

**Nuclear Arsenals of the United States, Russia,
Great Britain, France and China: A Status Report**

by

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What has been the progress of the Nuclear Weapon States in reducing their nuclear arsenals since the peak levels of the mid-1980s? What will be the sizes of future stockpiles? The Table below provides estimates of recent and current forces, and future projections. It shows our best estimate of where we have been, where we are today and where we are going. Let us look in more detail at what has transpired in each nation.

Estimated Nuclear Stockpiles, 1980-2004

	US	SU/Russia	UK	France	China	
1980	24,140	36,300	350	250	280	61,320
1981	23,240	38,700	350	275	330	62,895
1982	23,040	40,800	335	275	360	64,810
1983	23,240	42,600	320	280	380	66,820
1984	23,640	43,300	270	280	415	67,905
1985	23,560	44,000	300	360	425	68,645
1986	23,360	45,000	300	355	425	69,440
1987	23,560	44,000	300	420	415	68,695
1988	23,200	42,500	300	410	430	66,840
1989	22,365	40,000	300	410	435	63,510
1990	21,655	38,000	300	505	430	60,890
1991	19,155	35,000	300	540	435	55,430
1992	13,700	33,500	200	540	435	48,375
1993	11,200	32,000	200	525	435	44,360
1994	10,550	29,000	250	510	450	40,760
1995	10,500	26,500	250	500	450	38,200
1996	10,400	24,000	260	450	400	35,510
1997	10,335	22,375	275	450	400	33,835
1998	10,285	20,750	275	450	400	32,160
1999	10,240	19,125	275	450	425	30,515
2000	10,195	17,500	275	450	450	28,870
2001	10,140	15,875	275	450	475	27,215
2002	10,100	14,250	275	450	500	25,575
2003	10,050	12,625	275	450	525	23,925
2004	10,000	11,000	275	450	550	22,275

United States

In the mid-1980s the U.S. nuclear stockpile numbered about 23,500 warheads composed of almost 13,000 strategic weapons with the balance a variety of tactical warheads. To date about 12,000 warheads have been withdrawn from the arsenal. The current operational stockpile is approximately 10,400. Regardless of whether START II is implemented the future stockpile will be in the 10,000 range, with changes only in the ratio of warheads deployed versus those in a less ready condition.

The most dramatic decreases have come in the tactical area with 90 percent of that arsenal retired. The U.S. military used to have a wide variety of tactical nuclear weapons: for example, several types of artillery, land mines, short-range missiles, air defense missiles and anti-submarine warfare depth charges and missiles. All of these missions have been eliminated, and the nuclear weapons that went with them have been retired and

dismantled. Except for the ballistic missile submarine the U.S. Navy does not deploy with nuclear weapons, as it once did on a routine basis. The U.S. Army and the Marine Corps no longer have any nuclear weapons. The two types of tactical weapons that remain are gravity bombs for several types of U.S. and NATO aircraft and Tomahawk cruise missiles (stored ashore) for attack submarines only. There has been an enormous geographic consolidation. For example, there used to be over 6,000 U.S. nuclear weapons of 8 to 10 types in Europe at over 100 storage sites, today there are a few hundred of a single type at fewer than a dozen sites.

With U.S. strategic forces there have been reductions as well, the number of warheads has decreased by one-third and the number of platforms by one-half. Specifically the ballistic missile submarines went from about 36 in the mid-1980s to 18 today. If START II is implemented there will be 14. The number of strategic bombers is down from the 300-350 level to about 125. The number of ICBMs has gone from 1,000 to 550. The number of warheads for these "legs" has declined from about 13,000 to approximately 8,500. Even if the Start II Treaty is implemented the number will stay about the same, with 3,500 "accountable" warheads with active forces. The other 5,000 will be spares, a "hedge" for reconstitution, and an inactive portion that is stored in a lesser state of readiness. These will be supplemented by approximately 1,000 tactical warheads, for a total of about 10,000.

Russia

The Soviet stockpile peaked in the mid-1980s at some 45,000 warheads, though not all of them were with operational forces. We believe that about 33,000 of the 45,000 were fielded and active. Major disassembly began then and has continued at a rate estimated to be about 1,800 to 2,000 warheads per year. The original schedule proposed by President Gorbachev in October 1991 included a pledge to dismantle all atomic land mines by 1998, all nuclear artillery shells by 2000, one-half of the surface-to-air missile warheads by 1996, one-half of the tactical naval warheads by 1995 (with the other half stored ashore), and one-half of the bombs for the non-strategic air forces by 1996. According to a Russian official this schedule is being followed.

The status of current forces and the future plans of the Russian military are less well known than those of the U.S. We believe that of the 24,000 warheads that exist at the end of 1996, about half of them are operational. The other half are either retired and awaiting dismantlement or will be part of a future reserve or "hedge." The expansion of NATO eastward, the ratification of the START II Treaty and a future START III Treaty, along with limited budgets are all variables that could produce a future Russian arsenal larger or smaller than the one we have projected.

With Russian strategic forces there have been reductions similar to the U.S.; the number of warheads has decreased by one-third and the number of platforms by one-half from the peak of the late 1980s. Specifically, ballistic missile submarines decreased from 62 to 26, the number of strategic bombers from 170 to 100 and the number of ICBMs from almost 1,400 to 725. The number of warheads for these systems has

declined from about 11,000 to approximately 7,250. Implementation of the START I Treaty is proceeding in an orderly fashion. Inspections are taking place, information is being exchanged, and the target numbers and dates are being met on schedule.

Beginning in 1989 and 1990 with the fall of the Berlin wall and ethnic turbulence in the Caucasus and elsewhere, and accelerating after the attempted coup of August 1991 and the breakup of the Soviet Union itself, there has been an enormous logistical effort to consolidate thousands of Soviet/Russian tactical and strategic nuclear weapons to fewer and safer sites in Russia. In the mid-1980s Soviet weapons probably were deployed in all of the fifteen republics of the USSR, as well as in East Germany, Hungary, Poland, Bulgaria, and Czechoslovakia. Much has happened since then. The number of weapon storage sites has been consolidated from over 600 throughout the former Soviet Union in 1989 to approximately 100 in Russia today. The last Russia warheads in the Ukraine were removed by the end of May 1996 and the last few remaining in Belarus are scheduled to be gone by the end of the year.

United Kingdom

By 1999 Britain will have only one nuclear weapon system, the nuclear powered ballistic missile submarine (SSBN), and the ballistic missiles (SLBMs) they carry. At that time three of the eventual four SSBNs will be operational. The fourth submarine is scheduled to join the force in 2001. Also by 1999 approximately 100 Tornado aircraft, now in Britain and Germany, will no longer carry the nuclear gravity bomb known as the WE 177. The WE 177 bomb is scheduled to be fully retired by the end of 1998.

The British have recently retired their four older *Resolution*-class SSBNs, one in 1992, the second in 1994, the third in February 1996 and the fourth in August 1996 and the Polaris SLBMs that they carries. The four deployed on a total of 229 patrols over a 28 year period. The first new *Vanguard*-class submarine went on its first patrol at the end of 1994, the second (*Victorious*) joined the force at the end of 1995. The third (*Vigilant*) and fourth (*Vengeance*) submarines will enter service in 1998 and 2001, respectively. The submarines carry U.S. Trident II D-5 SLBMs with British-made warheads. Each submarine when it goes on patrol will carry an estimated 56-72 warheads, since some missiles will be fitted with only one warhead for the "sub-strategic" mission. We estimate that the total size of the future British stockpile will be around 275 warheads.

France

On February 22 and 23, 1996 President Jacques Chirac announced several major reforms for French armed forces for the period 1997 to 2002 and beyond. France will phase out conscription and by 2001 will have fully professional armed forces like the U.S. The size will be reduced from almost 400,000 to 260,500.

In the nuclear area President Chirac announced several major decisions. Significant is the elimination of the land-based leg of its Triad. Chirac announced that the S3 Intermediate Range Ballistic Missile would be retired and that there would be no

replacement. On September 16th all 18 missiles on the Plateau d'Albion in southeastern France were deactivated.

There were also reductions in the air leg. In July 1996, after thirty-two years of service the last 18 Mirage IVP bombers relinquished their nuclear role and were retired. France will continue to have air delivered nuclear weapons but most of its warheads will be on SSBNs. France is planning a four submarine fleet of *Triomphant*-class SSBNs, the first of which is scheduled to deploy by the end of 1996. A new missile and a new warhead are on board.

The M45 SLBM is an improved variant of the M4 and carries the new TN 45 warhead. The TN 75 program began in 1987. The warhead was tested numerous times up until July 1991 when testing ceased under orders of President Mitterrand. The TN 75 is a miniaturized, hardened thermonuclear warhead, lighter than the current TN 71. It has a new coating material and a precisely computed shape to give it a better penetration capability during reentry. President Chirac said in June 1995 that a final certification test of the TN 75 would be needed, one of the reasons he gave for resuming testing. It is likely that the October 1, 1995 test at Fangataufa with a reported yield of 110 Kt was a full scale test of the TN 75. Series production of the warhead probably began soon after, at the Centre d'Etudes de Valduc (the Pantex of France), near Is-sur-Tille, 25 miles north of Dijon, and will continue for the next five to seven years.

The current mainstay of the bomber force are 45 Mirage 2000N aircraft committed to nuclear missions which carry the Air-Sol-Moyenne-Portée (ASMP) supersonic air-to-surface missile, first deployed in May 1986. Ninety were delivered, with 80 assigned to Mirage IVP, Mirage 2000N and Super Etendard squadrons. These will be available for the Rafale-D, and may be replaced and/or supplemented by a longer range missile, now called the ASMP Plus.

France built two aircraft carriers one of which entered service in 1961 (*Clemenceau*) and the other in 1963 (*Foch*). Both were modified to handle the AN 52 nuclear gravity bomb with Super Etendard aircraft. The *Clemenceau* was modified in 1979 and the *Foch* in 1981. The AN 52 was retired in July 1991. Only the *Foch* was modified to "handle and store" the replacement ASMP, and approximately 20 were allocated for two squadrons--approximately 24 Super Etendard aircraft. The *Clemenceau* was never modified to "handle and store" the ASMP. The 32,780 ton aircraft carrier will be decommissioned in September 1997. The *Foch* will be laid up after the new carrier, the *Charles de Gaulle* enters service in December 1999, three years behind schedule. The 36,000 ton *de Gaulle* will have a single squadron of Super Etendard (with presumably about 10 ASMPs) until the Rafale-M is introduced in 2002. At about that time a second carrier may be ordered.

The Rafale is planned to be the multi-purpose Navy and Air Force fighter/bomber for the 21st century. Its roles include conventional ground attack, air defense, air superiority and nuclear delivery of the ASMP and/or ASMP+. The carrier-based Navy version will be

introduced first, in 2002, and the air force Rafale-D is scheduled to attain a nuclear strike role in 2005.

China

The Chinese have been very effective in keeping secret the details about the size and composition of their nuclear stockpile. Thus there remains uncertainty about the size of the nuclear bomber force, the number of ballistic missiles deployed, and whether or not there are "tactical" nuclear weapons. Our best estimate is that China maintains an arsenal of about 400 warheads of two basic categories, some 250 "strategic" weapons structured in a "triad" of land-based missiles, bombers, and submarine-launched ballistic missiles and about 150 "tactical" weapons, made up of some or all of the following--low yield bombs for tactical bombardment, artillery shells, atomic demolition munitions, and possibly short range missiles.

The mainstay of Chinese nuclear forces is the ballistic missile, which varies in range from 1,700 to 13,000 kilometers, with only a handful capable of hitting targets in North America. More advanced systems have long been under development with emphasis on improved accuracy and guidance, increased range, mobile launch platforms, solid fuel technology, and multiple warheads. We assume that the recent series of nuclear tests were aimed at providing warheads with improved yield-to-weight ratios for the next generation of ballistic missiles. The yield estimates of the 11 nuclear tests since 1990 suggests that one warhead candidate may be in the 100 to 200 kt range and a larger one in the 600 to 700 kt range.

The bomber force is antiquated, as it is based on Chinese produced versions of 1950s-vintage Soviet aircraft. The Hong-5, a redesign of the Soviet Il-28 Beagle, has been retired from air force service. The main bomber is the Hong-6, based on the Tu-16 Badger, which entered service with Soviet forces in 1955. Under a licensing agreement the Chinese began producing the H-6 in the 1960s. It was used to drop live weapons in two nuclear tests in 1965 and 1967.

For more than a decade China has been developing a new supersonic fighter-bomber, the Hong-7 (or FB-7) at the Xian Aircraft Company. The FB-7 until recently was thought to be a new bomber for the PLAAF, with perhaps a nuclear role. But according to a 1995 Rand study on China's Air Force the FB-7 is for the PLAN. It does not have air force participation, will not be ready for deployment until the late 1990s and then only produced in very small numbers--not more than 20. It will not have a nuclear mission.

A quicker route for China to modernize its bomber force may be to adapt aircraft for a nuclear role that it has already purchased from abroad, or may purchase in the future. In the former category are 26 Soviet/Russian Su-27 Flankers that were delivered in 1992 at a cost of \$1 billion. They are currently with the 3rd Air Division at Wuhu airfield, 250 kilometers west of Shanghai. Under a new agreement Russia intends to sell production rights to China to assemble and produce Su-27s in China. The Su-27 does have an air-to-ground capability though there is no evidence that the PLAAF is modifying it, at this time,

for a nuclear role. Many reports of purchases or licensed manufacturing of other types of Russian aircraft (e.g., MiG-31, Tu-22M, and Su-25) remain unsubstantiated.

With only one operational SSBN to date China has had a difficult time with developing and deploying this leg of its Triad. Technical difficulties with solid fuel for the missiles and nuclear reactors have slowed the program. The Julang-1 SLBM was China's first solid fueled ballistic missile. A second generation SLBM, the Julang-2--a variant of the DF-31 long range ballistic missile--is also under development. It is not known how many SSBNs are planned.

Information about Chinese tactical nuclear weapons is limited and contradictory, and there is no confirmation from official sources of their existence. China's initial interest in such weapons may have been spurred by worsening relations with the Soviet Union in the 1960s and 1970s. Several low yield nuclear tests in the late 1970s, and a large military exercise in June 1982 simulating the use of tactical nuclear weapons by both sides, suggests that they have been developed.

There is widespread debate in the West about the meaning and purpose of China's military modernization. Is the purpose merely a routine upgrade or, as some would have it, evidence of aggressive designs in the region? China's military budget has grown over the past years. While difficult to calculate, many Western experts believe China's military budget is in the \$28 to \$36 billion range. This is seven to nine times smaller than the U.S. military budget, but four to five times larger than what is declared by China's finance minister. Greater transparency about the budget, current forces, and future plans could help clarify foreign analysis and ease suspicions.

Conclusion

In conclusion, let me make three final points.

1. The plans of the United States, Britain and France with regard to their future nuclear arsenals are fairly well known. The deployment of new missiles, submarines, and aircraft in the pipeline along with the retirement of obsolete weapons provides an accurate picture of tomorrow's arsenals.
2. The plans of Russia and China with regard to their future nuclear arsenals are not well known. In Russia, for example, the number of tactical warheads to be retired is unclear. The future plans for the types and numbers of new Chinese weapons is a mystery.
3. If the current estimates provided in the Table on page one are anywhere near accurate the U.S. and Russia are planning to keep sizable arsenals, fifteen to twenty times larger than the combined arsenals of the second-tier states.