



## Global nuclear stockpiles, 1945–2006

**E**XCESSIVE SECRECY PROHIBITS the public from knowing the exact number of nuclear weapons in the world. Each nation shields the details of its own nuclear arsenal and generally knows few precise details about the size and composition of other countries' stockpiles.

Despite the uncertainty, we know that the total global nuclear weapons stockpile is considerably smaller than the 1986 Cold War high of 70,000-plus warheads. Through a series of arms control agreements and unilateral decisions, nuclear weapon states have reduced the global stockpile to its lowest level in 45 years. In the same period, the number of nuclear weapon states has grown from three to nine.

We estimate that these nine states possess about 27,000 intact nuclear warheads, of which 97 percent are in U.S. and Russian stockpiles. About 12,500 of these warheads are considered operational, with the balance in reserve or retired and awaiting dismantlement. We are able to make our estimates by monitoring all known nuclear weapon developments, by studying long-term trends, and by tracking the implementation of arms control treaties.

Estimating the arsenal sizes of the smaller nuclear powers—Israel, India, Pakistan, and North Korea—poses special difficulties, considering how minuscule they are compared with Russian and U.S. stockpiles. India and Pakistan have about 110 nuclear warheads between them, fewer than the number of warheads carried on a single U.S. Trident submarine, and the North Koreans could have around 10. Though Israel has

not acknowledged it possesses nuclear weapons, the Defense Intelligence Agency (DIA) estimates it has between 60 and 85 warheads.

More than 128,000 nuclear warheads have been built since 1945, according to our calculations, and all but close to 3 percent were built by the United States (about 55 percent) and the Soviet Union/Russia (about 43 percent). Since the end of the Cold War, the United States and Russia have moved an increasing percentage of their warheads from operational status to various reserve, inactive, or contingency categories, as arms control agreements traditionally have not required the destruction of warheads. For example, the 2002 Strategic Offensive Reductions Treaty (the “Moscow Treaty”) contains no verification provisions and ignores nonoperational and nonstrategic warheads altogether. With any number of warheads in indeterminate status, nuclear stockpiles are becoming more opaque and difficult to describe with precision. It’s a situation that will only worsen after 2009 if the United States and Russia do not extend the Strategic Arms Reduction Treaty I, which requires biannual reporting on the status of intercontinental ballistic missiles, submarine-launched ballistic missiles (SLBMs), and bombers.

**United States.** The Pentagon has custody of approximately 10,000 stockpiled warheads, of which about 5,735 are considered active or operational. The remaining are categorized as reserve or inactive. Details from an Energy Department 2004 stockpile plan indicate that some 4,000 warheads will eventually be retired, returned to Energy’s custody, and

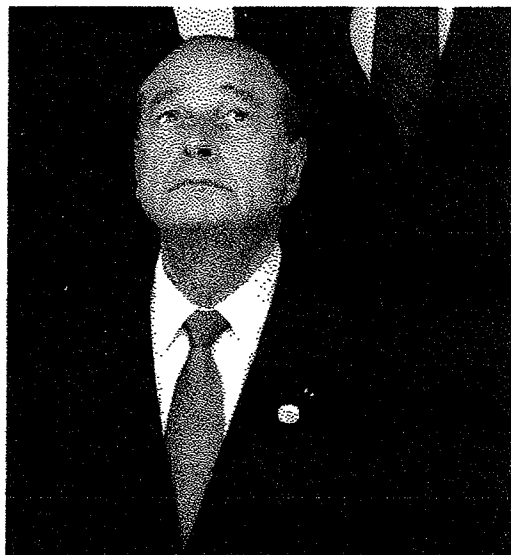
disassembled at the Pantex Plant near Amarillo, Texas, though that task could take many years to accomplish. Refurbishments and upgrades to existing warheads will take priority over disassembly in terms of man-hours for the foreseeable future.

Of the more than 70,000 warheads produced by the United States since 1945, more than 60,000 have been disassembled by mid-2006. More than 13,000 of these warheads have been taken apart since 1990, but Energy retains more than 12,000 intact plutonium pits from dismantled warheads and stores them at Pantex.

**Russia.** Moscow has released very little information about the size of its stockpile, and its future plans are not known with a great deal of certainty. We estimate that since 1949 the Soviet Union/Russia produced some 55,000 nuclear warheads and that about 30,000 warheads existed in 1991 at the end of the Cold War. A few statements

Sticking to their nukes: The leaders of four of the five major nuclear weapon states—French President Jacques Chirac, Russian President Vladimir Putin, President George W. Bush, and British Prime Minister Tony Blair (left to right)—at a NATO summit.

REUTERS/KEVIN LAMARQUE



from Russian officials provide an occasional benchmark to help roughly calculate stockpile size and trends. But these statements typically lack detail, and the referenced dates are often ambiguous. In 1993, Victor Mikhailov, then minister of atomic energy, revealed that in 1986 the Soviet Union had 45,000 warheads in its stockpile. A decade later, Mikhailov said that nearly half of these warheads had been dismantled.

The Defense Department and the CIA estimated that Russia dismantled slightly more than 1,000 warheads per year during the 1990s, though how firm those estimates were is unknown. Of the 16,000 intact warheads we estimate to be in Russia's possession today, around 5,830 are considered operational. Because Russia has removed warheads from its deployed and operational forces faster than it could dismantle them, there is a backlog of warheads awaiting dismantlement. The Moscow Treaty limits Russia's "operationally deployed strategic warheads" to no more than 2,200 by 2012, but its arsenal could shrink below this limit. Russia's production of new systems has been slow, and it is uncertain whether it can maintain such a large number of warheads because of limited resources and funding. Russia had previously pressed for a limit of 1,500 operational strategic warheads as part of the treaty, but the United States rejected this limit.

**Britain.** Since 1953, Britain has produced approximately 1,200 warheads, according to our estimates. The

British arsenal peaked in the 1970s at 350 warheads and has mostly declined since. The current stockpile consists of some 200 strategic and "sub-strategic" warheads for delivery by Trident II SLBMs aboard Vanguard-class nuclear-powered ballistic missile submarines (SSBNs). The Labour government declared in July 1998 that it would maintain "fewer than 200 operationally available warheads," of which 48 would be on patrol at any given time on a single SSBN.

**France.** The current French stockpile includes approximately 350 warheads, down from some 540 in 1992. We estimate that France produced more than 1,260 nuclear warheads since 1964. In the past decade, France dismantled its land-based ballistic missiles and retired its nuclear bombs intended for delivery by naval strike aircraft. France initially planned to arm its M51 sea-launched ballistic missile, which is scheduled for deployment in 2010, with an entirely new warhead, the Tête Nucléaire Océanique (TNO), but the missile will instead be equipped with a more robust version of an existing design, probably the TN-75.

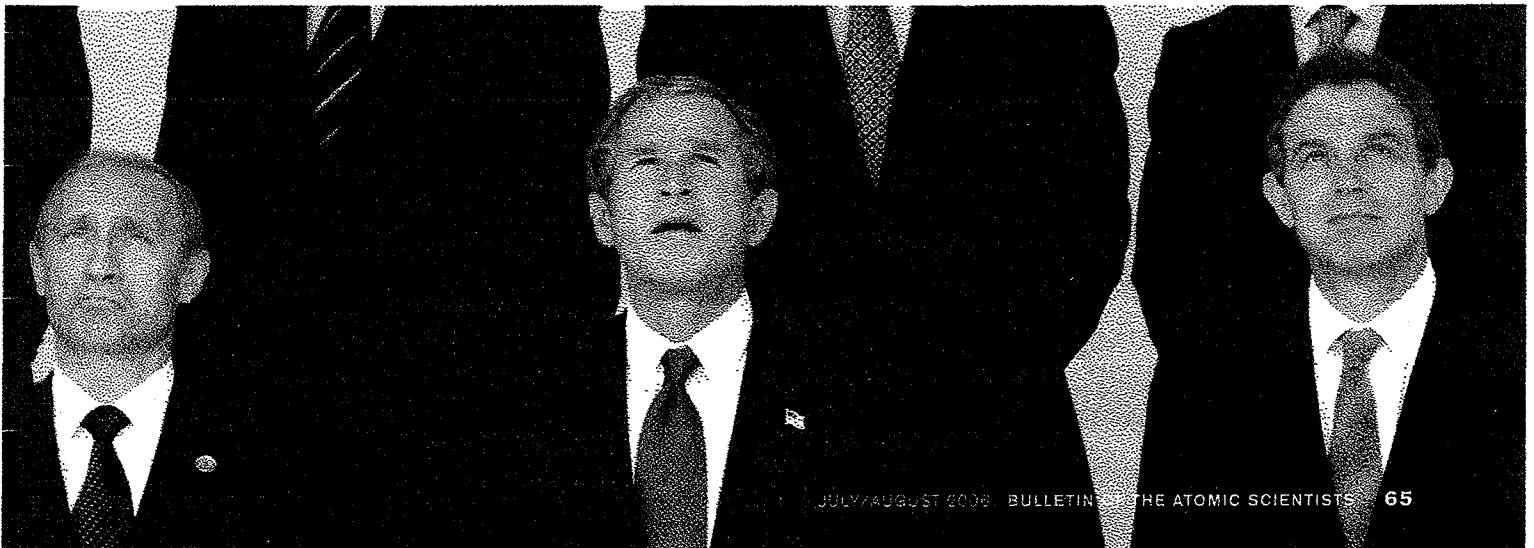
**China.** We estimate that China has an arsenal of some 200 nuclear warheads, down from an estimated 435 in 1993. This change is due to new information about the arsenal. China is thought to have produced some 600 nuclear warheads since 1964, and U.S. intelligence and defense agencies predict that over the next decade, China

may increase the number of warheads targeted primarily against the United States from 20 to about 75–100.

**India and Pakistan.** Neither India nor Pakistan has released any official information to the public about the size of its nuclear arsenal. Combined, the two are thought to possess as many as 110 warheads, some of which may not be operationally deployed. Independent experts estimate that India has produced enough fissile material for between 60 and 105 nuclear warheads but may have assembled only 50–60 warheads. In contrast, these experts believe that Pakistan has produced fissile material sufficient for between 55 and 90 weapons and has assembled 40–50 warheads. Both countries are thought to be increasing their stockpiles.

**Israel.** Although Israel has neither confirmed nor denied that it possesses nuclear weapons, the DIA concluded in 1999 that Israel had produced 60–80 warheads. Israel is estimated to have produced enough fissile material for between 115 and 190 warheads. The DIA projected that Israel's stockpile would increase only modestly by 2020.

**North Korea.** North Korea has a 5-megawatt-electric (MWe) graphite-moderated, gas-cooled reactor that began operations in 1986. Independent experts estimate that it has produced about 43 kilograms of separated plutonium, give or take 10 kilograms. Depending upon the North Koreans' technical capability and the desired



## Nuclear weapon states\*, 1945–2006

\*As members of the Nuclear Non-Proliferation Treaty

Year	United States	SU/Russia	Britain	France	China	Total
1945	6					6
1946	11					11
1947	32					32
1948	110					110
1949	235	1				236
1950	369	5				374
1951	640	25				665
1952	1,005	50				1,055
1953	1,436	120	1			1,557
1954	2,063	150	5			2,218
1955	3,057	200	10			3,267
1956	4,618	426	15			5,059
1957	6,444	660	20			7,124
1958	9,822	869	22			10,713
1959	15,468	1,060	25			16,553
1960	20,434	1,605	30			22,069
1961	24,126	2,471	50			26,647
1962	27,387	3,322	205			30,914
1963	29,459	4,238	280			33,977
1964	31,056	5,221	310	4		36,592
1965	31,982	6,129	310	32	5	38,458
1966	32,040	7,089	270	36	20	39,455
1967	31,233	8,339	270	36	25	39,903
1968	29,224	9,399	280	36	35	38,974
1969	27,342	10,538	308	36	50	38,274
1970	26,662	11,643	280	36	75	38,696
1971	26,956	13,092	220	45	100	40,413
1972	27,912	14,478	220	70	130	42,810
1973	28,999	15,915	275	116	150	45,455
1974	28,965	17,385	325	145	170	46,990
1975	27,826	19,055	350	188	185	47,604
1976	25,579	21,205	350	212	190	47,536
1977	25,722	23,044	350	228	200	49,544
1978	24,826	25,393	350	235	220	51,024
1979	24,605	27,935	350	235	235	53,360
1980	24,304	30,062	350	250	280	55,246
1981	23,464	32,049	350	274	330	56,467
1982	23,708	33,952	335	274	360	58,629
1983	24,099	35,804	320	279	380	60,882
1984	24,357	37,431	270	280	415	62,753
1985	24,237	39,197	300	360	425	64,519
1986	24,401	45,000	300	355	425	70,481
1987	24,344	43,000	300	420	415	68,479
1988	23,586	41,000	300	410	430	65,726
1989	22,380	39,000	300	410	435	62,525
1990	21,004	37,000	300	505	430	59,239
1991	17,287	35,000	300	540	435	53,562
1992	14,747	33,000	300	540	435	49,022
1993	13,076	31,000	300	525	435	45,336
1994	12,555	29,000	250	510	400	42,715
1995	12,144	27,000	300	500	400	40,344
1996	11,009	25,000	300	450	400	37,159
1997	10,950	24,000	260	450	400	36,060
1998	10,871	23,000	260	450	400	34,981
1999	10,824	22,000	185	450	400	33,859
2000	10,577	21,000	185	470	400	32,632
2001	10,527	20,000	200	350	400	31,477
2002	10,475	19,000	200	350	400	30,425
2003	10,421	18,000	200	350	400	29,371
2004	10,358	18,000	200	350	400	29,308
2005	10,295	17,000	200	350	400	28,245
2006	10,104	16,000	200	350	200	26,854

yield of the bomb, Pyongyang could have as few as five weapons or as many as fifteen. Ten weapons seems to be a reasonable estimate, with the addition of about one weapon per year. It is unknown if North Korea has weaponized its nuclear capability and made a deliverable or usable weapon that can be mated to a missile, for example. If North Korea completes an under-construction 50 MWe reactor in a few years, it could produce about 60 kilograms of plutonium per year, which could potentially grow the stockpile by 10–15 weapons per year.

**The future.** All five original nuclear weapon states continue to insist that nuclear weapons are essential to their national security, which translates into substantial global nuclear weapon stockpiles for the foreseeable future and the possibility that more nations will want the Bomb as well. India has committed to possessing a triad of nuclear forces including land-based ballistic missiles, nuclear-capable aircraft, and sea-based missiles that will probably require an arsenal of 100–150 warheads. Not to be outdone, Pakistan will likely keep pace with a similarly sized arsenal. Whether Israel's nuclear arsenal remains opaque will likely depend on the development of Iran's nuclear program, which appears to be about three to ten years away from joining the nuclear weapon club. Despite nuclear weapon states' progress in reducing global stockpiles, convincing nations to abandon their nuclear arsenals altogether remains a formidable task, one that will likely remain impossible until the nuclear powers themselves renounce their weapons. \*

*Nuclear Notebook is prepared by Robert S. Norris of the Natural Resources Defense Council and Hans M. Kristensen of the Federation of American Scientists. A footnoted version of this article is available online, along with data for all nuclear weapon states, at [www.thebulletin.org](http://www.thebulletin.org). Inquiries should be directed to NRDC, 1200 New York Avenue, N.W., Suite 400, Washington, D.C., 20005; 202-289-6868.*