



NRDC: Nuclear Notebook

U.S. nuclear forces, 2005

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We estimate that as of January 2005 there are approximately 5,300 operational nuclear warheads in the U.S. stockpile, including 4,530 strategic warheads and 780 non-strategic warheads. Almost 5,000 additional warheads have been retained in the "responsive reserve force" or are in an inactive status with their tritium removed.

In June 2004, the Energy Department announced that "almost half" of the warheads in the current stockpile would be retired by 2012 and eventually dismantled. We estimate that the current total stockpile of 10,350 will be reduced to about 6,000 by 2012.

The Pentagon continues to implement its 2001 Nuclear Posture Review (NPR) and adjust the deployment of U.S. nuclear forces to meet shifting nuclear targeting requirements. The United States has formally changed the name of its strategic nuclear war plan. Known throughout the Cold War as the Single Integrated Operational Plan (SIOP), it is now known as Operations Plan (OPLAN) 8044. The last war plan to use the old designation was the March 2003 SIOP-03 (revision 3).

Intercontinental ballistic missiles (ICBMs). The Defense Department reduced the ICBM force by 17 missiles in 2004 as part of the second phase of the MX/Peacekeeper's ongoing retirement. The last 10 MX missiles started 2005 on alert, but they will all be withdrawn by October 1. One MX was test-launched on July 21, 2004 from Vandenberg Air Force Base (AFB) in California.

The 2001 NPR calls for MX silos to be retained rather than destroyed, as was required in the now-defunct START II treaty. The United States will keep MX missiles for possible use as space-launch vehicles, as target vehicles, or for redeployment. The 550 W87 warheads from the 50 retired MXs will be temporarily stored until 2006, when a portion of them will begin to replace the W62 warheads on Minuteman III ICBMs. The Pentagon has scheduled the W62 for retirement in 2009. We estimate that 200 W87 warheads will be used on Minuteman IIIs, with the balance placed in the responsive force of reserve warheads. Some W87s may be used to arm Trident II D5 missiles in the future.

A February 2004 Defense Science Board study recommended converting 50 MXs to a conventional role and relocating them to Vandenberg AFB and Cape Canaveral Air Force Station, Florida. "These weapons would give the United States a 30-minute response capability for strategic strike worldwide," the report stated.

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[Table of Contents](#)
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Each of the 500 Minuteman III ICBMs currently deployed carries either a single warhead or two or three multiple independently targetable reentry vehicles (MIRVs). Three hundred carry the higher-yield W78 warhead and the more accurate Mk-12A reentry vehicle. With START II's ban on MIRVs now a dead letter, earlier plans to download all Minuteman missiles to a single-warhead configuration may be revised. As many as 700 to 800 warheads could be assigned to the 500-Minuteman force.

Minuteman modernization continues under an ambitious \$6 billion, six-part program intended to improve the missile's accuracy and reliability and extend its service life beyond 2020. The air force successfully flight-tested unarmed Minuteman IIIs on three occasions in 2004: June 23, July 23, and September 16. The air force plans to begin deployment of a Minuteman replacement in 2018.

Submarines. The United States has 336 submarine-launched ballistic missiles (SLBMs) on 14 nuclear-powered ballistic missile submarines (SSBNs). The missiles are armed with some 2,016 warheads, about 48 percent of U.S. operational strategic weapons. The U.S. Navy reduced its SSBN force by one in 2004, bringing the force to the level decided upon in the 1994 NPR. The navy has extended the service life of the subs from 30 to 44 years; the oldest sub is scheduled to retire in 2029, when a new SSBN will be introduced.

It was previously thought that the navy would split the 14-boat SSBN force evenly between the Atlantic and Pacific oceans, but recent shifts in planning position a larger force in the Pacific. Three SSBNs were transferred to Bangor, Washington, in 2002 and 2004 to compensate for the four older SSBNs that are being converted to cruise missile submarines. In September 2004, the navy announced that two more submarines, the *Maine* and the *Louisiana*, will leave Kings Bay, Georgia, in October 2005 for Bangor, temporarily reducing the Atlantic SSBN force to just five boats, the lowest number since the first SSBNs were initially deployed from the East Coast in 1961. Between 1966 and 1985, more than 30 SSBNs operated in the Atlantic and the Mediterranean Sea. The new, nine-strong Pacific force, the largest since 1979, reflects increased nuclear targeting requirements against China and possibly North Korea.

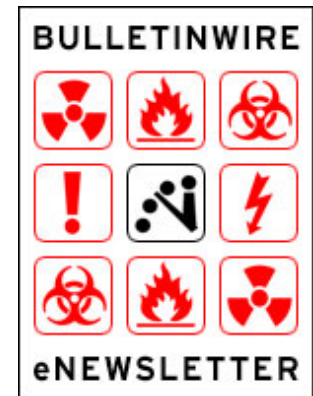
The navy planned to upgrade four Pacific-based SSBNs equipped with Trident I C4 SLBMs to carry the longer-range and more accurate Trident II D5s. The upgrades of the *Alaska* and *Nevada* are complete; the *Henry M. Jackson* and *Alabama* are expected to follow in 2005 and 2006, respectively.

The navy is converting four older SSBNs to non-nuclear operations as delivery platforms for Tomahawk cruise missiles and special operation forces. The *Ohio* began conversion at Puget Sound Naval Shipyard in 2002 and will begin operating from Bangor in 2005. The *Florida* is undergoing conversion at Norfolk Naval Shipyard and will be based at Kings Bay in 2006. The *Michigan* and *Georgia* off-loaded their Trident I missiles in October 2004 and began conversion at Puget Sound Naval Shipyard and Norfolk Naval Shipyard, respectively. After their conversion is complete in 2007, the *Michigan* will be based at Bangor and the *Georgia* at Kings Bay.

The fiscal 2005 Defense Authorization Bill, Section 104, requires the defense secretary to conduct a study, due in spring 2005, on whether the current practice of using two alternating crews for ballistic missile submarine patrols should be continued, modified, or terminated.

The navy is modernizing the Mk-4/W76 reentry vehicle and replacing the weapon's air-burst fuze with a new ground-burst fuze. The first production unit of the new weapon, designated the Mk-4A/W76-1, is scheduled for delivery in September 2007. About 40 percent of the navy's future stockpile of Mk-4/W76 reentry vehicles (approximately 800) will be converted by 2012. The new fuze will enhance the weapon's lethality and broaden the potential targets that can be attacked by subs equipped with the Mk-4A/W76-1.

In 2004 the navy began the Enhanced Effectiveness (E2) Reentry Body program to create "a near-term capability to steer an SLBM warhead to Global Positioning Satellite (GPS)-like accuracy" (within about 10 meters), according to the Pentagon. The program will expand the potential targets that can be attacked with W76 warheads. Officials are considering both nuclear and conventional warheads for the program. A full-scale test flight of the new capability using a Mk-4/W76 reentry vehicle is scheduled for early fiscal 2007.



The navy bought five more Trident II D5 missiles in the fiscal 2005 defense bill, bringing the total to 413. Officials extended D5 production through 2013 and increased the total number to be purchased from 390 to 540, at an additional cost of \$12.2 billion. The total cost of the program now stands at \$37.5 billion, or \$69 million per missile. To make the D5 operational through 2042 (the end of the extended service life of the newest *Ohio*-class SSBN), existing missiles will be upgraded to a new variant called the D5LE. In 2003, Congress budgeted \$416 million to modernize the D5. Of the 540 D5s, 336 will arm 14 SSBNs (including two sets for two SSBNs that will be in overhaul at any given time), with the balance available for flight tests.

The navy is in the early stages of planning to develop a Submarine-Launched Intermediate-Range Ballistic Missile (SLIRBM). Officials invited industry proposals in August 2003, and this year the navy plans to conduct two full-scale static test-firings of an "affordable, high performance SLIRBM" prototype rocket engine. The missile is intended to carry both nuclear and conventional payloads.

The navy plans to resume SLBM flight-testing in the Pacific in 2005, when the Pacific Missile Range is scheduled to resume operations. The last SLBM test-launch in the Pacific was in July 1993. The navy flight-tested three Tridents in 2003 but none in 2004.

Bombers. The United States has two types of long-range bombers for nuclear missions: the B-2A Spirit and the B-52H Stratofortress. Neither is maintained on day-to-day alert, and both also have conventional missions. The B-52s can deliver cruise missiles, gravity bombs, or a combination of both; B-2s carry only bombs.

The air force has decided to speed up the search for a bomber replacement. Officials are studying various interim and long-range options, including unmanned systems, updated bombers, and possibly an F/A-22 Raptor derivative.

In 2003 the air force completed the B-2's "Block 30" upgrade, a five-year modernization effort that enables the aircraft to carry a mix of B61 and B83 nuclear bombs as well as various conventional weapons. A Nuclear Surety Inspection was conducted at Whiteman AFB, Missouri, in December 2003. B-2s are scheduled to undergo an upgrade that will allow crews to make mission and targeting changes en route.

The advanced cruise missile (ACM) and air-launched cruise missile (ALCM) are undergoing service life-extension programs to prolong their service through 2030. The air force calls the ACM a "critical weapon" that is essential to Air Combat Command and Stratcom targeting commitments. Five contracts worth nearly \$10 million were awarded to Boeing and Raytheon in 2003 for ACM maintenance. The air force is studying options for a next-generation cruise missile.

Non-strategic nuclear weapons. The United States has approximately 780 operational non-strategic nuclear weapons: 580 B61 gravity bombs of three modifications, and 200 nuclear Tomahawk land-attack cruise missiles (TLAM/Ns). Another 100 Tomahawk warheads are kept in reserve or are inactive. The 2001 NPR did not address non-strategic nuclear weapons.

Of the 580 operational B61 bombs, 480 are deployed at eight bases in six European countries for delivery by U.S. and NATO aircraft (see "[U.S. Nuclear Weapons in Europe, 1954-2004](#)," November/ December 2004 *Bulletin*). The other 100 operational bombs are assigned to the squadrons of two U.S.-based fighter wings capable of quickly deploying anywhere in the world. The 334th, 335th, and 336th squadrons of the 4th Fighter Wing at Seymour Johnson AFB, North Carolina, operate dual-use F-15E aircraft. The 522nd, 523rd, and 524th squadrons of the 27th Fighter Wing at Cannon AFB, New Mexico, operate dual-use F-16 aircraft. The air force maintains an additional 435 B61-3, -4, and -10 bombs in reserve, which are likely stored at Kirtland AFB, New Mexico, and Nellis AFB, Nevada. Most or all of these bombs are earmarked for retirement and dismantlement in the coming years as a result of Energy's June 2004 decision to retire nearly half of the arsenal.

Under current air force planning, a portion of the F-35 Joint Strike Fighter (JSF) force will have a nuclear capability beginning in 2012. The JSF completed its initial nuclear certification requirements plan in 2004.

Nuclear warheads. To ensure the reliability of nuclear weapons beyond their original design

lives, most of the warheads in the enduring stockpile are scheduled to undergo life-extension programs over the next decade. The first of these programs began in 1994 and was for the W87; the first warhead was produced in 1999, and the program was completed in 2004. The cost of the W87 program, which will extend the life of the warheads 30 years, was initially estimated at \$440 million, but by 2000 the program's cost had ballooned to \$747 million, according to a Government Accountability Office report.

The B61-7/-11, W76, W78, W80, B83, and W88 warheads will also undergo life-extension programs, some of which are substantial enough to change a warhead's modification designation. The W76 will become the W76-1, and the W80-0 and W80-1 will become the W80-2 and W80-3, respectively. The first production units of the W80-2 and B61-7/-11 are scheduled for delivery in 2006; the W76-1 in 2007-2008, and the W80-3 around 2008. The B61-7/-11 life-extension program involves refurbishing the secondary.

The Energy Department's weapon laboratories began a study of the Robust Nuclear Earth Penetrator (RNEP) in 2003 after Congress repealed a 1994 ban on research and development of low-yield nuclear weapons. The study is scheduled for completion by 2006.

Energy has reestablished small-scale warhead pit production at Los Alamos National Laboratory, and the lab produced its first certifiable W88 pit in 2003. Energy planned to produce at least five more W88 pits in 2004. One or more of these is scheduled to enter the war reserve stockpile in 2007. Los Alamos's goal is to be able to manufacture 10 W88 pits per year by 2007. Next on its list, the lab plans to begin producing W87 pits by 2010.

Energy wants a new Modern Pit Facility, capable of manufacturing 250-900 pits annually, built at a location yet to be determined, to begin pit production in 2018, with B61-7 and W87 pits to be made first.

[Back to top ^](#)

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[Back to top ^](#)

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Type	Name	Launchers	Year deployed	Warheads x yield (kilotons)	Warheads active/spares
ICBMs					
LGM-30G	Minuteman III				
	Mk-12	150	1970	1 W62 x 170	150
	Mk-12	50	1970	3 W62 x 170 (MIRV)	150/15

	Mk-12A	300	1979	2-3 W78 x 335 (MIRV)	750/30
LGM-118A	MX/Peacekeeper	10	1986	10 W87 x 310 (MIRV)	100
Total		510			1,150/45

SLBMs

UGM-96A	Trident I C4	48/2	1979	6 W76 x 100 (MIRV)	288
UGM-133A	Trident II D5	288/12			
	Mk-4		1992	6 W76 x 100 (MIRV)	1,344/150
	Mk-5		1990	6 W88 x 455 (MIRV)	384/20
Total		336/14			2,016/170

Bombers

B-52H	Stratofortress	94/56*	1961	ALCM/W80-1 x 5-150	450/25
				ACM/W80-1 x 5-150	400/20
B-2A	Spirit	21/16	1994	B61-7, -11, B83-1 bombs	200/55
Total		115/72			1,050/100

Non-strategic forces

Tomahawk SLCM		325	1984	1 W80-0 x 5-150	200
B61-3, -4, -10 bombs		n/a	1979	0.3-170	580**
Total		325			780

Grand total*** ~5,000/315

ACM: advanced cruise missile; ALCM: air-launched cruise missile; ICBM: intercontinental ballistic missile (range greater than 5,500 kilometers); MIRV: multiple independently targetable reentry vehicle; SLCM: sea-launched cruise missile; SLBM: submarine-launched ballistic missile.

*The first figure is the total inventory, including those used for training, testing, and backup; the second figure is the primary mission inventory: the number of operational aircraft assigned for nuclear or conventional missions. **Four hundred and eighty are deployed at eight bases in six European countries. ***Approximately 5,000 additional

intact warheads are retained in the reserve or inactive stockpiles.

[Back to top ^](#)

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