

Policy Forum 06-15A: China's Nuclear Forces: The World's First Look at China's Underground Facilities for Nuclear Warheads



The NAPSNet Policy Forum provides expert analysis of contemporary peace and security issues in Northeast Asia. As always, we invite your responses to this report and hope you will take the opportunity to participate in discussion of the analysis.

Recommended Citation

"Policy Forum 06-15A: China's Nuclear Forces: The World's First Look at China's Underground Facilities for Nuclear Warheads", NAPSNet Policy Forum, February 23, 2006, <https://nautilus.org/napsnet/napsnet-policy-forum/chinas-nuclear-forces-the-worlds-first-look-at-chinas-underground-facilities-for-nuclear-warheads/>

China's Nuclear Forces: The World's First Look at China's Underground Facilities for Nuclear Warheads

China's Nuclear Forces: The World's First Look at China's Underground Facilities for Nuclear Warheads

Policy Forum Online 06-15A: February 23rd, 2006

"China's Nuclear Forces: The World's First Look at China's Underground Facilities for Nuclear Warheads"

by Thomas B. Cochran, Matthew G. McKinzie, Robert S. Norris, Laura S. Harrison, and Hans M. Kristensen

CONTENTS

[I. Introduction](#)

[II. Analysis by Thomas B. Cochran, Matthew G. McKinzie, Robert S. Norris, Laura S. Harrison, and Hans M. Kristensen](#)

[III. Nautilus invites your responses](#)

I. Introduction

Thomas B. Cochran, Matthew G. McKinzie, Robert S. Norris, Laura S. Harrison, and Hans M. Kristensen, analyzing China's nuclear forces in the publication *Imaging Notes*, write, "While President George W. Bush and President Hu Jintao spent their time in November discussing economic and regional issues, both of their military establishments were busy modernizing the nuclear forces. China is nowhere near nuclear parity with the United States, but both countries seem poised to modernize their nuclear forces with an eye to the other's intentions and capabilities."

The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Nautilus Institute. Readers should note that Nautilus seeks a diversity of views and opinions on contentious topics in order to identify common ground.

II. Analysis by Thomas B. Cochran, Matthew G. McKinzie, Robert S. Norris, Laura S. Harrison, and Hans M. Kristensen

- China's Nuclear Forces: The World's First Look at China's Underground Facilities for Nuclear Warheads

by Thomas B. Cochran, Matthew G. McKinzie, Robert S. Norris, Laura S. Harrison, and Hans M. Kristensen

Any discussion of U.S. and Chinese strategic nuclear arms was absent from the meetings in Beijing between President George W. Bush and President Hu Jintao this past November, where economic and regional concerns predominated. With the Cold War a fading memory, the public's attention to the role that nuclear weapons play in U.S. security has practically evaporated compared to the national debates and grass-roots anti-nuclear movements that characterized the 1970s and 1980s.

That inattention is a serious oversight, since the weapons have not gone away. The current operational stockpiles of the U.S. and Russia are approximately equal numerically at roughly 6,000 each, and both have thousands more in reserve. China has less than 400, 15 times less than either of the former Cold War rivals.(1)

The U.S. government states that its purpose in possessing nuclear weapons is, among other things, to deter nuclear use by any potential adversary, mainly Russia and China. In the late 1990s the United States decided to increase the number of Chinese facilities to be held at risk with U.S. nuclear weapons. This targeting of Chinese facilities is due to concern over the long-term modernization of their nuclear forces. The U.S. Navy has since increased the number of ballistic missile submarines in the Pacific, probably to implement that decision. As a result, the deterrent relationship between the United States and China appears to be undergoing some revision which, combined with Chinese concerns over the impact of U.S. ballistic missile defense systems, in turn may cause China to consider new options to modernize its nuclear forces and doctrine.

Non-governmental organizations (NGOs) have played an important educational role by publishing open and accurate information about global nuclear arsenals, materials and technical capabilities. One tool in this effort has been the use of the U.S. Freedom of Information Act (FOIA), which

provides access to once classified U.S. government documents, some of which have been about China. Increasing knowledge about China has also come from the Chinese themselves. Beginning in the mid-1980s, conferences and workshops co-sponsored by American and European NGOs and the Chinese Academy of Engineering Physics (CAEP-the site of China's nuclear weapons research, engineering and development program) have created an international community of researchers who study and write about nuclear deterrence, arms control and international security issues (See [Figure 1](#) for IKONOS image of CAEP facilities.). In recent years, a new tool has become available in commercial high-resolution satellite imagery, which since 1999 has greatly enhanced the abilities of NGOs to conduct research on the often secretive subject of nuclear weapons and their role in national defense policy.

The Natural Resources Defense Council (NRDC), an NGO based in Washington, D.C., is conducting a study in collaboration with the Federation of American Scientists to examine and describe the status of Chinese nuclear forces, assess what is known about future modernization plans and better understand the deterrent relationship with the U.S. This article is a preview of the forthcoming report and provides examples of IKONOS and QuickBird imagery of Chinese nuclear forces.

OVERVIEW OF CHINA'S NUCLEAR FORCES

China became a nuclear power in October 1964 after conducting its first test with initial assistance from the Soviet Union. After cooperation between the two countries ended in 1960, China continued development very much on its own. Over the past 40 years, China's nuclear forces have remained at relatively modest levels while technological improvements have gradually evolved. The strategic competition between the United States and the Soviet Union that resulted in enormous arsenals had no parallel in the United States-China relationship. Today, China possesses approximately 85 nuclear-capable land-based ballistic missiles; no more than twenty have sufficient range to target the continental United States.

During the Cold War, a "triad" of weapons including land-based intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and bomber-delivered weapons became the standard configuration for the nuclear arsenals of the United States and the Soviet Union and, to a lesser extent, for those of France and Britain. China also attempted to develop a triad but failed to achieve an operational sea-based leg. Today China has approximately 85 ballistic missiles deployed in fixed silos, hidden in caves, or loaded on mobile platforms. A single Chinese submarine is capable of delivering nuclear missiles, although it is not fully operational, and a modest number of aircraft can possibly deliver nuclear bombs. To replace its aging ballistic missile force, China is currently developing three new versions of the DF-31, two on land for mobile launchers and one on a new class of submarine. Deployment is expected to begin over the next five years.

NUCLEAR-CAPABLE BOMBER AIRCRAFT

China's aged strategic bomber force consists of between 100 and 120 Hong-6 medium-range bombers based on the 1950s-era design of the Soviet Tu-16 Badger bomber. Production of the Hong-6 began in 1964, and from 1980 to 1990, China built five or six Hong-6s per year.(2) The antiquated aircraft probably would have difficulties penetrating modern air defense systems. [Figure 2](#) shows a QuickBird photo of 13 Hong-6 nuclear-capable bombers found at Dangyang Airfield in Hubei Province, well within range of Japan, South Korea and Taiwan. Also visible in this satellite image are five aerial refueling tanker planes: the Hong-6U and Ilyushin-78.

Another type of nuclear-capable Chinese aircraft is the Qian-5, a supersonic attack aircraft designed in the late 1950s and 1960s. In January 1972, the Qian-5 was used for the first time to conduct a full-scale nuclear weapons test and reportedly has an internal bomb bay allowing for one weapon. [Figure 3](#) shows part of a group of 70 Qian-5 aircraft visible in a QuickBird image of Jianqiao Airfield in Zhejiang Province on the coast of the East China Sea. Their age and limited range (400 km)

make the continued nuclear role of these aircraft questionable.

NUCLEAR-POWERED BALLISTIC-MISSILE SUBMARINE

China's ballistic-missile submarine program has had a troubled history, with serious technical problems stretching back twenty years or more. Its "fleet" consists of a single SSBN (nuclear ballistic-missile-carrying submarine), the Xia. Based with China's North Sea Fleet at Qingdao, the Xia was built at Huludao Naval Base and Shipyard and launched in April 1981. The Xia is not fully operational, even after a recent four-year overhaul, and it has never sailed beyond China's regional waters.⁽³⁾ According to U.S. Naval Intelligence, the Xia has never conducted a deterrent patrol.

Since 1989, the Xia had reportedly been moved to the Jianggezhuang Submarine Base on the Yellow Sea in Shandong Province, where nuclear warheads for its Julang-I missiles are believed to be stored. [Figure 4](#) confirms the presence of the submarine at this facility, showing the Xia (identified by its 12 missile hatches behind the sail) moored along a pier near an entrance to an underground facility 450 meters northeast of the submarine. The underground facility, shown here for the first time, likely plays a role in the storage and maintenance of the Xia's Julang I missiles and their nuclear warheads.

UNDERGROUND FACILITIES

Several satellite images that NRDC obtained for this study are notable because they show the presence of underground facilities. The characterizing and cataloging of such features using high-resolution satellite imagery is important in current debates about U.S. nuclear policy because the Pentagon argues that it needs to be able to target underground facilities and that their numbers are increasing. [Figure 5](#) illustrates an underground Chinese facility associated with the Feidong Air Base in Anhui Province, including a runway emerging from the adjacent hill. Many such underground facilities were discovered at North Korean air bases in a prior NRDC study (Imaging Notes, Summer 2005).

DISCUSSION

American and Chinese nuclear capabilities are highly asymmetric. Beginning in 2002, an important-but largely unnoticed- change in U.S. nuclear forces has been the enhancement of accurate nuclear strike capabilities against targets in the Asia- Pacific region. By shifting the homeport of five ballistic-missile-carrying submarines (SSBNs, colloquially known as "Boomers") from the Naval Submarine Base Kings Bay in Georgia, to the Naval Submarine Base Bangor, just west of Seattle, Washington, more than two-thirds of the U.S. SSBN force will be based in the Pacific. This is a dramatic change compared with the Cold War when most U.S. SSBNs were based in the Atlantic to target the Soviet Union.

Moreover, the Trident I C4 sea-launched ballistic missile that previously armed SSBNs in the Pacific has been retired and replaced with the longer-range and more accurate Trident II D5. Unlike its predecessor, the D5 can carry the W88, the most powerful ballistic missile warhead in the U.S. arsenal. The other warhead carried on the SSBNs, the W76, is being equipped with a new fuze with ground-burst capability that will significantly enhance the lethality of the weapon.

While President George W. Bush and President Hu Jintao spent their time in November discussing economic and regional issues, both of their military establishments were busy modernizing the nuclear forces. China is nowhere near nuclear parity with the United States, but both countries seem poised to modernize their nuclear forces with an eye to the other's intentions and capabilities. That race, although less about numbers than capability, must be watched carefully, and remote sensing data is an invaluable tool to better understand Chinese nuclear forces and U.S. claims about their capabilities. In a forthcoming study, NRDC will assess the future direction of Chinese and U.S. nuclear forces in the Pacific to improve understanding of the future deterrent relationship between

these two countries.

FOOTNOTES

(1) Norris, Robert S. and Hans M. Kristensen, The Bulletin of the Atomic Scientists: "U.S. Nuclear Forces, 2006," January/February 2006 pp. 68-71, "Russian Nuclear Forces, 2006," March/April 2006, forthcoming , and "Chinese Nuclear Forces, 2003," November/December 2003 pp. 77-80 (vol. 59, no. 06).

(2) Pollack, Jonathan D., ed., In China's Shadow (Santa Monica: Rand, 1998), p. 21.

(3) Defense Department, "Annual Report on the Military Power of the People's Republic of China," (2002), p. 22.

III. Nautilus Invites Your Responses

The Northeast Asia Peace and Security Network invites your responses to this essay. Please send responses to: napsnet-reply@nautilus.org . Responses will be considered for redistribution to the network only if they include the author's name, affiliation, and explicit consent.

Produced by The Nautilus Institute for Security and Sustainable Development
Northeast Asia Peace and Security Project (napsnet-reply@nautilus.org)

[Return to top](#)

[back to top](#)

View this online at: <https://nautilus.org/napsnet/napsnet-policy-forum/chinas-nuclear-force-the-worlds-first-look-at-chinas-underground-facilities-for-nuclear-warheads/>

Nautilus Institute

608 San Miguel Ave., Berkeley, CA 94707-1535 | Phone: (510) 423-0372 | Email:

nautilus@nautilus.org