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20,000 Li Over the Sea: China's Sends Troops to First Permanent Base in Djibouti

In Chinese, the term *wan li* (万里; 10,000 li) is frequently used to indicate "a long way away". On July 11, China's first unit to be stationed abroad at a Chinese-owned base departed Southern China for Djibouti, a journey of roughly 20,000 li (10,000 kilometers) across the Indian Ocean and the South China Sea. In the early 2000s, Chinese naval port calls far from China were rare. Whereas today, Chinese ships regularly visit foreign ports, and China has dispatched 26 escort taskforces to combat piracy in

the Gulf of Aden—and to stretch the PLA Navy's capabilities.

The PLAN will now have its first permanent support base (保障基地) overseas to resupply and repair Chinese ships operating in the region. The small detachment, composed of the *Jinggangshan* (井冈山), a type 071 amphibious assault ship, and the *Donghaidao* (东海岛), semi-submersible support ship (半潜船), left the dock at Zhanjiang, the home of China's Southern Fleet (SSF) to great fanfare. PLAN Commander ADM Shen Jinlong (沈金龙), formerly Deputy Commander of the Southern Theater Command and Commander of the SSF, presented the detachment's commander with a PLA banner. The

PLAN's top Commissar, Miao Hua (苗华), also gave remarks.



(Above Left: Tugs pull the Dongghaidao and Jingtangshan away from the pier in Zhanjiang [CCTV] Above Right: The two ships caught at dock by a PlanetLabs satellite).

The unit's departure represents the culmination of several years of careful diplomacy. In 2014, Central Military Commission member and Minister of Defense GEN Chang Wanquan (常万全) signed a ten-year agreement with Djibouti's Minister of Defense Hassan Darar Houffaneh ([Xinhua](#), February 26, 2014). In the run-up to the establishment of the port, China has invested heavily in Djibouti. Their bilateral trade is \$2 billion and imports of Chinese goods make up 54 percent of Djibouti's total ([FMPRC](#), July 2016; [OEC](#), 2015).

In late 2016, CMC Vice-Chairman GEN Fan Changlong (范长龙) and inspected the Djibouti facility during a port visit for resupply from the PLAN's 24th Escort Taskforce ([CCTV](#), November 27, 2016). Addressing the taskforce, GEN Fan urged them to "improve coordination, speed-up construction [of the base] [...] and provide

strong support for military operations to carry out overseas missions."

China's obvious interest in Djibouti raised alarm in the United States due to the presence of Camp Lemonnier, a U.S. UAV and Special Forces base that played an important role in the Global War on Terror. Even Japan, which has had a presence in the

small country since 2011, in 2016 decided to expand its base, apparently in response to China ([Sina](#), October 14, 2016).

China has built overseas bases (基地) or stations (站) before—it maintains a space monitoring facility in the deserts outside Neuquen, Argentina ([China Brief](#), October 2, 2015; [Sohu](#), May 26, 2016). But Djibouti is the first overt and explicitly military-related outpost. Chinese naval ships already visit the port an average of four times a year, and this will only increase as China expands its far-seas maritime operations.

In the lead-up to the establishment of the base, Chinese media was careful to insist it had limited use and, until recently, was described as Support Facilities (保障设施) rather than a Support Base (保障基地). **[1]** Although China has downplayed the military implications of the base, within China "Support Base" has a specific definition, and only Chinese officers of a certain grade (Corps Deputy Leader) are able to command them. Key naval facilities such as those at Lushun, (旅顺), Qingdao and Sanya, for example,

are described as Support Bases, or for larger facilities Comprehensive Support Bases (综合保障基地). Six Joint Logistics Support Bases (联勤保障基地) form the backbone of China's internal military logistics system. Building bases abroad then need to be understood as an expansion of China's preexisting military logistics organization.

Logistics has been a major failing of the PLA by its own assessment: it is seen as holding back China's drive for an effective military (*China Brief*, May 9, 2013). The General Logistics Department was plagued with corruption scandals. GEN. Gu Junshan (谷俊山) and Zhou Guotai (周国泰), both senior leaders in the organization, were felled by corruption investigations. Major reforms in 2012 and in 2015 streamlined logistics and refocused them on joint operations. [2]

Some hints about how Chinese support bases would function in a wartime scenario can be found in authoritative textbooks. In the 2006 edition of the *Science of Campaigns*, descriptions of offensive campaigns against coral reefs (i.e., in the South China Sea) explicitly included the use of Advanced Support Bases (前进保障基地) and Seaborne mobile support (海上机动保障) to aid operations. Bases like Djibouti and ships like the *Donghaidao* (东海岛) semi-submersible support ship could be used in these types of operations.

The Djibouti support base is likely just the first of many as China improves its ability to protect the trade routes that form the vital arteries of its economy. This base, and those that follow should be viewed in the same light as the infrastructure projects China is driving across Asia, connecting it through an expanding web of

pipelines, highways and railways to the rest of the global economy.

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Notes:

1. Mattieu Duchatel noted that the term used has shifted, as it was originally Support Infrastructure (保障设施).
2. Nan Li, "The People's Liberation Army Navy as an Evolving Organization," in *The PLA as Organization 2.0*, Kevin Pollpeter and Ken Allen, Eds. p. 316.

Beijing Harnesses Big Data & AI to Perfect the Police State

By Willy Lam

Even by the standards of the Chinese Communist Party (CCP), the brutal treatment of China's first Nobel Prize winner, Liu Xiaobo, has breached the norms of civilized behavior. The third day after Liu's death from liver cancer—which deteriorated into the terminal stage last June largely due to lack of medical attention during his eight-year incarceration in northeastern Liaoning Province—the authorities cremated the body of the pro-democracy icon and scattered his ashes in the sea. This followed a short funeral, during which two dozen police and state-security personnel posed as relatives and friends paying their last respects. Liu's supporters from all over China, some of whom had congregated in Shenyang, were barred from the

hastily arranged ceremony. Although Liu's widow, Liu Xia, has never been charged with any crimes, she has been held under house arrest since 2010. It is unlikely that she will gain her freedom anytime soon ([Apple Daily \[Hong Kong\]](#), July 15; [Liberty Times \[Taipei\]](#), July 15; [HKO1.com](#), July 14).

The biggest question after Liu's death is: Will this galvanize the badly demoralized and out-gunned pro-democracy community in China—and ignite another wave of protests? Most of China's prominent dissidents either are in jail or kept under 24-hour surveillance. Only a few of them have been able to talk to the Western or Hong Kong media about Liu's demise. It does not look as though they were confident about the future of democracy. Human rights activist and liberal columnist Mo Zhixu, a good friend of Liu's, would only say that Liu's death would have "a far-reaching influence on citizen movements." Hu Jia, an internationally famous dissident who is under house arrest, said Liu's writings and actions had "planted the seeds of democracy among Chinese." When asked about the prospect of democracy, however, Hu had this to say: "To be pessimistic is meaningless... We only have one option, and that is to remain optimistic about China's democratization." The bitter truth is that thanks to the CCP's through control over information and its relentless efforts in hunting down critics of the regime, few Chinese citizens outside intellectual circles know who Liu Xiaobo is. As Hu said: "In Beijing, if you ask 100 people and one of them says he has heard of Liu Xiaobo, it is quite something." ([Hong Kong Citizen News](#), July 14; [Cable News](#), [Hong Kong] July 14; [Central News Agency \[Taiwan\]](#), July 13).

The biggest difficulty facing dissidents is that they are up against a fully digitalized and all-embracing *tianluo diwang* (天罗地网; "a dragnet that stretches from heaven to earth"), or what Politburo member in charge of internal security Meng Jianzhu calls a "multidimensional, all-weather and foolproof *fangkong* (防控; prevention and control) grid." This *wei-wen* (维稳; "stability maintenance") network was created even before President Xi Jinping came to power five years ago. It was Xi, however, who in 2014 introduced the concept of "mega national security" soon after he created the Central National Security Commission (CNSC), China's top security organ. Xi, who doubles as CNSC chair, vowed that Beijing would lay out a "road map for national security with Chinese characteristics that will meet the challenges of the 21st century." "We will pay utmost attention to both external and internal security; territorial security as well as citizens' security; traditional and non-traditional security," he instructed ([Xinhua](#), April 16, 2014; [China News Service](#), December 1, 2009). (See "Terrorism Fears Push Muscular Approach to 'Overall National Security'," *China Brief*, May 7, 2014). [1]

The supreme leader's biggest contribution to thwarting pro-democracy and other "anti-government" movements, however, has been his determination to modernize Beijing's already formidable police-state apparatus through the application of top-notch spy and related surveillance software. Xi set up in 2014 the Central Leading Group on Cyberspace Affairs, which is charged with building the world's largest digitalized data bank to keep tabs on "destabilizing elements" ranging from criminals and terrorists to dissidents, underground church personnel, and NGO activists. Specialized *weiwen* cadres have

the full cooperation of the country's social-media and e-commerce platforms, as well as cloud-computing and related high-tech firms in establishing a seamless and all-encompassing intelligence network that would do George Orwell's Big Brother proud (Hong Kong Citizen News, July 12; MIIT.gov.cn, June 5).

The Omniscient State

The biggest breakthrough is the successful use of artificial intelligence (AI) to uphold political stability. As the *Anhui Daily* put it earlier this month, *anfang*—"security protection," which covers police and national-security work—has taken a leap forward due to AI-enabled security systems that have benefited from big data, cloud computing, "deep learning," and identification and surveillance software. "'AI plus *anfang*' has changed passive defense [against dissent] to active advance-warning," the official daily said. "This has rendered possible management of public safety based on [high] visibility, digitalization and AI-enablement" (Anhui Daily, July 11). Indigenously developed facial recognition software has enabled police and state-security agencies to keep track of all "destabilizing agents" in society. The mugshots of criminals and suspects, as well as dissidents, are being stored in police-run facial-recognition data banks. China boasts more than 170 million surveillance cameras and video facilities all over the country, most of which are interfaced with these state-of-the-art AI-enabled data collections (South China Morning Post, May 26; Liberty Times, December 4, 2016).

While facial-recognition techniques have in the past couple years been used for mundane activities such as accessing ATM machines or unlocking mobile phones, more instances of *anfang*-

related applications have been reported in the open media. Take, for example, the case of a Wuhan resident surnamed Xiao who was wanted by police for alleged fraud. He was earlier this month bicycling along the city's famed East Lake when the computer in the local police surveillance center blipped. Xiao's face had appeared on one of the several facial-recognition enabled surveillance cameras installed on the East Lake waterfront. The local media reported that there was a 97.44 percent resemblance between Xiao's facial features as captured by the spy camera and the photo that was stored in the data bank for criminals on the lam. Xiao was arrested within 24 hours (Ming Pao [Hong Kong], July 10; Wall Street Journal, June 26; Hong Kong Free Press, June 19).

Both Chinese and foreign experts reckon that China has the most advanced—and cheapest—AI-enabled surveillance technology in the world. The reason is simple: China has the fastest-expanding market for facial recognition and similar know-how. This is coupled with the absence of enforceable laws and regulations protecting citizens' privacy. According to Zhao Yong, the CEO of DeepGlint, a successful AI firm, it takes a mere second for company technology to compare and contrast tens of millions of sets of facial features (CPS.com.cn, March 9). Zhong An Wang (中安网, literally "China Security Net," or <http://www.CPS.com.cn/>), a popular website for *anfang*-related AI start-ups, noted that this sector manufactured products worth 486 billion yuan in 2015. Major funders include not only the Ministry of Public Security, the Ministry of State Security and other government departments but also private companies. Multi-billion-dollar firms in the areas of IT, e-commerce, finance as well as universities which have made big investments in facial recognition technology include

Alibaba, the Citic Group, the Pingan Group, Vanke, and Tsinghua University. Megvii Technology Inc, a leading facial recognition software manufacturer, has received hefty investments from multinationals including the Taiwan IT giant Foxconn Technology ([China Daily](#), January 12; [36kr.com \[Beijing\]](#), December 6, 2016).

China's leading clout in big-data engineering has also yielded a bonanza for the crafting of a police-state apparatus choc-a-choc with essential data of its estimated 700 million netizens. The Central Leading Group on Cyberspace Affairs has fostered the establishment of a national "social credit" data bank. With information provided by the social media, e-commerce platforms as well as banks and e-banking firms, police and state-security departments have since 2015 established a nation-wide social credit system to keep tabs on even the apparently mundane activities of citizens ([South China Morning Post](#), November 24, 2015; [BBC Chinese Service](#), October 27, 2015).

Social credit data depositories are not unique to China. Banks and credit card companies in Western and Asian countries keep thick files on the income and credit-worthiness of customers. The difference is that in China, all such information kept by supposedly privacy-conscious banks, e-banking, and e-commerce platforms as well and social-media firms is fed into the security forces' mass surveillance system. Big Brother has a full picture of citizens' credit ratings, their spending habits and punctuality in paying taxes. Also input into the data pool is citizens' education levels, consumption patterns, and records of travels abroad ([China Safety.gov.cn](#), June 26; [Hong Kong Free Press](#), January 3). While this sensitive data is not necessarily security-related, it forms an important part of a comprehensive database

that police departments can use to rapidly access important information about every Chinese citizen.

Of course, the crudest form of data collection is happening particularly in restive districts such as the Xinjiang Uyghur Autonomous Region, where police and the paramilitary People's Armed Police are battling the activities of Uighur dissidents and separatists. Since 2016, police have been collecting samples of DNA of Uighurs with the apparent purpose of constructing a national Uighur DNA bank. A recent report by New York-based Human Rights Watch noted that Xinjiang authorities recently bought \$10 billion worth of equipment for the purpose of DNA collection, storage, and analysis ([BBC Chinese](#), May 7; [Radio Free Asia](#), May 7). HRW China Director Sophie Richardson pointed out that "mass DNA collection by the powerful Chinese police absent effective privacy protections or an independent judicial system is a perfect storm for abuses" ([Human Rights Watch](#), May 15).

The Party's Eyes

The emphasis on high-tech surveillance has been complemented by ground level "human intelligence" gathering based on Chairman Mao's famous "people's warfare" strategy. Mobilizing the masses for the cause of *anfang* and *fangkong* was first used successfully to prevent mishaps in the 2008 Summer Olympics. That year, 850,000 "volunteer-vigilantes" (治安志愿者 or "law-and-order volunteers") were recruited in the capital. Part of their jobs was to provide information to local public security bureaus upon seeing "suspicious characters" or coming upon "plots" supposedly hatched by terrorist and dissident groups. The same tactics were adopted by Shanghai and Hangzhou authorities to ensure

public safety during the 2010 Shanghai Expo and the G20 summit last year. Cai Qi (蔡奇), the newly appointed Party Secretary of Beijing, has taken things forward by pledging to draft significantly more Beijing residents into the capital's *fangkong* network. The *New Beijing Post* reported that different categories of informants and other *weiwen* personnel had breached the 1.4 million mark. Cai heaped particular praise on the *wei-wen* contributions of the city's Chaoyang and Xicheng Districts. Registered volunteer-vigilantes in Chaoyang numbered more than 130,000, meaning there are 277 such personnel per square meter. The party chief vowed to turn volunteer-vigilantes in Chaoyang into "the world's fifth-largest intelligence agency" (*New Beijing Post*, July 12; *Global Times*, July 4). This staggering number of part-time spies and informants have rendered it even more difficult for members of dissident groups and NGOs—even those involved with apparently innocuous issues such as environmental protection—to either expand their organization or to stage public events.

Conclusion

After Liu's Xiaobo's death, all references to him or even associated terms such as the Nobel Peace Prize, Charter 08, "sea burial," the initials RIP were scrubbed from Chinese websites and media. Even a candle-shaped emoji used by some as a memorial was blocked. A number of Liu's friends and supporters who had gone to Shenyang or who had staged brief, small-scale protests in a handful of Chinese cities, have received severe warnings or been subjected to brief detentions by the police. The country's pro-democracy movement is currently at low tide. The increasing sophistication and reach of the country's AI-enabled police-state apparatus

mean that it is possible that Liu's peaceful, moderate and incremental goals for political liberalization might lapse into dormancy for the foreseeable future.

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Notes:

1. For a discussion of Xi's reasons for setting up the CNSC, see for example: David Lampton, "Xi Jinping and the National Security Commission: Policy coordination and political power," *Journal of Contemporary China*, March 18, 2015, pp. 759–777; Elizabeth C. Economy, "China's Imperial President: Xi Jinping tightens his grip," *Foreign Affairs*, 2014, <http://heinonline.org/HOL/LandingPage?handle=hein.journals/fora93&div=135&id=&page=>.

The PLAAF's "Silver-Bullet" Bomber Force

By Andreas Rupprecht

Although China is widely seen in the West as a major future opponent and rival in terms of global economics and political influence, its current force structure and its evolving joint operational doctrine is still largely consistent with a

defensive orientation (Defense White Paper, May 25, 2015). However, China's rising ambitions have led to dramatic reforms in recent years, which mean for the first time in its history, the People's Liberation Army Air Force (PLAAF) will shift its focus from primarily territorial air defense to the ability to conduct offensive and defensive operations as well. **[1]** Most attention has focused on the introduction of new modern multirole combat fighters (J-10B/C, J-15 and J-16) and the development of next generation aircraft (J-20 and FC-31 stealth aircraft, Y-20 indigenous transport aircraft).

China has strengthened its air and naval power projection capabilities dramatically in the past 10 years, but, in general, the PLAAF has still a defensive composition. A majority of its aircraft are fighters and only a very small percentage are offensive or multirole-capable types. Specifically, compared to the other services, the PLAAF still lacks a real ability to project power far from its borders—its strategic airlift, aerial refueling and modern strategic bombers all lag behind in development. China's small bomber fleet consists of three Bomber Divisions (8th, 10th and 36th) with six Regiments operating a variety of H-6 bomber variants. The H-6 itself is a venerable aircraft derived from the Soviet-era Tu-16, which was first delivered to China in 1958. At best, this force represents a sort of 'Silver Bullet', capable of striking targets beyond the reach of the PLAAF's regular assets, but they are in no way a strategic force.

Compared to recent Chinese fighter developments, the development of strategic bombers is surely less impressive. It will take several years for the remaining older H-6 variants to be replaced with the latest H-6K armed with KD-20 air-launched cruise missiles (ALCMs). However,

the oldest versions urgently need to be retired. Even the updated H-6K bombers will need a replacement within a foreseeable time frame (likely 5-8 years). Consequently, observers and enthusiasts alike are speculating when a new long-range—and probably even true strategic—bomber will appear.

PLAAF Officially Confirms Development of New Heavy Bomber

On September 1, 2016 during an interview given at the "2016's PLAAF open day" in Changchun, Chinese Air Force Commander General Ma Xiaotian confirmed to the media that development of a new long range bomber is underway (Global Times, September 3, 2016). While presenting the latest H-6K to the public he announced that "the Chinese air force has now entered a phase of transition, we want to build a powerful Air Force both defensive and offensive." Pointing to the H-6K he added: "Our long range strike capability has much improved compared to the past, and an even bigger improvement is coming. We are developing a new generation of long bomber" (Weibo, September 2, 2016).

The relative openness is surprising as is the fact that it has been discussed by other media. Though it largely went unnoticed by the Western media, *China Daily* reported on July 2015 that, according to Chinese military officials, a new strategic bomber should be capable of striking targets beyond the second island chain without aerial refueling, while carrying a payload of at least 10 metric tons. **[2]**

Nearly two years later, reports are becoming more frequent and reliable. Many interpret this openness as a hint of an imminent unveiling. Two reports give additional credence to this. In

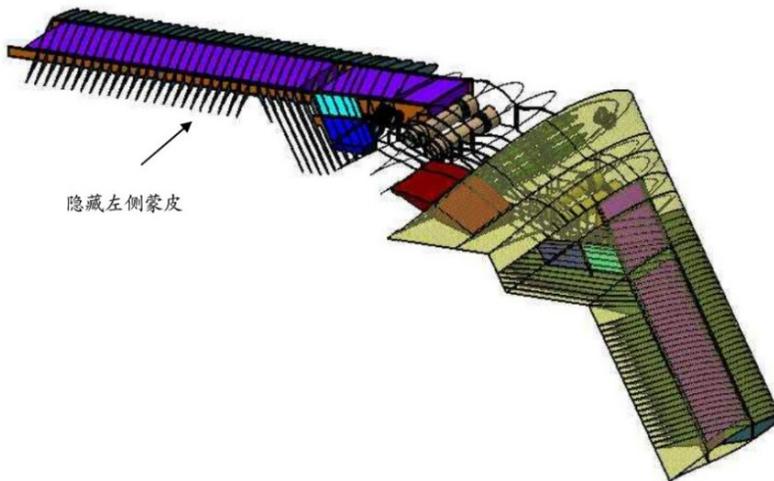
December 2016 China Central Television (CCTV) displayed a notional rendering of a future bomber—surely fan-art only as a placeholder—but in itself some sort of confirmation. Later, Retired Rear Admiral Yin Zhuo, director of the PLA Navy's Expert Consultation Committee and also a regular media commentator on Chinese military developments for CCTV, noted when asked on when the next-generation strategic bomber will make its debut, "we should have some patience." Though his statement does not give any facts, it is typical of the way China discloses such major programs to its public. In 2009, for example, Lieutenant General He Weirong, announced that "a Chinese fourth generation (by Chinese definition) fighter (referring to the J-20) will fly soon and be operational between 2017 and 2019," a timeline which has been borne out by events.

Also widely admitted to the public is that the current bomber-force is no longer adequate and that China has never developed such a large-tonnage and long-range strategic bomber before. Consequently, the development issues are technically demanding. Another frequently-cited military expert Li Li added that "the aircraft's aerodynamic configuration will be quite different from that of a supersonic bomber. It may be a more realistic solution to select from the stealth capability and supersonic penetration." Finally, most reports point out that "having a strategic bomber will become one of the symbols of China's air force as a strategic service" ([ChinaMil](#), February 17).

Program status

Although many facts are still unclear, some information is available regarding this program:

- The primary contractor for the new bomber is the Xi'an Aircraft Industrial Corporation (also known as the Xi'an Aircraft Company Limited) XAC and its affiliated no. 603 Institute.
- For certain areas like the wing geometry, the S-shaped dorsal engine intakes and the engine's exhaust as well as the flight control system of the new bomber is said to have gained assistance for technical solutions from Shenyang's SAC and its experience on the Sharp Sword UCAV.
- The Chinese aviation industry seems generally confident that through the J-20' and Y-20's development (as well as via international cooperation) AVIC has gained enough expertise to overcome any eventual technical difficulties including engine location, air intake design, material selection and stealth technology.
- The new strategic long-range bomber—officially known so far only as the "strategic project"—will probably be designated H-20 and has been under development since the late 1990s, or more likely, the early 2000s.
- The PLAAF was reportedly undecided for some time about the requirement and what type of bomber would fit this best. Consequently—and similar to the alleged new tactical- or regional-bomber design under development at SAC—various configurations were studied ranging from supersonic configurations thru conventional and even quite innovative designs: one is said featuring a delta wing geometry and canards while others were more conventional to finally a subsonic stealthy flying wing design ([Chinese Military Aviation Blog](#), February 12). [3]



Given the great secrecy of this program and the urgency of the Y-20 program, it was reported that the H-20-project only gained full momentum after the successful flight of latter in late 2012 or early 2013. Besides General Ma Xiaotian's public confirmation in 2016, a first hint of the H-X's progress was a news-report from December 2015 within the AVIC group reported about a digital 3D-mock-up of a "major project" being completed and currently the design is in the phase / stage of detailed design / engineering (AVIC, December 16, 2015). This was again noted in early 2017 by this consistently reliable source, and complemented by the information, that also a quality control system/platform for this 3D-mock-up—now called prototype—has now been established (Weibo, February 10). Also noted again was that:

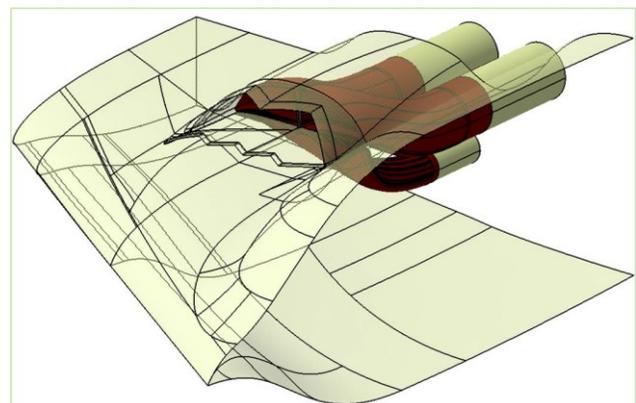
"China's next generation bomber has entered the detailed design / engineering stage and the program's name is at least until its unveiling 'new type long range combat aircraft'"

Consequently, it is assumed that individual parts of a prototype are already under construction since 2016 (some sources say since March) at

XAC. And finally, from June 2017, a PLAAF Spokesman noted:

"The PLAAF has reached the threshold of having a strategic air force and has made historic progress in the field of aeronautics... The PLAAF will.. enhance its broader ability to carry out a variety of missions" (MOD, June 21).

Following these reports, several scaled-down models were built and test-flown so that by 2011 a four-engined flying wing design similar in configuration to the US B-2 or even B-21 was chosen. Concerning other technical details, one can only speculate but the engines are most likely modified, afterburner-less WS-10A as an interim solution to the WS-15-derivative later. Academic concept papers published after November 2015 indicate that the H-X most likely features engines buried deep within the main wing's structure to further reduce the radar cross signature (how stealth it is) and twin dorsal S-shaped engine intakes with saw tooth lips similar to those of the B-2 (AVIC, November 2015). The paper it was featured in also mentioned that development work on the 'cockpit section' and 'intake configuration' was finished by a joint R&D-team from Xi'an and Hanzhong's 012 Base.



Range and Capabilities

Subsequent reports assess the new bomber to be a stealthy design in order to evade modern air defense systems and penetrate deep into the enemy's territory ([ChinaMil](#), February 17). Its range has to be dramatically longer than the current H-6K's (range of more than 10,000km, and combat radius of over 5,000km and in-flight refueling-capable) while able to carry a heavy weapons load (smaller load than the B-2A's 23 tons, but larger than H-6K) for both nuclear and conventional ordnance ([China Brief](#), July 6). The few images published so far suggest a single center weapons-bay—albeit there are artworks depicting two bays – capable of carrying at least six KD-20 ALCMs or any other precision strike munition on a rotary launcher.

Consequently, the new bomber is expected to feature a modern avionics system built around an Active Electronically Scanned Array (AESA) radar with conformal antennas again similar to the U.S. AN/APQ-181 LPI radar. Additionally, it is said to feature a modern electronic warfare-capability and to be also capable acting as a C4ISR node to interact with other sensor platforms like UAVs, AEW- and strategic reconnaissance aircraft to share information and target data (data fusion).

The PLAFF can currently reach with its H-6 bombers, at least 5,000-5,500 km (from the bomber base at Anqing) can be assumed. This range covers the South China Sea, the all-important first and the second Islands chains, Japan, up to the northern part of the Australia, and including Guam. However if one looks a bit further, the next major important U.S. base in a position to support the second line is Hawaii (and Australia). The dominance of U.S. forces in the

Pacific region depends heavily these two points. Therefore, a range in excess of 8,500-9000km is likely a minimum requirement for the new bomber ([EastPendulum](#), September 2, 2016).

Timeline for Development

The Chinese internet community is eagerly expecting the unveiling of the new bomber and are anticipating a maiden flight within the next two years. If a more reasonable timeline is used by assuming a similar development-cycle and timeframe comparable to the China's indigenously-produced Y-20 transport aircraft—a roll out can be expected earliest around late 2019 and the first prototype could fly as early as 2020.

[4]

Development milestone	XAC Y-20	XAC H-X (estimated)
Full-scale mock-up completed (digital/metal)	early 2008 / 2010	late 2013
Rumors that the #01 prototype was under construction	mid-2009	late 2015 / early 2016
Three prototypes (#01 - #03) finished, #02 static test	mid 2012	late 2018 / early 2019
Roll out & first low speed taxiing	late 2012	late 2019
First flight	early 2013	early 2020

Conclusion

Particularly over the last 10 years the PLAAF has constantly and rapidly improved its capabilities not only by the introduction of new and more

capable types but also by structural changes, training, and doctrine. However, specifically compared to the other services, the PLAAF still lacks a real ability to project power far from its borders. Its commitment to the improvement of its strategic airlift (through the Y-20), and modern strategic bombers are all stepping stones on its way to resolving that deficit.

PLAAF Commander General Ma Xiaotian's September 2016 confirmation that development of a new long-range bomber is underway should come as no surprise. When the aircraft is completed, and is able to enter service in the mid-to-late 2020s, the PLAAF will indeed reach its goal of becoming a true "strategic force", and be able to accomplish China's strategic ambitions by acting as nuclear deterrent, being part of the triad, and to provide more effective strike options in order to challenge the dominance of the US-forces within the disputed South China Sea and in the Pacific region.

Andreas Rupprecht is an aviation journalist. He has written several books on China's military aviation, including "Flashpoint China" and "Modern Chinese Warplanes".

Notes

1. Fravel, M. Taylor: Securing Borders: China's Doctrine and Force Structure for Frontier Defense, MIT, The Journal of Strategic Studies, Vol. 30, No. 4–5, pp. 705–737, August–October 2007 and "China's security Problem", RAND, http://www.rand.org/content/dam/rand/pubs/monograph_reports/MR1121/mr1121.ch2.pdf
2. The China Daily/AFP report "China needs long-range strategic bomber: state media", 7th July 2015 (<https://www.yahoo.com/news/china-needs-long-range-strategic-bomber-state-media-084622579.html>), in turn cited Kanwa Defense for the 10-ton number so this is not an official number from a Chinese government publication.
3. It is worth noting that there are several patents online which, even if not specifically related to the new bomber, are at least related to "flying wing" configuration and aerodynamic research. See for example: (CN105398565) for a Chinese flying wing, B-2 styled, issued on March 16, 2016. The applicant is a company called QINGAN GROUP CO LTD (<http://www.diigen.com/supplier/xian-qingan-group-aviation-mechanical-manufacture-co-ltd-china-6479312/>), No. 2 Bonded Warehouse, Fengcheng 12 Road, Shaanxi Xi'an Export Processing Zone, **Xi'an, Shaanxi**.
4. Dates are significant, and it is possible that a new bomber could be unveiled on January 1, 2017—only 9 years after the J-20 performed its maiden flight in 2011, though this would ignore that the development of a new stealthy bomber is surely a more demanding task than a transport.

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Making Sense of China's Caribbean Policy

Jared Ward

While the world's attention focuses on the Belt and Road Initiative (BRI) connecting China with Eurasia and Africa, China is also making major investments in the Caribbean. In September 2016 the China Harbor Engineering Company (中国港湾工程有限责任公司) agreed to build a mega-port in Jamaica that would make the small island-nation a hub for mammoth Chinese ships soon crossing through an expanded Panama Canal (Jamaica Gleaner, September 24, 2016). Valued at \$1.5 billion, the port will become China's largest in a region that has become a growing target for Chinese aid and diplomatic overtures. Barbados, a small island in the Lesser

Antilles, has received millions from Chinese companies to restore historical landmarks and provide free medical care. In March of this year, a visa waiver program was created, aimed at opening the Caribbean paradise to an untapped market of 20-million Chinese tourists. Chinese funds have restored the Baha Mar luxury resort in the Bahamas. In Guyana, Chinese companies have developed the timber, oil, and gold industries.

China's short and long-term interests in the region appear to be not only motivated by economics but also aimed at connecting nations in America's backyard to a Maritime Silk Road under Chinese influence. Recent developments in Sino-American relations have magnified the importance of border seas and the Caribbean, like the South China Sea, is likely to become a stage for clashing Chinese and American visions of global politics.

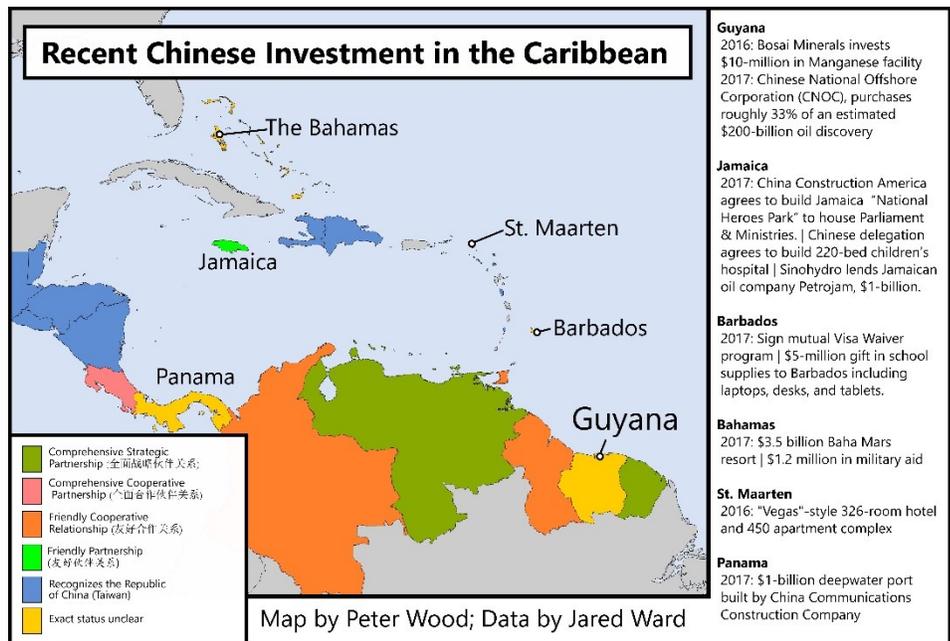
Chinese promises of aid to the Caribbean are consistent with a pattern elsewhere in the developing world. Beijing touts its own success as a developing nation; a rags to riches story of a non-Western power rising to global prominence. Caribbean officials generally view China's checkbook diplomacy in a positive light. Generous loan terms and willingness to undertake badly needed infrastructure projects have helped offset drying up funds from Western institutions like the International Monetary Fund (IMF) and World Bank. The influx of capital and projects bring promises of badly needed jobs for locals and training programs to teach transferable skills that last. However, on the ground, these promises are much more complicated, leaving locals wondering, as one Jamaican official did: "What does China want

from us? That's the big question that everyone has about this: Why?" (Global Post, April 22, 2011).

China's Increased Caribbean Footprint

In late 2016, the PRC released its first White Paper on Latin America and the Caribbean, laying out guidelines for China's engagement in the region (FMPRC, November 24, 2016). Xi Jinping's 2014 visit to Trinidad and Tobago elevated interest in the region. The White Paper lays out broad principles such as noninterference in political affairs (不干涉内政的原则), mutually beneficial relationships (平等互利的), and infrastructure and turnkey projects aimed at creating immediate improvements in the local economies. According to Beijing, this focus on addressing local problems is what makes their worldview different from America in the Caribbean. These lofty policy goals and carefully worded political statements are left to Chinese State Owned Enterprises (SOE) and lending banks to be put into practice.

China's main arms in the Caribbean are a combination of lending banks, individual Chinese investors, and State Owned Enterprises. Chinese financial institutes such as the Chinese Export-Import Bank (中国进出口银行) make funds available to lend to SOE's that bid on contracts to complete projects. The massive Baha Mar Bahama resort, valued at \$2.4 billion, was built by the China Communications Construction Company (中国铁建股份有限公司). Chinese officials have also made clear that funds made available for nations involved in the



BRI will also include Caribbean nations. Zhu Qingqao (祝青桥), head of the Latin American and Caribbean Affairs Department (拉丁美洲和加勒比司) of the Ministry of Foreign Affairs (MFA) made clear it clear that the Caribbean is part of Maritime Silk Road. In an interview in June with Cuban newspaper *Granma*, Zhu said that China put investments in Caribbean nations on par with projects receiving more focus in Asia, Africa, and the Middle East (*Granma*, June 2). Jamaican Prime Minister Andrew Holness expressed his country's interest in formally joining BRI; calling it a "noble expression," that promoted cooperation and inclusiveness across the developing world (*Jamaica Gleaner*, June 22).

While China's invitation for Caribbean nations to join BRI is tempting, Chinese SOE's in the Caribbean have become embroiled in controversy and unveil a much more complicated reality where Chinese visions of development have mixed results and receptions. Accusations against Chinese companies range from flouting local labor laws to providing job and contracts exclusively to Chinese nationals, to an exploitation of natural resources (NACLA,

June 26, 2013). This double-edged sword of Chinese aid to the Caribbean is on display in Guyana, China's oldest CARICOM ally from the English-speaking Caribbean. Guyanese politicians continue to praise China as an invaluable partner and a potential model to follow to their own successful rise from poverty. In practice, Chinese promises of jobs, housing, and electricity have a mixed legacy that is often more gilded than gold.

Sino-Guyanese Relations: A Case Study in China's Caribbean Policy

Guyana reluctantly embraces a paradox common to many developing states: rich in natural resources with poor economies. Besides its vast tracts of rain forest rich in lumber harvest, the discovery of an offshore oil and gas field earlier this year may make the small nation a major oil producer in the region (NYTimes, January 13). While China has shown a recent interest in these natural resources, Sino-Guyanese relations trace back to Guyana's first Prime Minister Forbes Burnham. In 1972, Guyana went against Cold War currents and became the first former colony of former British West Indies to grant Beijing, not Taipei, diplomatic recognition. In the early years of the relationship, China would use Guyana as a laboratory of sorts and the site of its first foreign aid project in the Western Hemisphere—the Bel Lu Clay Brick Factory. The brick factory promised to make 10-million bricks a year; however, due to mismanagement and a lack of Chinese enthusiasm to step back in, the factory closed in the early 1990s and is now overgrown. Guyana has remained one of China's most consistent CARICOM partners and in recent years has received millions in medical, military, and technical assistance. Other projects have

improved telecommunications and built infrastructure aimed at making Guyana's natural resources more accessible and further integrating its economy with its neighbors.

However, China has also been the target of criticisms common to its efforts elsewhere in the developing world. Local companies are often shut out of projects; all contracts are awarded to Chinese companies through a secretive bidding process. Furthermore, Chinese job creation promises often fall short and rely primarily on Chinese nationals. Baishanlin (白山林), a recent acquisition of Long Jian Forest Industries, a state-owned enterprise (SOE), has been at the center of a growing controversy and an example of how China's development program can potentially sour bilateral relations.

Baishanlin arrived in Guyana over a decade ago and made promises familiar to many Caribbean nations. It would be given access to millions of acres of timber reserves in exchange for creating 10,000 local jobs and leaving behind a wood processing plant for the development of Guyana's forest industry. Job creation has fallen short and those who do work for the SOE have filed grievances over inadequate pay, long hours, and exploitation of natural resources (Stabroek News, July 26, 2016). Additionally, Baishanlin's promise to build a wood processing plant, a requirement for it to receive tax breaks has not been met, leading the Guyana Forest Commission to seize Chinese owned logging equipment and other assets (Demerara Waves, September 7, 2016). Most recently, the Chinese Development Bank has asked the Guyana government to hold off reallocating Baishanlin owned lands while it gathers the capital to recapitalize the loans owned by the company. (Demerarawaves, April, 19). As for now, the failed

promises of Baishanlin remains a grim reminder for those in the region debating whether to widen their relations with Beijing.

Sympathetic Partner or Neo-Colonialist? Making Sense of China's Caribbean Policy:

Guyana shows the double-edged sword of Chinese investment but also provides insights into China's foreign policy toward the region as a whole. The entire Caribbean region has only 41-million people and there is little indication Chinese tourists are willing to make the around-the-world trip for vacation. What then is China's interest in pouring billions of dollars into a region that can promise little in return? One possibility is that China's policy is directed at Taiwan. The Caribbean is one of the last bastions for Taipei's dwindling diplomatic alliances. The Dominican Republic, Belize, Haiti, Saint Lucia, Saint Kitts and Nevis, and Saint Vincent still recognize Taipei—not Beijing. This frames China's checkbook diplomacy as a carrot to draw away Taiwan's allies and isolate Taipei further politically. While the "One-China" policy does remain significant in all of China's relations, this only explains a charm offensive toward nations like Panama, which until recently retained relations with Taiwan. China's largest partners in the region—Jamaica, Guyana, Trinidad, and Barbados—have recognized Beijing exclusively since the 1970s.

China's push for closer relations with these Caribbean nations was part of a pivot toward the 'Third World' in the waning years of the Mao Zedong Era (1949–1976). In the early 1970s, nations like Guyana and Jamaica became part of a Third World bloc that helped push the PRC's final bid for UN membership. China's initial interest in the Caribbean coincided with the beginning stages of Sino-American

rapprochement when security anxieties about growing Sino-Soviet hostilities brought China from the recluses of the Cultural Revolution (1966–1976). The Caribbean became part a vast Third World that included Africa, Asia, the Middle East, and Latin America in which Mao envisioned China more fit to lead than the industrialized, white, Soviet Union or America. The Caribbean has always been unable to offer Beijing the same natural resources or strategic military alliances with countries in Africa, Asia, and the Middle East. However, geopolitically the region provides economic and symbolic incentives for China's investments. Many of China's largest infrastructure projects, like ports in the Bahamas and Jamaica, will be used to accommodate larger volumes of cargo coming from China for transshipment throughout the Western Hemisphere. According to a proposal presented by Baishanlin, the driving force for the China National Development Bank Program's investment in Guyana is its access to 277-million consumers, a \$130-billion export market, and over \$2-trillion in buying power. [2] Furthermore, in small Caribbean nations, China's aid can make a greater impact for less investment; setting Beijing up to better compete with Western companies.

Conclusion

Beyond market access, China's increased presence in Caribbean affairs can be understood as a subtle jab at American Western Hemisphere dominance at a time when Washington is pushing Beijing in the South China Sea. Xi Jinping, when he was still Vice President of China, visited Jamaica in 2009 and 2013 (Xinhua, February 14, 2009). Xi's 2013 visit to Trinidad was one of his earliest trips abroad. In an interview before the trip Xi lauded Trinidad and China's

long cultural ties and common paths of development. In both 2009 as VP and later as President he described Sino-Caribbean relations according to an old Chinese saying which says "close friends stay close at heart though thousands of miles apart." At a time when Washington is accusing China of bullying smaller countries in the South China Sea, Beijing has repeatedly held the Caribbean up as an of America's history of big-power chauvinism. A *Global Times* editorial that lashed out against ramped up tensions caused by the US and reminding Washington "The South China Sea is not the Caribbean. It is not a place for the US to behave recklessly." (*Global Times*, February 23). Just as China views the South China Sea as a core national interest, Washington views the Caribbean as naturally within its sphere of influence. Success in connecting America's backyard to the Belt and Road Initiative presents a way for Xi to position China to challenge America in its own hemisphere.

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Notes

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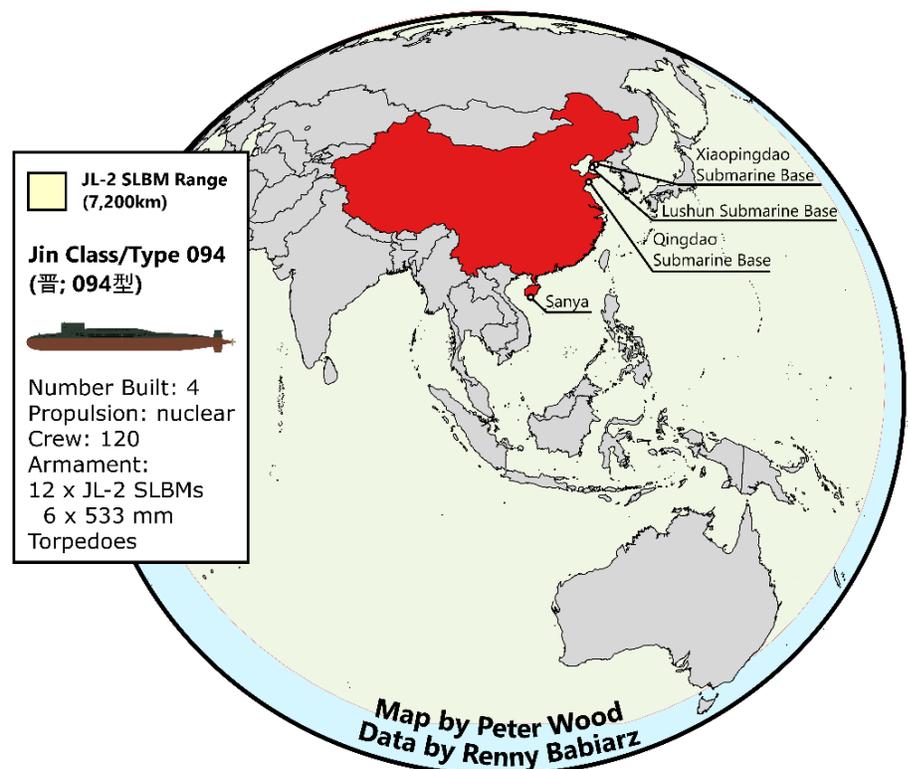
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China's Nuclear Submarine Force

Renny Babiarz

Over the past three years, China's sea-based nuclear deterrent capability has noticeably improved, beginning with the first service deployment of a nuclear-armed ballistic missile submarine in 2014. Most recently, geospatial analysis

Chinese Jin-Class Submarines - Bases and JL-2 Range



conducted by AllSource Analysis has recently revealed four Jin-class (Type 094) ballistic missile submarines (SSBNs) at Longpo Naval Base on Hainan Island, supporting United States Department of Defense reports that China has at least four Type 094 SSBNs in service. **[1]** Available evidence shows that China's development of a sea-based nuclear deterrent has been incremental, fits within generally accepted norms of nuclear deterrence strategy, and faces certain technical and geographic constraints that will most likely limit China's nuclear deterrence patrols in the near future. **[2]**

China's SSBNs have apparently entered into service with its South China Sea Fleet as China has improved and expanded its political administration and military occupation of maritime territory throughout the South China Sea. This has included the creation of islands with deep-water ports, runways, and various other administrative and storage facilities throughout the Spratly Islands along the western edge of the South China Sea. While this South China Sea territorial expansion has several effects—extending claims on energy resources and protecting critical sea-lanes—the most important outcome is that it facilitates unimpeded deployment of its SLBM force. As China's SSBN force continues to expand and receive upgrades, this could have the eventual—and unprecedented—intent of China deploying a global nuclear deterrent from within the South China Sea.

China's SLBM Program

China initiated its SLBM research during 1958 with the code name "1060" (later renamed Julang Yihao, or JL-1, 巨浪; in 1964), and received technical assistance and equipment from the

Soviet Union towards this project. China constructed a naval base at Qingdao and a ship-building facility at Huludao as part of its early submarine development. **[3]** As research and development on SLBM systems continued during the late 1960s and into the 1980s, China conducted submarine nuclear propulsion trials at Hulu Dao shipyard, tested rocket components at Wuzhai Missile Test Facility, and conducted missile ejection tests in the Bohai Strait in association with nearby Xiaoping Dao and Lushun submarine bases (see **figure 1**). **[4]**

Development of China's SLBM program was intermittent during China's Mao-era political leadership (1949–1976) due to budgetary constraints, historical events (such as the Great Leap Forward, the Sino-Soviet split, and the Cultural Revolution), restricted access to oceans, and periodic strategic reassessments. **[5]** After the leadership ascension of Deng Xiaoping in 1978, China's SLBM program received new emphasis, and 1982 marked the first successful test-launch of a JL-1 missile from a submerged Xia-class (Type 092) SSBN, China's first generation of operational SSBNs. The Type 092 entered into service in the 1980s, yet probably did not conduct nuclear deterrence patrols given certain technical, geographic, and international security constraints. China's current SSBN program, the Jin-class (Type 094), was initiated in the 1980s and carries the JL-2 missile with a range of approximately 7,200 kilometers ([DOD](#), 2016). The first Type 094 SSBN entered into service by 2014, roughly 60 years after the initiation of China's SLBM program, 35 years after China's first successful test launch of a ballistic missile from a submerged submarine, and about 30 years after

the initiation of the Type 094 SSBN program, underscoring the incremental pace of development for China's SLBM capability.

South China Sea

The South China Sea is bounded by the Malacca and Singapore Straits in the west and the Taiwan Strait in the east, and lies between Vietnam, the Philippines, China, and Indonesia. An estimated 50 percent of global oil shipments pass through it, and surveys suggest there are projections of large oil and natural gas reserves under the seabed.

The Paracel Islands, located approximately 300 kilometers southeast of Hainan province's

In the Spratly Island region, located approximately 1000 kilometers southeast Hainan province's southern coast, China has been expanding and improving its outposts since approximately 2014. China has reclaimed land and constructed civil-military facilities in the following seven areas of the Spratly Island region: Subi Reef, Gaven Reefs, Fiery Cross Reef, Hughes Reef, Johnson Reef, Mischief Reef, and Cuarteron Reef (DOD, 2015).

China's Nuclear Doctrine and Evolving Nuclear Force Structure

China's current nuclear doctrine is best characterized as a nuclear counterstrike strategy (核反击), which some scholars have summarized as

"assured retaliation." [6] Developing a secure counterstrike (or second strike) capability is a fundamental tenant of nuclear deterrence strategy, although corollary concepts such as minimum and limited deterrence vary in the importance placed upon this tenant. [7] China's nuclear counterstrike strategy may be considered as either an independent nuclear counterstrike campaign or coordinated within a broader counterstrike campaign employing nuclear forces deployed in different services. [8] Although China has long worked to develop a more credible second strike capability, such as through

improved road-mobile ballistic missile systems for its land-based nuclear forces, its deployment of a sea-based nuclear deterrent offers the most secure theoretical nuclear counterstrike capability.

China's Type 094 SSBNs measure between 132–137-meters-long on satellite imagery, with a



southern coast, are generally recognized as being occupied by China after they dislodged Vietnam from these islands in 1974; they are still claimed by Vietnam and Taiwan. China's expansion of infrastructure throughout the Paracels has been extensive ever since, and the area has recently been included in China's domestic political administrative system.

“humpback” (龟背) area in the vessel’s mid-section containing 12 ballistic missile tubes (**figure 2**) (*The Paper*, July 21, 2016). **[9]** The Type 094 is designed to carry the JL-2 ballistic missile with a range of approximately 7,200 kilometers (*DOD*, April 26, 2016). China’s four Type 094 SSBNs are probably based at Longpo Naval Base at Hainan Island as part of the South China Sea Fleet, and the nuclear weapons they carry are possibly controlled by the PLA Navy instead of China’s PLA Rocket Force (the force currently in charge of administering China’s nuclear forces). **[10]** Located nearby Hainan’s Yulin Naval Facility, the Longpo Naval Base was constructed between 2003 and 2010 and contains submarine piers, probable military administrative areas, a probable sea-based tunnel entrance, and a probable magnetic silencing facility (**figure 3**).

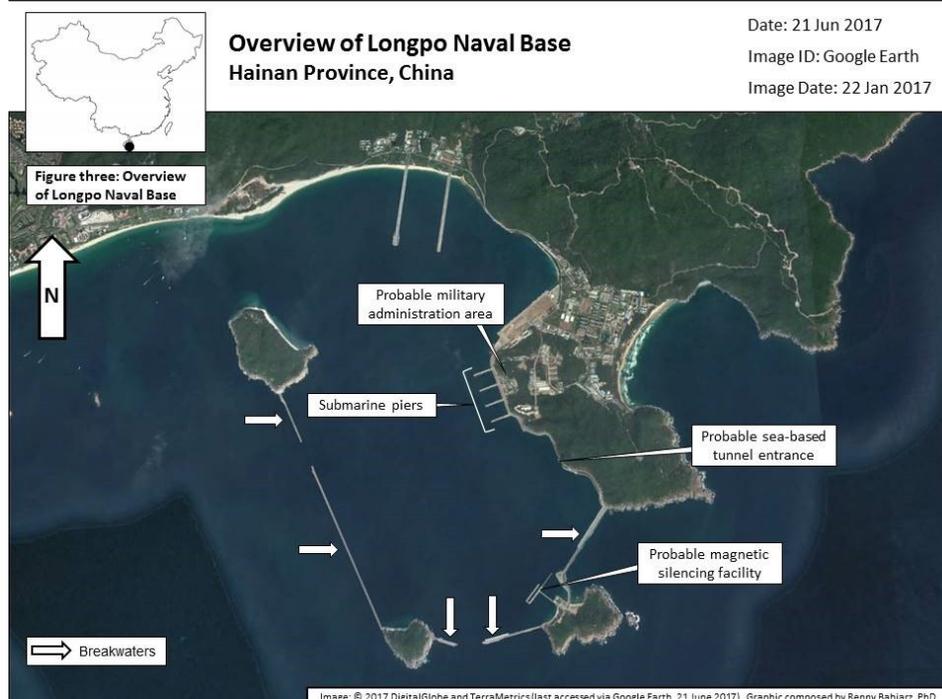
China currently faces limitations regarding deployment of Type 094 SSBNs from Hainan Island based on interactions between the current inter-

national features of the Type 094 SSBN, and maritime geography factors of the South China Sea. More specifically, Japan and the United States most likely deploy a variety of submarine surveillance systems throughout the East China Sea and the western Pacific, and operate sophisticated anti-submarine assets throughout the region. Type 094 SSBNs reportedly generate a level of noise while under sail that more easily allows for tracking and, in theory, targeting (*IHS Janes*, July 15, 2016). The maritime geography of the East and South China Sea offers limited access channels to the Pacific Ocean for open-ocean nuclear deterrence patrols. Taken together, these factors most likely constrain China’s deployment of its sea-based nuclear deterrent in the near term.

To mitigate these constraints, China may adopt a “bastion” strategy that keeps its SLBM force within the South China Sea while maintaining a credible nuclear counterstrike. **[11]** A bastion

strategy of SLBM deployment was a concept first applied to Soviet SLBM deployment patterns, wherein Soviet SSBNs with long-range SLBMs deployed within the Barents Sea, close to Soviet territory, due in part to U.S. superiority of submarine tracking in the open ocean. **[12]** In the case of China, such an approach would probably rely on developments currently underway that recast interactions between China’s SLBM technology and maritime geographic features of the South China Sea. In terms of technical advances, China may

be developing a quieter variant of the Type 094



national maritime security environment, tech-

(the Type 094A), a longer-range ballistic missile for the Type 094 based on the JL-2 (sometimes termed the JL-2A), and is planning a next-generation SLBM system (the type 096) to be equipped with a next-generation ballistic missile, the JL-3 (DoD 2016, IHS Janes July 15, 2016). Yet it is China's actions in the Paracel and Spratly Islands of the South China Sea that hold the greatest promise for advancing a possible bastion SLBM deployment strategy. While a full summary of China's expansion in the South China Sea is beyond the scope of this article, several recent political and military developments bear mention.

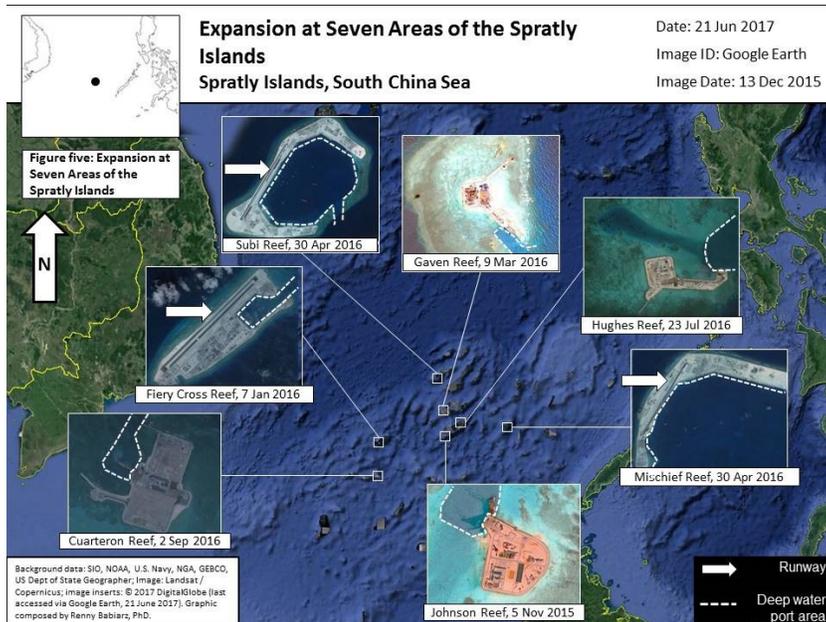
Since 2012, China has expanded its political and military occupation of the Paracel Islands as part of its larger claim of national sovereignty over South China Sea. In 2012, China established formal political administration of the Paracel Islands by creating Sansha city (三沙市) on Woody Island (永兴岛) as part of Hainan province (海南省) ([Sansha Government](#) [accessed June 18];

[AMTI](#), April 17). Additionally, China has improved civil-military infrastructure on Woody Island, to include the island's airport and seaport areas, and probable military jets are observable on the island's nearby runway hangars on satellite imagery via Google Earth (**figure 4**). China now promotes tourist visits to the area, and Woody Island has since been used as the subject of propaganda posters on China's mainland territory promoting China's sovereignty over the entire South China Sea ([Sansha Government Tourist Info](#) [accessed June 18]).

In the Spratly Islands, China has expanded and improved seven areas, in some cases creating new landforms where only underwater reefs existed before. At Subi Reef, Gaven Reefs, Fiery Cross Reef, Hughes Reef, Johnson Reef, Mischief Reef, and Cuarteron Reef, China has expanded physical territory through land reclamation, built new probable administrative facilities, and constructed deep water ports (**see figure 5**).

At Mischief Reef, Subi Reef, and Fiery Cross Reef, China has constructed runways between 2.8-3.1kilometers-long. Additionally, China has most likely upgraded aviation and naval-related navigation communication systems through occupied areas of the South China Sea region. [13] As a result of these improvements, China has improved its capacity for coordinating and hosting a range of civil-military activity throughout





the southern and eastern portions of the South China Sea.

Conclusion

While China's emergent sea-based nuclear deterrent is a new military capability, it has been long expected and fits well-established expectations of nuclear deterrence strategy. Further, China's deployment of its SLBM systems faces certain constraints in the near term related to the current international security environment, maritime geographic factors in the South China Sea, and certain technical aspects of the Type 094 SSBN. Future technical improvements to China's SLBM capability are to be expected, and bear close observation. Yet it is the interaction of such technical advances with the reshaped maritime geography in the South China Sea that offers China the requisite political and military support for regular nuclear deterrence missions in the future. China's future deployment of longer-ranged SLBMs within this reshaped maritime environment could facilitate global nuclear deterrence patrols from within the South China Sea.

Even in the absence of a bastion strategy, China's expanded political and military occupation of areas within the South China Sea has nonetheless improved its capacity for deploying its SLBM force in the Asia-Pacific region. Politically, China is developing administrative jurisdiction over areas of the SCS that legitimate the deployment of military assets in the region. Militarily, China can host and coordinate greater numbers and types of naval vessels, and can provide improved air transport and combat support. Seen in this light, China's emergent sea-based nuclear deterrent is one part of a much broader expansion of China's presence in the Asia-Pacific region.

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6. A minimum deterrence posture relies upon the mere existence of a nuclear capability to deter, while limited deterrence entails a more secure nuclear retaliatory force. See Patrick Morgan, *Deterrence Now*, for a complete overview of these and other nuclear deterrence concepts.
7. Yu Jixun, *Second Artillery Campaign Studies*, pp. 297 generally discusses nuclear-armed submarines as acting with nuclear-armed air and land-based systems as part of an overall nuclear counterstrike campaign.
8. Historically, China decided to design and build nuclear attack submarines (SSNs) first, and then based designs for an indigenous SSBN using the nuclear attack submarine; China based designs for its Jin-class 094 SSBN on a nuclear attack submarine – possibly the Shang-class Type 093 SSN - with missile tubes "plugged" into the midsection of the vessel (see Jane's Navy International, "Strategic Power: SSBNs Maintain Course in Evolving Security Environment," and John Lewis and Xue Litai, *China's Strategic Seapower*, for more on these developments).
9. Jane's Navy International, "Strategic Power: SSBNs Maintain Course in Evolving Security Environment." Bastion could be translated as either 棱堡 or 堡; this source uses the term "棱堡" and describes it as a Soviet plan: "中国加速造航母 或派两艘驻南," The China Press, 15 February 2017, accessed 11 June 2017 <http://ny.uschinapress.com/spotlight/2017/02-15/113864.html>. Another source uses the term "堡垒" to characterize the use of the South China Sea as an area of consolidated space for nuclear submarines, similar in principle to the Soviet bastion concept: "南海变内湖 陆巩固核潜艇堡垒海域," China Times, May 13, 2016, accessed 11 June 2017, <http://www.chinatimes.com/cn/realtime-news/20160513004129-260417>.
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