

China

Date of first nuclear explosion- 16 October 1964

1. Amount, Location and Operational Plan of Nuclear Weapons

Strategic Weapons

Type	No. Deployed	Range (km)	Warheads x Yield (kt)	Warheads in Stockpile
<i>Land-Based Missiles</i>				
Dong Feng (DF)-3A	16	3,100	1 x 3,300	16
DF-4	22	>5,500	1 x 3,300	22
DF-5A	20	13,000	1 x 4,000- 5,000	20
DF-21A	35	2,100	1 x 200-300	35
DF-31	0	~ 7,250	1 x ?	0
DF-31A	0	~ 11,270	1 x ?	0
<i>Sea-Based Missiles</i>				
JL-1	12	>1,700	1 x 200-300	12
JL-2	0	>8,000	1 x ?	0
<i>Nuclear-Capable Aircraft</i>				
Hong-6	20	3,100	1 x bomb	~ 20
Quan-5, others?	?	?	1 x bomb	~ 20
Total				~ 145

Robert S. Norris and Hans M. Kristenson, "Chinese Nuclear Forces, 2006" from *NRDC: Nuclear Notebook*, in *Bulletin of the Atomic Scientists*, May/June 2006 62(3), pp 60-63.

Tactical Weapons

The intended ambiguity of China's nuclear forces extends to the opacity surrounding its non-strategic arsenal.

The Natural Resources Defense Council most recently said that although they previously counted about 100 Chinese non-strategic short-range nuclear weapons based on US intelligence, "no recent credible evidence suggests that they are presently part of Chinese operational forces." China deploys as many as 650-730 short-range ballistic missiles (DF-11, -15) opposite Taiwan, but these are thought to be conventionally armed.

Robert S. Norris and Hans M. Kristenson, "Chinese Nuclear Forces, 2006" from *NRDC: Nuclear Notebook*, in *Bulletin of the Atomic Scientists*, May/June 62(3), pp 60-63.

Nuclear weapons facilities

Name/Location of Facility	Type/Status
Lop Nur Nuclear Weapons Test Site, Xinjiang	Nuclear weapons test site and possible nuclear weapons stockpile

Northwest Nuclear Technology Institute, in the Scientific Research District outside Malan, Xinjiang	Archive on nuclear explosions, warfare, and weapons research and design; associated with testing at Lop Nur
Haiyan or Koko Nor complex in Qinghai [Tsinghai] Province	Closed down. Large nuclear stockpile site and nearby weapons development complex
Baotou (Pao-t'ou)	materials and component production facility
Jinquan Atomic Energy Complex (plant 404), Subei, Gansu	Closed down. Former site of uranium processing and plutonium production, reprocessing and fabrication
Hanzong, Shaanxi	Two operational gas centrifuge enrichment facilities
Lanzhou Nuclear Fuel Complex, Lanzhou, Ningxia	Russian-supplied centrifuge enrichment plant; pilot-scale reprocessing plant
821 Plant, Guangyuan, Sichuan	China's largest plutonium production and reprocessing plant, not thought to be producing fissile material. Former weapons assembly facility.
Heping, Sichuan	Gaseous diffusion uranium enrichment plant; capable of producing from 750 to 2450 Kgs of weapons-grade uranium per year.
Nuclear Fuel Component Plant, Yibin, Sichuan	Produces and processes plutonium for nuclear weapons
Chinese Academy of Engineering Physics (CAEP), Mianyang, Sichuan	Nuclear weapons research, design and technology complex, called the "Los Alamos of China"; 12 institutes spread throughout Mianyang
Institute 905 of the CAEP, Mianyang, Sichuan	Ordinance engineering laboratory for design of non-nuclear components of nuclear weapons; called the "Chinese Sandia"
Shanghai Institute of Nuclear Research, Shanghai, Zhejiang	Engaged in ballistic missile and nuclear weapons development
Headquarters of the North Sea Naval Fleet, Qingdao, Shandong	Probable location of China's Xia class ballistic missile nuclear submarine
Harbin, Heilongjiang	Possible warhead assembly and production facility
China Nuclear Energy Industry Corporation, Beijing	Commercial arm of the government-owned China National Nuclear Corp.
Institute of Applied Physics and Computational Mathematics, Beijing	Conducts research for the CAEP on nuclear warhead design computations
Fudan University, Shanghai, Xhejiang	Engaged in tomography, testing of solid missile propellants, explosives, and detonation packages for nuclear weapons

Joseph Cirincione with Jon B. Wolfsthal and Miriam Rajkumar, *Deadly Arsenals: Tracking Weapons of Mass Destruction*. Carnegie Endowment for International Peace, 2005; and <http://www.fas.org/nuke/guide/china/facility/index.html>; and *Chinese Military Plutonium and Highly Enriched Uranium Inventories*, by David Albright and Corey Hinderstein, June 22, 2005.

The Role of Nuclear Weapons in National Security Strategy

Again, China's intentional ambiguity about national security issues makes detailed reporting difficult. However, elements of national security strategy can be discerned from diplomatic statements and governmental white papers.

China focuses its security strategy on three inter-related elements:

- promoting national economic development;
- promoting domestic unity; and
- maintaining state sovereignty and territorial integrity.

China views its nuclear arsenal- the smallest of the 5 recognized nuclear weapon states- as an important element of deterrence, although it repeatedly voices support for global elimination of nuclear weapons. Its December 2006 White Paper, *China's National Defense in 2006*, cited deterring nuclear attack or threat of attack as the fundamental goal of its nuclear arsenal. Thus, China "upholds the principles of counterattack in self-defense and limited development of nuclear weapons, and aims at building a lean and effective nuclear force' while pledging not to enter into a nuclear arms race with any other country."

China's "no first use" policy is still in place, although there is some debate in China over whether to maintain that position. Annual White Papers from 2003 to 2006 have reiterated China's firm commitment to "no first use". During Secretary of Defense Rumsfeld's October 2005 visit, China's senior leadership also assured him that its policy of "no first use" will not change. However, several individuals closely connected to the government have publicly advocated changing the policy.

Shannon N. Kile, Vitaly Fedchenko and Hans M. Kristensen, "World nuclear Forces, 2007" in SIPRI Yearbook 2007. Information Office of the State Council of the People's Republic of China, 'China's national defense in 2006', Beijing, 29 Dec. 2006, at <http://www.china.org.cn/english/features/book/194421.htm>
US Department of Defense's annual report to Congress on the Military Power of the People's Republic of China, available at: <http://www.fas.org/nuke/guide/china/dod-2006.pdf>

2. Compliance with Article VI of the NPT

Nuclear Weapons Modernization/Vertical Proliferation

China continues to modernize its nuclear forces very slowly, and many unknowns remain. The actual number of warheads appears to have leveled at about 200 in the 1980s, and remained at that number since then. However, its December 2006 White Paper, *China's National Defense in 2006*, says that China "aims at progressively improving its force structure of having both nuclear and conventional missiles, and raising its capabilities in strategic deterrence and conventional strike under conditions of information-ization".

Missile upgrades

A program to upgrade its intercontinental ballistic missile (ICBM), the DF-5, to a DF-5A with increased range and payload, has been ongoing since the 1980s. China may decide to deploy multiple warheads on the currently single-warhead missiles in response to US missile defenses. Reports of a new three-stage, solid-fueled, mobile ICBM, the DF-31, surfaced nearly two decades ago, but it still has not been deployed. It is expected to replace ageing DF-3As and DF4s once deployed. China is also developing a longer-range version of this missile, the DF-31A, but it is unlikely to be deployed before the end of the decade.

Submarine upgrades

China currently has one Xia-class nuclear-powered ballistic missile submarine (SSBN), which has never conducted a deterrent patrol. China is working on a new Type 094 Jin class SSBN. This new class of SSBN is expected to carry 16 three-stage JL-2s, which is a variant of the D-31 missile, but is not expected to be deployed before 2010.

Bomber upgrades

China is developing land-attack cruise missiles (the DH-10 and the YJ-63) that could be for delivery by its H-6 bomber. China is not thought to have aircraft whose primary purpose is to deliver nuclear weapons.

Systems Retired

- DF-3A missiles are being gradually retired;

- DF-41 was canceled; and
- some DF-21 missiles have been converted to non-nuclear missions.

Shannon N. Kile, Vitaly Fedchenko and Hans M. Kristensen, "World nuclear Forces, 2007" in SIPRI Yearbook 2007.
 Information Office of the State Council of the People's Republic of China, 'China's national defense in 2006', Beijing, 29 Dec. 2006, at: <http://www.china.org.cn/english/features/book/194421.htm>
 Robert S. Norris and Hans M. Kristenson, "Chinese Nuclear Forces, 2006" from *NRDC: Nuclear Notebook*, in *Bulletin of the Atomic Scientists*, May/June 62(3), pp 60-63.

3. Location and Capability of Nuclear Facilities

Power reactors

Operational: 10
 Shut down: 0
 Under Construction: 5
 Planned: 93
<http://www.iaea.or.at/programmes/a2/>
<http://world-nuclear.org/info/inf63.html>

Research reactors

Operational: 14
 Shut down: 2
 Under Construction: 2
 Planned: 0
<http://www.iaea.or.at/worldatom/rrdb/>

China reportedly intends to reprocess a small amount of light water reactor spent fuel and recycle separated plutonium into its civil reactors. It also plans to establish a 100 ton per year reprocessing plant and associated MOX fuel fabrication plant, but these plans have been delayed.

http://www.isis-online.org/global_stocks/separated_civil_pu.html

Uranium Mines (9 operational)

Fuzhou- 300 tons capacity per year
 Chongyi- 120 tons capacity per year
 Yining- 200 tons capacity per year
 Lantian- 100 tons capacity per year
 Benxi- 120 tons capacity per year
 Qinglong field- 8,000 tons total
 Tengchong (ISL)- 6,000 tons total
 Chenxian mine- 5,000 tons total
 712 Uranium Mine
 Hengyang (on stand-by)- 500-100 tons per year
 exploration finished at:
 Yili deposit
 Shihongtan deposit
 Zaohuohao deposit
 Chanziping deposit
 Xiangshan field in Jiangxi Province
 Xiazhuang field in Guangdong Province

Uranium Enrichment Facilities, cont.

Beijing)
 Centrifuge enrichment plant (Chengdu, Sichuan)

Uranium Processing Facilities

Nuclear Fuel Component Plant/202 (Baotou, Nei Mongolia province)
 Nuclear Fuel Component Plant/ 812 (Yibin, Sichuan)
 Jiuquan Atomic Energy Complex/Plant 404 (Subei, Gansu) Closed

Plutonium Production Reactors

Plant 821 (Guangyuan, Sichuan)
 Nuclear Fuel Component Plant/Plant 812 (Yibin, Sichuan)
 Jiuquan Atomic Energy Complex/Plant 404 (Subei, Gansu) Closed

Uranium Enrichment Facilities

Heping Uranium Enrichment Plant (Heping, Sichuan)
 Lanzhou Nuclear Fuel Complex (Lanzhou, Gansu)
 Lanzhou Nuclear Fuel Complex-2 (Lanzhou, Gansu)
 China Institute of Atomic Energy (Tuoli, near

Plutonium Processing Facilities

Jiuquan Atomic Energy Complex/Plant 404 (Subei, Gansu) Closed
 Plant 821 (Guangyuan, Sichuan)
 Nuclear Fuel Component Plant/Plant 812 (Yibin, Sichuan)
 Lanzhou Nuclear Fuel Complex (Lanzhou, Gansu)

4. Fissile Material Holdings

Military Stocks of Fissile Materials

Plutonium: 4.1 tons, with 2.1-6.6 ton range of total estimated stock
 HEU: 21 tons (+/-5)

Declared Excess

Plutonium: 0

HEU- 0

http://www.isis-online.org/global_stocks/end2003/military_pu.pdf (revised June 30, 2005)

http://www.isis-online.org/global_stocks/end2003/military_excess_heu.pdf (revised June 30, 2005)

Unseparated Civil Plutonium: 5.1 tons

Separated Civil Plutonium: 0

http://www.isis-online.org/global_stocks/end2003/military_pu.pdf (revised June 30, 2005)

Civil Highly Enriched Uranium:

End of 2003: 1 ton

Projected for 2020: 1.5 tons

http://www.isis-online.org/global_stocks/end2003/civil_heu_watch2005.pdf (revised August, 2005)

Radioactive Waste Management

The World Nuclear Association predicts that the annual spent fuel arisings will amount to approximately 600 tons in 2010 and 1000 tons by 2020. <http://www.world-nuclear.org/info/inf63.htm>

Spent fuels are temporarily stored at on-site pools for at least 5 years before transported to spent fuel interim storage sites for future reprocessing.

Li, Zhongliang, "Radioactive Waste and Spent Fuel Management in China," presentation given at the "GLOBAL 2001: Back End of the Fuel Cycle" conference, September 10-13, 2001, Paris, France.

The Commission of Science, Technology and Industry for National Defence is responsible for all facilities associated with the nuclear fuel cycle and radioactive waste management.

Low- and intermediate level waste: It is reported that China will construct 4-5 repositories for low-level waste produced from its nuclear industry, the decommissioning of nuclear facilities and from nuclear power plant operation. The wastes will be delivered to these facilities after a five-year interim storage period. <http://www.ocrwm.doe.gov/factsheets/doeymp0409.shtml>

China employs three techniques for management of low- and intermediate-level nuclear waste: hydraulic fracture (commenced in 1993), bulk pouring cementation (mostly completed) and near-surface disposal near sites with "comparatively concentrated" nuclear installations.

High-level waste: China plans to create a vitrification workshop; in the meanwhile, China carries out chemical-separation experiments to downblend HLW and continues with its studies on HLW deep geological disposal. China has completed all feasibility studies and will most likely construct it in the northwest region of China, where two wells up to 700 m were drilled.

Li, Zhongliang, "Radioactive Waste and Spent Fuel Management in China," presentation given at the "GLOBAL 2001: Back End of the Fuel Cycle" conference, September 10-13, 2001, Paris, France.

5. Nuclear Activities

Research Programs

China Nuclear Power Information Network

CIAE - China Inst of Atomic Energy

IHIP - Institute of Heavy Ion Physics

INET - Inst of Nuclear Energy Technology

Lanzhou University Nuclear Science & Technology Research Center

Peking University Nuclear Science & Technology Research Center

SNERDI - Shanghai Nuclear Engineering Research & Design Institute

SWIP - Southwest Inst of Physics

<http://www.radwaste.org/research.htm>

Nuclear fusion research

Institute of Plasma Physics, Chinese Academy of Science

Southwestern Institute of Physics, Center of Fusion Science

Department of Modern Physics, University of Science and Technology of China

http://www.iaea.org/inis/ws/research_institutes/china.html

Nuclear Cooperation

Algeria: Provision of 15 MW research reactor (1983); research facilities (1996 and 1997)

Argentina: Nuclear fuel cycle research and development (1985-present)

Belgium: Cooperation agreement (1985-present)

Belgo-Luxembourg Economic Union: Cooperation agreement (1979-present)

Brazil: Provision of nuclear materials and equipment (1984)

Canada: Uranium agreements (1994-2024)

Chile: Geology and mining; uranium reprocessing (1989-?)

Finland: Comprehensive agreement (1987-?)

France: Cooperation, safety, scientific and technical agreements (1978-present)

Germany: Cooperation, safety, scientific and technical agreements (1984-present)

Indonesia: Cooperation, technical, assistance and training agreement (1985)

Iran: Provision of nuclear technology, including cooperation, technical, scientific agreements (1985-?)

Italy: Cooperation, safety, scientific and technical agreements (1980-?)

Japan: Cooperation, safety, and radioactive waste management agreements (1986-present)

Pakistan: Nuclear cooperation agreement, including the supply of a 300 MW power reactor (1976-?)

Romania: Cooperation agreement (1984)

Russia: Cooperation agreement (1996); uranium enrichment plant construction cooperation (1994);

Agreement on supply of two 1,000 MW power reactors (1992); Economic and Scientific

Cooperation agreement, including two nuclear power plants (1990-2000)

South Korea: Agreement for cooperation in establishing manufacturing facilities in China for nuclear

components and equipment, and on the fabrication of sets of major components for 30-40

reactors (1995); Protocol on monitoring radioactivity and in alerting one another of any

nuclear accidents; (1994); Bilateral nuclear energy agreement that will allow South Korean

companies to take part in the construction of nuclear power plants in China (1994);

Information provision agreement (1991)

Spain: Comprehensive agreement (1985-?)

Sweden: Industrial and scientific cooperation agreement (1978-present)

Switzerland: Cooperation agreement (1986-present)

Ukraine: Cooperation in mining, research and development, and safety (1996)

UK: Comprehensive agreement (1985-present)

US: Nuclear reactor technology and nuclear application technologies; Nuclear emergency manage

ment and safety; Export controls on nuclear materials, equipment, technology, dual-use

items; International nuclear safeguards and physical protection; Radioactive source security

(1985-present)

Yugoslavia (former): Cooperation, provision of technical assistance, materials, and equipment (1980-?)

<http://www.nti.org/db/china/nca.htm>

6. International Non-Proliferation Efforts

“Since the mid-1990s, China has gradually set up a comprehensive legal system for export control of nuclear, biological, chemical, missile and other sensitive items and technologies as well as all military products... China's legislation on export control widely embraces such international practices as licensing system, end-user and end-use certification, list control and "catch-all" principle. In order to reduce the risk of proliferation, relevant regulations also stipulate that nuclear exports and the export of controlled chemicals and military products can only be handled by a few trading companies desig-

nated by the Government. All regulations spell out in detail penalty measures for illegal exports. The scope of control of the aforementioned regulations is basically identical with international practices.” China Government White Paper, *China's Endeavors for Arms Control, Disarmament and Non-Proliferation*, September 2005. <http://www.china.org.cn/english/features/book/140320.htm>

Treaties Signed and Ratified, Date of deposit

African Nuclear-Weapon-Free Zone Treaty (Treaty of Pelindaba) Protocols I & II, 6 September 1996

Antarctic Treaty, 8 June 1983

Biological and Toxin Weapons Convention, 15 November 1984

Certain Conventional Weapons Convention, 7 April 1982

Comprehensive Nuclear Test-Ban Treaty, not yet ratified, 24 September 1996

Convention on the Physical Protection of Nuclear Material, 10 January 1989

Chemical Weapons Convention, 25 April 1997

Nuclear Non-Proliferation Treaty, 17 March 1992

Outer Space Treaty, 12 January 1984

Sea Bed Treaty, 28 February 1991

South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga) Protocol 2 & 3, 21 October 1988

Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlateloco) Protocol II, with reservations, 12 June 1974

On 28 March 2002, China ratified the IAEA Additional Protocol, the first NWS to do so.

Multilateral Groups

Conference on Disarmament

Nuclear Suppliers Group

Zangger Committee

In February 2004, China and the Missile Technology Control Regime held their first round of dialogue, four months after Foreign Minister Li Zhaoxing sent a letter to the MTCR Chair, declaring China's willingness to join. China has applied for membership and pledged to abide by the MTCR's control mechanisms.

7. Positions Taken in International Fora on Various Issues of Nuclear Disarmament

Nuclear Doctrine: “China has pledged not to be the first to use nuclear weapons, not to use nuclear weapons against non-nuclear-weapon states under any circumstances. China calls upon all nuclear-weapon States to renounce the policy of nuclear deterrence based on the first use of nuclear weapons, to undertake not to be the first to use nuclear weapons and to reduce the role of nuclear weapons in their national security policies. China has never taken part in nuclear arms race or deployed nuclear weapons abroad.” - **Statement by Ambassador Hu Xiaodi to the 2005 NPT Review Conference, New York, 19 May 2005.** <http://www.china-un.org/eng/xw/t196528.htm>

Nuclear Disarmament: “The nuclear disarmament should be a just and reasonable process of gradual reduction towards a downward balance. States possessing the largest and most advanced nuclear arsenals bear special and primary responsibility for nuclear disarmament and should take the lead in drastically reducing their nuclear arsenals and bind their reduction commitment through legal instruments. All nuclear weapons reduced from their arsenals should be destroyed rather than stored. China is in favor of the 'intermediate measures' with regard to nuclear disarmament. China is ready to consider implementing relevant measures at appropriate time and under appropriate conditions in the due course of the nuclear disarmament process.” - **Statement by Ambassador Hu Xiaodi to the 2005 NPT Review Conference, New York, 19 May 2005.** <http://www.china-un.org/eng/xw/t196528.htm>

Non-Proliferation: “The fundamental purpose of preventing the proliferation of nuclear weapons is to preserve and promote international and regional peace, stability and security. Any measure of non-

proliferation should be conducive to attaining this goal. Concerns related to proliferation of nuclear weapons should be addressed peacefully through political and diplomatic means within the framework of existing international laws. Countries should refrain from willful threat or use of force, double or multiple standards on the issues of nuclear non-proliferation, or even pursuing other agenda in the name of non-proliferation." - **Statement by Ambassador Hu Xiaodi to the 2005 NPT Review Conference, Main Committee II, New York, 19 May, 2005.** <http://www.china-un.org/eng/xw/t196527.htm>

Outer Space: "The efforts in preventing the weaponization of and an arms race in outer space and advancing nuclear disarmament are mutually complementary. If weapon systems were deployed in outer space, global strategic balance and stability would be disrupted and an arms race including a nuclear one be provoked. Therefore, it is both necessary and pressing to prevent such a scenario from becoming reality. To that end, China, the Russian Federation, along with some other countries have all along stood for the negotiation of, in the CD, an international legal agreement on the prohibition of deployment of weapons in outer space, threat or use of force against outer space objects." **Statement by Ambassador Hu Xiaodi to the 2005 NPT Review Conference, New York, 19 May 2005.** <http://www.china-un.org/eng/xw/t196528.htm>

Thirteen Steps: "The 2000 NPT Review Conference agreed on 13-step nuclear disarmament measures. Although regrettable changes took place in some aspects, we should continue to adhere to the spirit and principles of the steps. It is necessary for the third session of the preparatory committee to reaffirm those measures which are still valid. New proposals reflecting changes of the situation should be explored and the consensus should be sought." - **Mr. Liu Jieyi, Director General of Arms Control and Disarmament Department, Foreign Ministry of China, on Nuclear Disarmament and Security Assurances, 6 April 2004.** <http://www.fmprc.gov.cn/eng/wj/zjg/jks/jkxw/t82570.htm>

Security Assurances: "China supports the Conference on Disarmament to establish, in accordance with the relevant mandate as contained in the A5 proposal, an ad hoc committee on NSA so that it can start substantive work in negotiating an international legal instrument in security assurances for non-nuclear weapon states. We can also agree to the negotiations of a protocol on security assurance for non-nuclear weapon states within the framework of the NPT." - **Statement by Ambassador Jingye Cheng to the Conference on Disarmament, Geneva, 3 August 2006** <http://www.reachingcriticalwill.org/political/cd/speeches06/3AugustChina.pdf>

"Since non-nuclear states have given up the nuclear weapon choice, it is fair and reasonable for them to claim assurances that they be free from threat of nuclear weapons, and ask for a legally-binding confirmation of such assurances. Security assurances for non-nuclear-weapon states is not one-way benefit. By undertaking not to develop nuclear weapons, non-nuclear-weapon states make contributions to international nuclear non-proliferation and nuclear disarmament, as well as world peace and stability at large. Security assurances for non-nuclear-weapon states will enhance their sense of security and reduce their motivation to pursue nuclear weapons, hence playing a positive role in preventing the proliferation of nuclear weapons and preserving the international nuclear non-proliferation regime, of which the NPT serves as the cornerstone." - **Statement by Ambassador Hu Xiaodi to the 2005 NPT Review Conference, New York, 19 May 2005.** <http://www.china-un.org/eng/xw/t197216.htm>

Fissile Materials: "FMCT negotiations in the CD should be based on the mandate contained in the Shannon Report. We believe that the right approach to achieve the "cessation of production of fissile material" is to adopt a legal instrument through negotiations. At the same time, we are of the view that future FMCT negotiations should not involve the issue of stockpile." - **Statement by Ambassador Jingye Cheng to the Conference on Disarmament, Geneva, 17 May 2006** <http://www.reachingcriticalwill.org/political/cd/speeches06/17MayChina.pdf>