Imaging Corporation's Ikonos satellite. The air base is approximately 13.3 square kilometers in area, with one 3,350-meter runway. Several dozen aircraft are visible in the image: F-16 fighter aircraft, B-52 bombers, helicopters, and large transport aircraft. Vehicles and off-loaded containers can be seen in and around the ordnance storage areas. In addition to the base's housing structures, a tent city comprising over 100 temporary living quarters has been constructed at the northeast end of Incirlik. This activity at Incirlik, evident in the satellite photo, shows preparations for Operation Iraqi Freedom, which was launched three months later.

A total of 56 protective aircraft shelters are situated adjacent to the main runway. These shelters are of three kinds, and include a type with conical, wooden-framed doors that were also evident at Aviano, which may be where the weapons storage and security system vaults are located.



COMMERCIAL SATELLITE PHOTO PURCHASED FROM SPACE IMAGING (ACQUIRED DECEMBER 13, 2002)

cloaked in a kind of forward-leaning impatience with the old Cold War status quo of protracted, painstaking negotiations. This kind of stance presented an illusion of creative activity on the arms control front. But this is mostly a mirage, and closer examination reveals the “new thinking” to be nothing more than remnants of the worst days of the Cold War. The administration’s argument seems to be that, for the most part, arms treaties have inhibited the United States in the past from doing things it may have wanted to do, and thus should be avoided in the future. Several older treaties have been jettisoned and others are in jeopardy of being scrapped. The Bush administration considers the START II Treaty to be defunct and has withdrawn the United States from the Anti-Ballistic Missile Treaty altogether. Early on, it scuttled the efforts of other nations to draft a verification protocol for the convention banning biological weapons, but has failed to come up with a proposal of its own. It is conceivable that the Comprehensive Test Ban Treaty, which has never been ratified by the U.S. Senate, could be revoked in a second Bush administration.

The Bush administration’s arms control record could have important negative implications for the continued strength of the nuclear Non-Proliferation Treaty. The administration took office asserting strong rhetorical support for the treaty but rejecting many of the interim steps, such as the Comprehensive Test Ban Treaty, that are supported by virtually all other parties. The Bush administration’s nuclear policy suggests that the Non-Proliferation Treaty’s ultimate goal—complete nuclear disarmament—remains as elusive as ever.

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CHAPTER 6

THE FUZZY MATH OF THE MOSCOW TREATY

From a certain distance, the Bush administration might appear to be engaged in something resembling bilateral arms control, in this case the Moscow Treaty. But a closer look at the substance reveals something quite different.

In 2002, President Bush signed a treaty with President Vladimir Putin called the Strategic Offensive Reductions Treaty (SORT), also known as the Moscow Treaty. This treaty—which fits on less than one typeset page—has shockingly limited goals, and its hollow promises reveal the administration's disingenuous nuclear policy. The Moscow Treaty does not mandate the elimination of a single nuclear missile silo, submarine, missile, warhead, bomber, or bomb, and it allows production and deployment of new nuclear warheads and delivery systems. The treaty provides a misleading public relations cover for a muscle-bound, U.S. nuclear posture that will not reduce future nuclear risks.

A TREATY IN NAME ONLY

When President Bush originally proposed the treaty, he said it would “liquidate the legacy of the Cold War.” In fact, however, the treaty will prolong the United States–Russian nuclear standoff for years to come, and even encourage nuclear proliferation.

No weapons destruction The only limit included in the treaty calls for reducing “operationally deployed strategic warheads” to a maximum of 2,200. The rest of the U.S. nuclear weapons can be put in storage, since the treaty does not require the destruction of a single warhead. Moreover, the treaty does nothing to constrain or eliminate large stockpiles of non-strategic, or tactical, nuclear weapons deliverable by shorter-range systems, such as cruise missiles, and tactical aircraft. While the United States has retired most of its tactical weapons and has decided to dismantle several thousand more between now and 2012, more could have been done to engage Russia in a complementary process.

No verification The treaty has no verification or inspection provisions of any kind. There is no way to confirm that the United States and Russia are complying with the guidelines. Nor does it require improvements in cooperative monitoring and secure storage for thousands of nondeployed Russian warheads, warhead components, and stocks

of nuclear weapons-usable materials. One would have thought, after September 11, that reducing nuclear proliferation risks from Russia would have leapt to the forefront of the Bush administration's nuclear arms control agenda. But achieving meaningful verified controls on Russia's nuclear arsenal would require the United States to reciprocate.

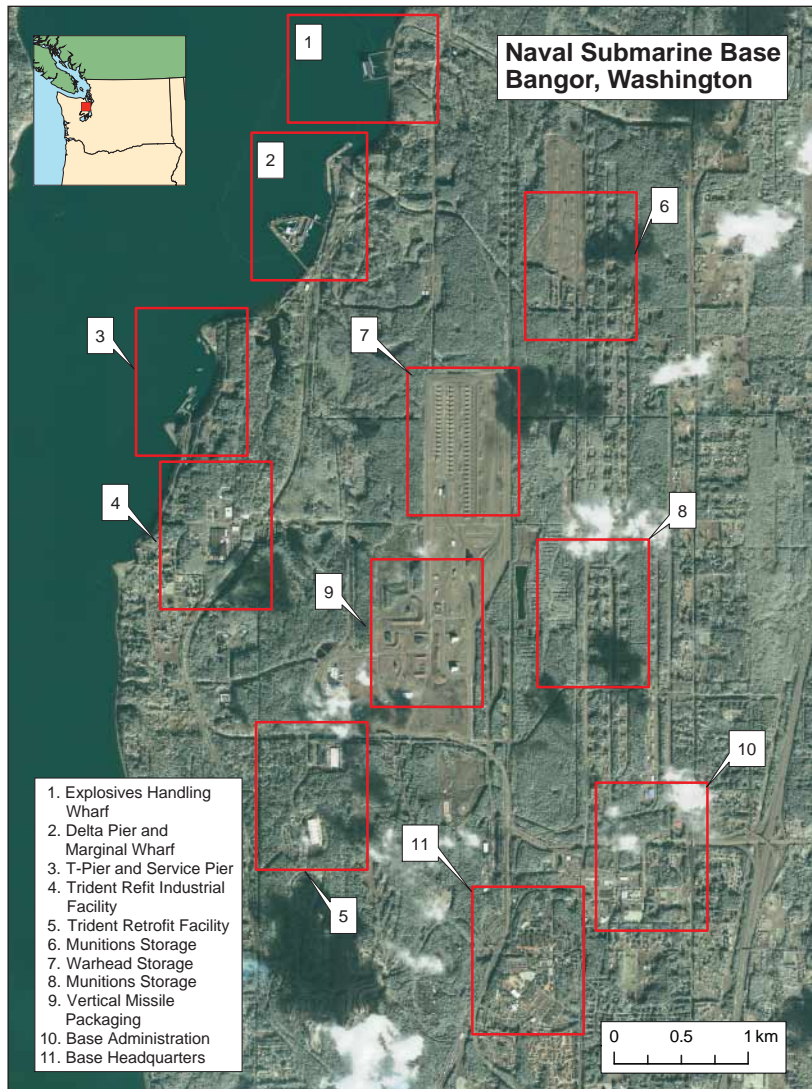
No deadlines The maximum "limit" of 2,200 "operationally deployed strategic warheads" must be met by December 31, 2012 (i.e., 11:59:59 P.M. on December 30).

STILL FIGHTING THE COLD WAR: NAVAL SUBMARINE BASE BANGOR, WASHINGTON

At any given time, a half dozen or more U.S. ballistic missile submarines patrol Atlantic and Pacific waters. The U.S. nuclear war plan requires that their warheads cover designated targets at all times, regardless of the altered relationship with Russia. Thus, the submarines are maintained at high levels of alert approaching the tempo of the Cold War. This operational level is excessive and could be relaxed with no loss of security.

The Pacific patrols are based at Naval Submarine Base Bangor located near Seattle on the Hood Canal. Nuclear warheads supplying the Pacific-based Trident submarines are stored at the Strategic Weapons Facility Pacific in Silverdale, part of the Bangor complex. The base stores nuclear warheads for the three or four submarines that are in port or overhaul at any given time. There are probably around 1,500 warheads assigned to the base, though a portion is always at sea on submarines on patrol. Until recently, only W76 warheads were stored at Bangor, but beginning in 2002, the number of W88 warheads has increased as Trident II missiles are back-fitted onto older submarines. There are also W80-0 warheads for sea-launched cruise missiles that could be re-deployed on attack submarines.

The photograph of Naval Submarine Base Bangor was taken on October 23, 2003, by the DigitalGlobe Corporation's QuickBird satellite. According to its website, the Bangor base occupies 7,201 acres or 29.1 square kilometers. The satellite image captures approximately 41 square kilometers of land—presumably most of the base (1 sq km = 247.105381 acres). Facilities at the naval base include piers and wharfs; industrial facilities servicing the submarines, missiles and warheads; and base administration, training, and housing. Three submarines are visible in the image.



COMMERCIAL SATELLITE PHOTO PURCHASED FROM DIGITALGLOBE (ACQUIRED OCTOBER 23, 2003)

However, the treaty remains in force only until December 31, 2012, so the treaty's only effective restriction is never legally binding on the parties. According to the Bush administration's article-by-article analysis: "Prior to December 31, 2012, each party is free to maintain whatever level of strategic nuclear warheads it deems appropriate." On or after this date, the treaty is no longer in force.³⁵

No binding requirements The treaty imposes no schedule for removing warheads from missiles, bombers, or submarines. Prior to the effective date of the limit on operationally deployed warheads, either side could give three months' notice and withdraw from the treaty altogether. This provision hardly seems necessary, given that the treaty has no binding provisions dictating what either nation is permitted to do. Given this deficiency and the lack of inspection protocols, other countries can only conclude that the United States (and Russia) are not serious about real disarmament and that nuclear weapons will remain central to their planning for the indefinite future.³⁶

The president went before the United Nations to argue for steps to prevent nuclear proliferation, while at the same time his administration was asking Congress for money for two new types of nuclear weapons.

No guarantees As a response to the treaty, other nations may want to develop nuclear weapons of their own or improve ones they already have. So rather than helping to "liquidate the legacy of the Cold War," the treaty in fact encourages proliferation by sending the signal that U.S. and Russian nuclear weapons are likely to remain a permanent feature of the international security landscape. This discouraging message is meant to reinforce another even more dissuasive one: any country not perceived as an ally by the United States could become a U.S. nuclear target if it seeks to acquire weapons of mass destruction.

BREEDING CYNICISM

The limits of the Moscow Treaty suggest that the Bush administration's real strategy was to create the illusion of nuclear arms restraint, while giving up nothing of consequence to its planned nuclear posture and achieving maximum freedom from arms control constraints. A phantom arms control process like this is potentially dangerous because it breeds cynicism about U.S. intentions. All U.S. administrations, regardless of party, have a responsibility to ensure that arms control agreements represent substantive progress toward disarmament and nonproliferation, and are not merely window dressing or propaganda exercises.

Indeed, the Moscow Treaty requires nothing of the administration that it did not already plan to do. As one senior administration official bluntly admitted, "What we have now agreed to do under the treaty is what we wanted to do anyway. That's our kind of treaty."³⁷ Instead, the Moscow Treaty is a nuclear gentleman's agreement that makes a virtue of necessity by enabling Russia to effortlessly arrive at 2,200 deployed strategic warheads or less and that permits the United States to keep what it had planned to keep anyway. In other words, while it claims to have accomplished unprecedented, deep nuclear cuts, the Bush administration has relinquished nothing beyond the 1997 Helsinki framework agreement between Presidents Clinton and Yeltsin.

For the Bush administration, such double standards are not uncommon where arms control is concerned. For example, in September 2003, the president went before the United Nations to argue for steps to prevent nuclear proliferation, while at the same time his administration was asking Congress for money for new types of nuclear weapons. On February 11, 2004, he gave a speech at the National Defense University with more specific nonproliferation proposals, without ever addressing the question of why the United States needed 10,000 warheads—or, for that matter, the 6,000 that will remain after the administration's June 2004 stockpile reduction plan. The double standard also turns up in the context of verification of arms treaties. What the Russians might or might not do in terms of compliance with the Moscow Treaty is now apparently unimportant; there are no stipulations about verification in the brief document. But extensive verification measures are a prerequisite for an agreement with Iran or North Korea.



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CHAPTER 7

BILLIONS OVER BUDGET AT THE DEPARTMENT OF ENERGY

The National Nuclear Security Administration (NNSA), an agency within the Department of Energy, is responsible for maintaining the U.S. nuclear weapons stockpile. A close examination of its Fiscal Year 2005 budget reveals a department that is financially and technically out of control. Several major projects are years behind schedule and billions of dollars over budget pursuing an overly ambitious, excessively costly, and unnecessary capability for “virtual” nuclear testing that is yielding uncertain results.

For the past three years, however, the Bush administration has turned a blind eye to the billions of dollars of overspending. And in fact, its Nuclear Posture Review reveals the administration’s commitment to revitalize and expand the nuclear complex even further. Unless Congress calls a halt, taxpayers will be forced to continue subsidizing unnecessary, redundant, and technically flawed projects. An NRDC companion report published in April analyzed the projects in great detail. What follows briefly describes some of the analysis and conclusions found there.³⁸

ALMOST 20 YEARS LATE

The Dual Axis Radiographic Hydrotest (DARHT) facility is located at Los Alamos National Laboratory. It was promoted as the most important facility in the science-based stockpile stewardship program, created to ensure the reliability of the nuclear weapons in the U.S. stockpile without actual nuclear testing. DARHT is intended to provide three-dimensional X-ray images of imploding surrogate nuclear weapons—thereby confirming that the primary, the plutonium pit component of a typical two-stage nuclear weapon, is being compressed in the manner required to trigger subsequent nuclear explosions.³⁹

DARHT began life in 1988 as a modest \$30 million upgrade to an existing dual axis machine—also designed to reduce the need for testing by generating images of implosions. Sixteen years later, DARHT is still not finished, and it is now projected to cost \$327 million, a tenfold increase. But the delays are not yet over. The president’s Fiscal Year 2005 budget request reveals that the facility will not be ready until Fiscal Year 2007, 19 years after its inception, and 15 years after the United States entered

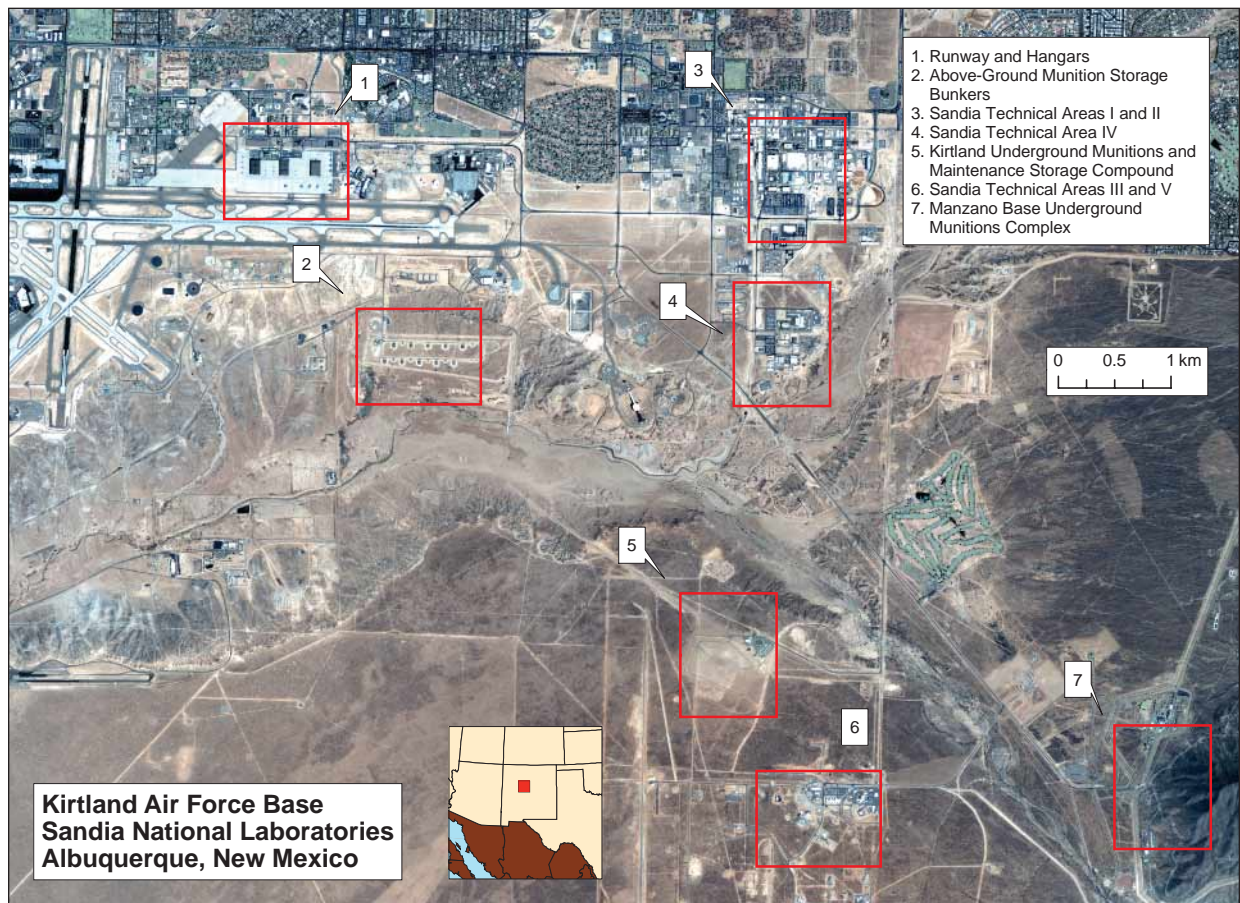
EXCESSIVE ARSENALS: KIRTLAND AIR FORCE BASE, NEW MEXICO

Publicly, the Bush administration has pledged to reduce the nuclear arsenal to a level of 1,700 to 2,200 “operationally deployed strategic weapons.” Yet the operationally deployed weapons are only the visible portion of a huge, hidden arsenal. Approximately 7,000 warheads are currently deployed with active forces, and 3,000 additional reserve or inactive warheads in storage. Regardless of the alert levels, the U.S. arsenal will still total more than 6,000 warheads even after the administration’s proposed stockpile retirements are complete in 2012.

Kirtland Air Force Base serves as one of two main Air Force nuclear-weapons general depots in the United States. Because of its proximity to the Pantex Plant in Amarillo, Texas, where nuclear warheads are taken apart, Kirtland serves as a transshipment point to and from operational bases and storage sites. Nuclear weapons are stored in the recently built Kirtland Underground Munitions Storage Complex. The types of bombs and warheads include B61-4, B61-7, B61-11, B83-0, W84-0, W87-0, and W62-0.

Kirtland has been the U.S. military center for nuclear weapons administration and operation since during the Cold War. The current 56-acre Kirtland Underground Munitions Storage Complex was completed in 1994, consolidating warhead storage in a new facility outside Manzano Mountain. The complex is located on the southeast side of the installation, approximately 3.5 miles east of the main base. Nuclear weapons moved by air in and out of the Kirtland complex use the Albuquerque International Airport.

The satellite photo of Kirtland/Sandia was acquired by the DigitalGlobe Corporation’s QuickBird satellite on August 4, 2003. This clear image provides a view of the Manzano and Kirtland Underground Munitions Storage Complex facilities, as well as Sandia National Laboratories buildings. Albuquerque International Airport lies in the northwestern corner of the satellite photo. Two sections of the Kirtland base with aircraft can be seen in the photo: one area with large military transport aircraft and helicopters, and a second area with fighter aircraft (11 visible in the image).



COMMERCIAL SATELLITE PHOTO PURCHASED FROM DIGITALGLOBE (ACQUIRED AUGUST 4, 2003)

into a nuclear test moratorium. The Department of Energy claimed that DARHT's capability—to provide higher-resolution images of the later stages of the implosion process, and therefore, key computational benchmarks for simulating the subsequent stages in a nuclear explosion—was absolutely critical to the success of its stockpile stewardship strategy, more important, for example, than the similarly delayed and troubled National Ignition Facility project described in this chapter.

Not to be deterred by their own mismanagement and technical misjudgments, the pending Fiscal Year 2005 budget request reveals that managers are planning in Fiscal Year 2006–7—before DARHT is even fully up and running—to complete “conceptual plans for future [radiography] facilities” and “prepare [a] mission need document for [a] future radiography facility,” most likely the billion-dollar-plus Advanced Hydrotest Facility.

THE MYSTERIOUSLY EXPANDING MESA COMPLEX

To meet the needs of the NNSA's large program for refurbishing stockpile warheads, the Sandia National Laboratories is responsible for conducting non-nuclear component engineering and weapons system integration of the nuclear components developed by Los Alamos and Livermore. The centerpiece of Sandia's engineering campaign is the \$519 million Microsystems and Engineering Sciences Application (MESA) complex in Albuquerque, New Mexico.

MESA's purpose is to develop new electronic micromachine components for current and future nuclear weapons. MESA started small but has grown mightily, adding several costly buildings along the way. The complex now comprises approximately 391,000 square feet that will house some 650 engineers. How much of this is necessary to extend the service life of existing weapons is difficult to gauge. But prior to this administration, the project consisted only of a proposed \$51 million upgrade for retooling the existing Microelectronics Development Laboratory. One may conclude that much of the expanded work is an add-on that is not strictly required for sustaining the U.S. nuclear weapons stockpile.

REDUNDANT COMPUTERS

The Bush administration's Fiscal Year 2005 budget reveals that it intends to spend \$740 million next year on nuclear weapons simulation and computing, and more than \$4 billion through Fiscal Year 2009—an average of \$806 million per year on nuclear weapons computing alone. Each of the four nuclear weapons laboratories (Los Alamos, Livermore, Sandia Albuquerque, and Sandia Livermore) now has a new supercomputing center under construction or recently completed.

It is unclear why the NNSA weapons labs could not make do with networked access to a single center for “massively parallel” computing, rather than constructing and equipping three such centers. The General Accounting Office (GAO) repeatedly found that in the late 1990s, the Department of Energy's existing supercomputer resources were seriously underutilized. Those concerns, however, have not slowed the project.

Over the period from 2002 to 2006, the NNSA will have added some 656,000 square feet of floor space dedicated to nuclear weapons supercomputing at a cost of \$263 million, just for the empty buildings and utility support systems. The bill to equip these centers with supercomputer hardware and advanced display technology through Fiscal Year 2009 comes to \$1.71 billion, and operating them will cost an additional \$1.35 billion. Billions more will be needed to fully develop the three-dimensional weapons simulation codes that ostensibly will utilize this vastly increased computational capacity.

The NNSA's overfunded supercomputing effort means that taxpayers must pick up the computer support staff, maintenance, security, and utility costs (including large electricity bills) for not one but four separate computing centers, each having numerous unique support requirements.

THE NATIONAL IGNITION FACILITY: AN EXPENSIVE EXPERIMENT

The National Ignition Facility, a massive 196-beam laser facility under construction at Lawrence Livermore National Laboratory, is by far the largest single project in the NNSA budget and quite possibly the most expensive experimental facility ever built.

The escalating cost of the project is staggering, especially when compared to the National Ignition Facility's indirect and modest technical relevance for maintaining the safety and reliability of U.S. nuclear weapons in the absence of nuclear testing. At the time the project was approved for construction in March 1997, the Department of Energy's official baseline estimate of total project costs was \$1.07 billion, and completion was set for the third quarter of 2002.

According to the NNSA, when the laser system installation is finally completed in September 2008, construction will have officially cost \$3.5 billion. NRDC estimates that the cost of the project through Fiscal Year 2008 will actually be much higher, on the order of \$5.2 billion, and that further billions will be required to reach the first demonstration of the facility's namesake mission—fusion ignition—now postponed until 2010–14.

Events have vindicated NRDC's earlier judgment, and the assessments by independent scientists, that the department was neither scientifically nor technically ready to construct an ignition facility in 1997. Indeed, the evidence suggests that it is still not ready.

THE GOLDEN PIT

Since 1993, the Department of Energy has sought to restore a limited capacity to manufacture nuclear pits, which together with high explosives are the triggering mechanisms for nuclear bombs. By any reasonable standard, the glacial pace and cost of the project are extraordinary. In 1989, the country's principal Cold War pit manufacturing plant, located northwest of Denver at Rocky Flats, was shuttered. The Nuclear Posture Review calls for long-range construction of a \$2 billion to \$4 billion

modern pit facility at a site yet to be determined, with the capacity to manufacture all types of pits, including new designs beginning in 2019.

More than \$1.2 billion has already been spent on restoring small interim pit production at Los Alamos National Laboratory, with an additional \$1.3 billion slated to be spent between 2005 and 2009. The administration's Fiscal Year 2005 budget reveals that the NNSA intends to manufacture "at least six certifiable W88 pits" to augment the six being produced in Fiscal Year 2004: "These pits will be used in tests to support the goal of Fiscal Year 2007 W88 pit certification." The cost to manufacture these six certifiable pits is \$132 million, or \$22 million per pit, at current prices.

The Manhattan Project produced the first significant quantities of separated plutonium in human history and manufactured it into pits within three years. With half a century of nuclear experience, and after the United States has produced tens of thousands of pits, Los Alamos somehow requires 11 years and billions of dollars to confidently manufacture one "war reserve pit" for the nuclear weapons stockpile. A full-scale congressional investigation is warranted.

The cost to manufacture these six certifiable pits is \$132 million, or \$22 million per pit, at current prices.

THE TRITIUM GAP

Tritium is a hydrogen isotope in gas form used to boost the efficiency of fission weapons. NRDC estimates that the NNSA has spent at least \$2.6 billion since 1996 maintaining and attempting to restore U.S. tritium recycling, production, and extraction capability. Tritium has a half-life of 12.3 years and must be replenished periodically for the weapon to work to design specifications. The United States formerly produced tritium in antiquated special purpose reactors at the Savannah River Site in South Carolina, but shut down production in 1988. Since then, existing tritium stocks have been used—that is, tritium has been taken from retired weapons and used to supply active weapons. Several administrations have developed and then abandoned costly plans on how to replace the DOE's tritium production capacity, but in the end, the least costly contingency option prevailed. In October 2003, the Tennessee Valley Authority's Watts Bar Nuclear Power Plant near Knoxville began irradiating tritium, produced in absorber rods that will be shipped to the Savannah River Site for processing in a new tritium extraction facility still under construction.

The NNSA's tritium inventory requirement is a somewhat arbitrary figure derived from often-inflated assumptions regarding the size of the future nuclear stockpile and the need for a five-year reserve inventory. Even before the June 2004 announcement concerning additional retirements NRDC estimated that to support the nuclear force called for under the Moscow Treaty—for example, 2,200 operationally deployed strategic weapons and 300 operational non-strategic weapons, with a five-year tritium reserve—would not require resumption of tritium production to prevent a decline in the reserve until around 2012, and actual weapons would not need fresh tritium until 2017. With thousands of additional retired warheads to draw upon we now calculate that the date for the resumption has been pushed out by about five years.

Weapons with depleted tritium reservoirs would still detonate with a force ranging from a few hundred to thousands of tons of TNT equivalent—a devastating

explosion, particularly if delivered by highly accurate GPS-guided systems. Given the strategic shift away from planning massive counterforce exchanges between superpower mega-arsenals resulting in the collateral deaths of tens of millions, there is no longer a need to maintain large numbers of high-yield (e.g., 100 to 1,000 kiloton) nuclear weapons ready to strike at a moments notice. The declining tritium inventory could be concentrated in a small number of higher yield weapons retained solely for the purpose of ensuring a retaliatory deterrent against nuclear attack on the American homeland. Other deterrent requirements could be met by more discriminate kinds of military forces.

The administration's program to satisfy future tritium requirements, largely inherited from the previous administration, is fraught with inefficiency, bad management, and a continuing failure to consolidate tritium research and development operations to a single site, and overall tritium operations to fewer sites. A fresh look at the current situation is in order.



NUCLEAR INSECURITY

*A Critique of the
Bush Administration's
Nuclear Weapons
Policies*

September 2004

CHAPTER 8

A RESPONSIBLE NUCLEAR WEAPONS POLICY FOR THE 21ST CENTURY

We conclude that the Bush administration's nuclear weapons policies will not bring greater security to the United States. Indeed, by expanding the role of nuclear weapons, the administration legitimizes the use of nuclear weapons as credible instruments of foreign policy and encourages other nations to follow our lead. This could likely jump-start another global arms race, as potential adversaries try to keep pace with our revitalized nuclear arsenal. Yet the stark fact about nuclear weapons is that far fewer than the planned U.S. stockpile of 6,000 are needed to deter a nuclear strike on the United States or its allies. Upon examination, the supposed benefits ascribed to nuclear weapons by the Bush administration either exaggerate their military utility or downplay their danger.

Sound alternatives are available that would enhance our security rather than diminish it. Each of them begins with the step of devaluing nuclear weapons rather than perpetuating their importance in our overall security policy. The fervor with which the Bush administration continues its commitment to nuclear weapons confers unwarranted legitimacy on the role of nuclear weapons in international relations and encourages other countries to value them as well. Real disarmament and enduring nonproliferation can be achieved most effectively when the United States sets an example for the world by delegitimizing nuclear weapons and ultimately placing its nuclear deterrent under the authority of the U.N. Security Council to prevent breakouts from a global nuclear disarmament regime. The double standard that surrounds the current policy undermines long-term efforts toward achieving meaningful nuclear non-proliferation goals.

RECOMMENDATIONS FOR MOVING TOWARD A RESPONSIBLE NUCLEAR POLICY

The following concrete recommendations will help move the United States toward a more responsible nuclear weapons policy, one that will fortify American national security, rather than undermining it.

Focus on weapons systems that meet genuine needs. The administration today relies on what is called capability-based planning, which drives planners to stock weapons

far in excess of what is necessary to meet realistic national security objectives. This approach shortchanges needed capabilities, such as body armor and improved tactical navigation and communications on the battlefield. Cold War nuclear weapons and delivery systems continue to be “modernized,” while American soldiers in Humvees lose their way in Iraq and become vulnerable targets for ambush by insurgents. The better approach is to identify genuine military needs, and then meet them.

Cancel the Department of Energy’s international nuclear energy programs. The Bush administration has launched programs to help nonweapons nations develop nuclear power reactors. A close examination reveals that the reactor programs would clearly assist non-nuclear weapons states (some of which once had clandestine weapon programs) to develop capabilities that would permit them to rapidly produce large quantities of nuclear weapons-usable materials. Considering the ease with which terrorists might purchase or steal these materials and the difficulty of detecting the materials’ entry into the United States, this poses a grave threat to American homeland security.

The department should cancel all programs that help nations to develop the brainpower and facilities to build nuclear power reactors and reprocess plutonium. By eliminating these programs, the United States will help limit the amount of nuclear weapons materials available to terrorists.

Do not deploy an unproven missile defense system. The administration plans to spend \$10 billion this year—in addition to the \$100 billion already spent in the past 50 years—on an anti-ballistic missile defense system that is technically flawed and ineffectual. Yet despite the billions spent, the United States is unlikely to be any safer, for in a logic that is as old as warfare itself, Russia, China, and perhaps other nations will undoubtedly build more or better offensive weapons in order to circumvent our defense.

Equally important, the defense systems will do nothing to stop the most significant threat of our time: terrorist attacks. Missile defense systems are designed to block ballistic missiles, but terrorist groups are far more likely to use a merchant ship, airplane, or truck to deliver a nuclear weapon to an American city. No national missile defense system can prevent that occurrence. Given these grave limitations, the administration should sharply limit the research funds for missile defense and redirect the majority of the money to address the far more pressing threat of terrorist attacks.

Abolish the U.S. permanent nuclear war plan. Currently, the United States has in place a permanent war plan—the Single Integrated Operational Plan (SIOP)—that demands that the military must assign one nuclear weapon—often on high alert—for each potential target. This is a recipe for unceasing arms requirements by the Pentagon. It also fuels continuing competition with Russia and others to expand their arsenals to keep pace with our own. The SIOP is an artifact of the Cold War that has held arms reduction efforts hostage, and it is time for it to be abolished.

The administration should sharply limit the research funds for missile defense and redirect the majority of the money to address the far more pressing threat of terrorist attacks.

Fundamental change in the way nuclear war planning is conducted is called for. It is time to replace the SIOP with a contingency model that would allow the military to assemble attack plans in the event of hostilities with another nuclear state. Moving from an enormous, permanent war plan to contingency plans would allow the military to take many or all ICBMs off alert and significantly reduce submarine patrols—now going on at near Cold War levels.

WEAPONS ABROAD: KLEINE BROGEL AIR BASE, BELGIUM

There are approximately 480 B61 bombs at eight airbases in six European countries. In the 1990s, many bombs were returned to the United States and the nuclear mission at several NATO bases ended. All other remaining bombs should be withdrawn as well, including those at Kleine Brogel Air Base, Belgium.

Kleine Brogel is the original and only remaining U.S. nuclear storage site in Belgium. Today, Kleine Brogel is a 1,100-acre Belgian Air Force main operating base located near the city of Meeuen in the northeast part of the country. It is host to the USAF 10th Tactical Fighter Bomber Wing flying F-16 aircraft. The wing is home to four squadrons (Smaldeelen) of F-16s, including two nuclear-certified units.

The 52nd Munitions Support Squadron is made up of about 110 members and cares for the B61 nuclear

bombs stored in the weapons storage and security system vaults located within hardened aircraft shelters on the base. The vaults at Kleine Brogel reached initial operational capability on April 3, 1993, and 11 vaults are operational today.

The satellite photograph of Kleine Brogel Air Base was taken by the DigitalGlobe Corporation's QuickBird satellite on September 21, 2003. Two parallel runways are evident in the photo: one 3,200 meters and the other 2,800 meters in length. There are two sets of hardened aircraft shelters: 11 at the southwestern end of the runway and four at the northeastern end. The four aircraft shelters at the northeastern end of the runway are within a double-fence enclosure. No aircraft of any type are visible in this satellite image.



COMMERCIAL SATELLITE PHOTO PURCHASED FROM DIGITALGLOBE (ACQUIRED SEPTEMBER 21, 2003)

Scrap the development of nuclear bunker busters and other programs that facilitate the use of nuclear bombs. Developing new nuclear weapons—or new missions for existing weapons—threatens to restart the arms race. Potential adversaries will build weapons to match our changing arsenal, particularly if we create warheads that appear to lower the threshold for using nuclear weapons, such as earth-penetrating and low-yield weapons. During the Cold War, nuclear weapons were in a special category by themselves—a classification that reserved their use for the gravest and most extreme circumstances.

Building earth-penetrating weapons would blur these lines by legitimizing the use of nuclear weapons to strike particularly hard-to-destroy targets in countries that do not present an imminent threat to the national survival of the United States. It would encourage military planners to add certain targets and enhance the circumstances for their use. This trend toward making nuclear weapons more employable for limited regional warfare should be resisted and reversed by civilian and military officials.

Accelerate the implementation of the Moscow Treaty. It is difficult to defend the administration's position that the United States will need 6,000 nuclear weapons in its arsenal in 2012, as current plans call for. For deterrence of nuclear attack upon ourselves and our forces and allies, far fewer than 6,000 are needed. A few hundred are capable of killing or injuring more than a third of the entire Russian population and destroying most major urban centers.⁴¹ If the prospect of that kind of damage is insufficient to deter any realistic enemy, it is difficult to imagine why more weapons would be any more persuasive.

Therefore, we recommend accelerating the pace of the Moscow Treaty. While the treaty contains no legally binding obligations, it does present a possibility for parallel unilateral reductions of nuclear arsenals. Congress should pass legislation to strengthen the treaty. We recommend increasing the rate, extent, and "irreversibility" of U.S. and Russian nuclear stockpile reductions until stocks dip below 1,000 on each side. The process of reduction will then need to become multilateral, encompassing all declared and undeclared nuclear weapons states.

Honor the U.S. commitment to the Nuclear Nonproliferation Treaty. The United States needs to take its commitment to Article VI of the Nuclear Nonproliferation Treaty seriously.⁴² Signed by the United States in 1968, and effective in 1970, Article VI commits the United States, China, Russia, the United Kingdom, and France to pursue nuclear disarmament. Yet all of the administration's supposed accomplishments toward nonproliferation have been largely devoid of substance, including the Moscow Treaty, fissile material control measures, dismantlement at the Pantex Plant, and cooperative threat reduction. The Nuclear Posture Review and the annual budget requests for extensive spending on nuclear weaponry are the strongest indicators of where the administration is heading, and it is not in the direction of disarmament.

The 2005 Non-Proliferation Treaty Review Conference should become the forum to honestly address the deficiencies in the present treaty, propose ways to strengthen its

terms, and encourage participating states to honor its requirements. Specifically, the United States should set an example by proposing new and deep arms reductions, ratifying the Comprehensive Test Ban Treaty, and unambiguously de-emphasizing the role of nuclear weapons in our security policy.

Increase congressional oversight and accountability of DOD and DOE programs. Several projects at the nation's nuclear weapons laboratories are billions of dollars over budget and years behind in their goals. They have been allowed to proceed with very little accountability or oversight. The past few years have seen a thinner public record about Department of Defense (DOD) and Department of Energy (DOE) weapons programs, partly as a result of the increased secrecy of the executive branch, but also because of Congressional inattention. Congressional hearings have been fewer, and the questions submitted and received for the record are minimal and uninformative. All of these factors have combined to leave large components of DOD and DOE programs and budgets unexamined.

More diligent oversight by Congress is needed to provide a fuller public record about the DOD and DOE programs. Specifically, Congress should call for in-depth investigations into these programs and then cut back or cancel those that are wasteful, redundant, or incurably deficient from a technical standpoint. It should also direct the Department of Energy to establish an independent outside advisory committee under the Federal Advisory Committee Act to conduct peer reviews of stockpile stewardship and technology projects.

ENDNOTES

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