

China Goes Ballistic

By Andrew S. Erickson and Michael S. Chase

China is increasingly a force to be reckoned with, not only economically but also militarily. Its aggressive stance toward some of its neighbors, along with Asia's growing economic importance and the need to assure U.S. allies that Washington will increase its attention to the region despite budgetary challenges and fractious domestic politics, prompted the Obama administration to announce a "rebalance" toward Asia. Now Beijing's relations with Japan—which has been indulging in what China sees as alarming spasms of nationalism, including a recent visit by Prime Minister Shinzo Abe to the Yasukuni shrine—have deteriorated to their lowest level in many years. In addition, China's efforts to undermine Japan's administrative control over the disputed Senkaku/Diaoyu islands are raising the possibility of a crisis that could draw in the United States by challenging the credibility of U.S. extended deterrence. To deter negative Chinese actions in this vital but volatile region while avoiding dangerous escalation, Washington must better understand the ultimate instrument of Chinese deterrence: the People's

Liberation Army Second Artillery Force (PLASAF), which controls the country's land-based nuclear and conventional ballistic missiles and its ground-launched land-attack cruise missiles.

Possessing the world's second-largest economy and a growing defense budget has enabled China to deploy more formidable military capabilities, such as the world's first antiship ballistic missile (ASBM) and largest substrategic missile force. Wielding such conventional capabilities, it seeks to increase its leverage in disputes regarding island and maritime claims in the East and South China Seas and to deter or if necessary counter U.S. military intervention in the event of a conflict with one of its neighbors. Meanwhile, continued development of its nuclear forces—with a new mobile intercontinental ballistic missile (ICBM) reportedly capable of carrying multiple independently targetable reentry vehicles (MIRV) under development and its first effective nuclear ballistic-missile submarine (SSBN) going on a deterrent patrol this year—indicates China's determination to further improve its position at the great-power table and force the United States to respect its vital interests.

Like its home nation, the PLASAF is itself increasingly a formidable force. Thanks to top-tier industrial capabilities and long-term strategic prioritization, it boasts what the National Air and Space Intelligence Center (NASIC) calls the world's "most active and diverse ballistic missile development

Andrew S. Erickson is an associate professor at the Naval War College and an associate in research at Harvard University's Fairbank Center for Chinese Studies. **Michael S. Chase** is a senior political scientist at the RAND Corporation. The ideas expressed here are those of the authors alone and do not represent the views of any of their employers.

program,” with both types and numbers expanding; longer-range, more accurate, improved-payload missiles being tested and introduced, even as older systems are upgraded; and new units being formed. China’s missile force has deployed a variety of systems, including short-range ballistic missiles (SRBMs) opposite Taiwan; mobile, conventionally armed medium-range ballistic missiles (MRBMs) for regional deterrence and conventional-strike operations; and new mobile, nuclear-armed ICBMs for strategic deterrence.

From its establishment in the late 1960s until the late 1980s, the missile force was responsible only for a small, outdated and potentially vulnerable arsenal of nuclear missiles, but since the early 1990s it has added a conventional-strike mission and improved its nuclear capabilities. In sharp contrast to its relatively humble beginnings, it now controls a more sophisticated and survivable force of nuclear missiles capable of reaching the United States and regional targets as well as what has emerged as the world’s premier conventional ballistic- and cruise-missile force. The latter now includes not only the SRBMs it began introducing in the 1990s, but also conventional MRBMs capable of striking regional air bases and ASBMs designed to target U.S. aircraft carriers. Underscoring the Second Artillery Force’s growing importance to China’s national defense, in a December 2012 meeting with PLASAF officers, Chinese leader Xi Jinping described the force as “the core strength of China’s strategic deterrence, the strategic support for the country’s status as a major power, and an important cornerstone safeguarding national security.”

China has been taking other measures as well. To increase its influence over disputed territorial and maritime claims around its contested periphery in peacetime and—if necessary—through wartime

operations, China has developed and deployed the world’s foremost force of theater ballistic missiles. It has fielded a large, diverse array of increasingly capable SRBMs, particularly within range of Taiwan. Following a period of rapid growth in the last decade, the total number of SRBMs seems to be holding relatively steady over the past few years, but China continues to enhance or improve the force in other ways (for example, by swapping in newer missiles with better range, accuracy and warhead types). By December 2012, China’s inventory of SRBMs stood at more than 1,100. The PLASAF also fields the ground-launched variant of the DH-10/CJ-10 land-attack cruise missile, with a range of up to 2,000 km. The vast majority of China’s many other cruise missiles are controlled by the service on whose platforms they are deployed.

Conventional DF-21C (CSS-5) MRBMs, which have a range of at least 1,750 km, and DF-21D ASBMs, with a range of at least 1,500 km, represent an important strategic deterrent and a growing long-range conventional precision-strike capability. China currently deploys fewer than thirty launchers of the former and an unknown but growing small quantity of the latter (multiple missiles can use a single launcher). China has developed—and fielded since 2010 in limited numbers—the world’s first ASBM. Future developments will include longer-range conventional-strike capabilities, such as conventional intermediate-range ballistic missiles (IRBMs). Indeed, NASIC assesses that “the PLA is developing conventional intermediate-range ballistic missiles (IRBM) at a steady pace, to increase its capability for near-precision strike out to the second island chain.” The PLASAF’s capabilities for long-range conventional missile strikes are particularly critical given the nascent or limited long-range conventional-strike capabilities of the People’s Liberation Army Air Force and



People's Liberation Army Navy (PLAN). According to NASIC, "China's emerging missile strategy will be marked by increased shooter survivability, enhanced operational flexibility, and significantly greater reach and precision."

At the theater level, China's missile force is capable of supporting a variety of types of campaigns against Taiwan. According to the Department of Defense, while "China today probably could not enforce a full military blockade, particularly if a major naval power intervened," its "ability to do so will improve significantly over the next five to ten years." China's missile force could also strike key targets on Taiwan with short-range missiles or participate in operations against other potential regional adversaries, such as Japan, Vietnam and the Philippines.

After relying on a small, relatively unsophisticated and potentially vulnerable nuclear force for several decades, China is now well on the way to a more credible nuclear retaliatory capability, mostly because of the PLASAF's deployment of more survivable mobile ICBMs. Importantly, Beijing continues to adhere to a "no first use" policy, though there have been debates about the circumstances under which it would apply, and some Chinese military

publications indicate that the PLASAF's nuclear capabilities could help to deter conventional strategic attacks against China.

How quickly is China moving? Some caution is in order here. China is not "racing to parity" with the United States and Russia, as some observers in the two nuclear superpowers have suggested, but it is enhancing its nuclear capabilities by increasing

the size and sophistication of its strategic missile force to respond to what it sees as threats to the credibility of its nuclear deterrent. Specifically, Beijing is modernizing its nuclear force to enhance its survivability, increase its striking power and counter missile-defense developments. In addition, China is enhancing its nuclear command and control. According to the U.S. Department of Defense, "The PLA has deployed new command, control, and communications capabilities to its nuclear forces. These capabilities improve the Second Artillery's ability to command and control multiple units in the field."

Under way for decades, Chinese nuclear modernization can be traced back to concerns about the viability of China's traditional strategic posture that were highlighted in Chinese military publications released in the 1980s. In particular, Beijing became concerned about what it perceived as potentially threatening advances in adversary intelligence, surveillance and reconnaissance, conventional precision strike and missile-defense capabilities. While China's overall approach to nuclear weapons may not have changed, its nuclear force is becoming larger and more advanced. The transition to a somewhat larger, much more modern

nuclear force that includes road-mobile ICBMs and SSBNs, the latter controlled by the PLAN, is providing China with a more survivable—and therefore more credible—nuclear deterrent. This is in keeping with official documents like China's biannual defense white papers, in which China has underscored its determination to deploy the "lean and effective" nuclear force it views as necessary to meet its national-security requirements.

Most nongovernmental experts believe that China currently has several hundred nuclear warheads. For example, in the *Bulletin of the Atomic Scientists*, Hans Kristensen and Robert Norris estimate that China has roughly 250 nuclear weapons. China possesses MRBMs and IRBMs for regional deterrence missions, and silo-based and road-mobile ICBMs capable of striking targets anywhere in the world. NASIC projects that China's ballistic-missile force will continue to grow by size and type, and that "the number of Chinese ICBM nuclear warheads capable of reaching the United States could expand to well over 100 within the next 15 years."

For regional nuclear-deterrence missions, China currently fields five to ten launchers for the limited-mobility single-stage liquid-propellant DF-3 (CSS-2) IRBM, which has a range of at least 3,000 km, and fewer than fifty launchers each for the DF-21 and DF-21A (CSS-5 Mod 1 and 2) MRBMs. Many observers expect that these older DF-3 missiles will likely be retired from service in the near future, as China has been transitioning to a more survivable, road-mobile theater nuclear force composed of DF-21 and DF-21A MRBMs, both of which are solid-propellant road-mobile missiles with ranges of at least 1,750 km.

The Defense Department states that China currently has fifty to seventy-five ICBMs. The liquid-propellant, two-stage, silo-based DF-5 (CSS-4 Mod 1) ICBM served

as the mainstay of China's intercontinental nuclear-deterrence force for more than two decades after its initial deployment in 1981 and remains an important component of that force even today. China currently deploys about twenty silo-based DF-5 ICBMs, which have a range of at least 13,000 km, sufficient to strike targets throughout the continental United States. Moreover, according to the director of the U.S. Defense Intelligence Agency, China is "enhancing its silo-based systems" as part of the modernization of its nuclear-missile force. In addition, China also retains some of its older, liquid-fueled, two-stage DF-4 (CSS-3) ICBMs with a relatively limited range of at least 5,500 km. In 2013, NASIC stated that China retains about ten to fifteen CSS-3 launchers, but many observers anticipate that China will soon decommission this older system.

After lengthy development programs, the PLASAF has deployed two three-stage road-mobile ICBMs: five to ten launchers for the DF-31 (CSS-10 Mod 1), which has a range of at least 7,200 km, and more than fifteen launchers for the DF-31A (CSS-10 Mod 2). This represents an important development because road-mobile ICBMs are more difficult for an enemy to locate and therefore more survivable than their silo-based counterparts. The DF-31's range is sufficient to reach U.S. missile-defense sites in Alaska, U.S. forces in the Pacific and parts of the western United States. After a protracted development history that began in the 1980s, China conducted the first developmental flight test of the DF-31 in August 1999, and the DF-31 was finally deployed in 2006. The DF-31A has a maximum range of more than 11,200 km, which allows it to reach targets throughout most of the continental United States. China reportedly began deploying the DF-31A road-mobile ICBM in 2007; the Pentagon estimates that its

Beijing is modernizing its nuclear force to enhance its survivability, increase its striking power and counter missile-defense developments.

force will increase by 2015, and be joined by enhanced DF-5 ICBMs. Hans Kristensen and Robert Norris estimate that China has deployed a total of about twenty to forty road-mobile ICBMs.

What this ongoing quantitative and qualitative modernization portends for the future of China's nuclear force is a subject of growing attention in the United States, Russia, India and other countries. Over the next decade, China is likely to continue increasing the size of its nuclear stockpile while concentrating on further enhancing its ability to survive a first strike and overwhelm adversary missile-defense systems, steps which Chinese strategists appear to regard as critical to maintaining the credibility of China's nuclear deterrent.

As part of a broader effort to counter U.S. and allied ballistic-missile defenses, the PLASAF could employ MIRVs and hypersonic capabilities. In addition, the Pentagon noted, it could deploy "decoys, chaff, jamming, thermal shielding, and anti-satellite (ASAT) weapons," as well as other countermeasures.

Even as China's nuclear force continues to increase in quality and quantity, however, Beijing is highly unlikely to achieve numerical parity with the United States and Russia, unless the numbers of nuclear weapons in those countries' arsenals decline dramatically. According to General Jing Zhiyuan (who served as PLASAF commander from 2003 to 2012), China's "limited development" of nuclear weapons "will not compete in quantity" with the nuclear superpowers, but as many Chinese scholars

have written, it will be sufficient to protect China's national security. China does not believe it needs to match the United States or Russia to protect its national security or to cement its status as a major power, but it will continue to deploy the larger and more capable nuclear force it appears to see as essential to guaranteeing an assured-retaliation capability and a credible nuclear deterrent. In particular, China is reportedly developing and testing the DF-41, a road-mobile ICBM capable of carrying MIRVs. The principal motivation for developing MIRV technology appears to be increasing the number of warheads China could deliver against targets such as major cities and large military installations as a means of overwhelming U.S. missile-defense capabilities. In NASIC's assessment, "Mobile missiles carrying MIRVs are intended to ensure the viability of China's strategic deterrence. MIRVs provide operational flexibility that a single warhead does not." For China, the key advantages of MIRVs include "simultaneously increasing their ability to engage desired targets while holding a greater number of weapons in reserve." Additionally, from an organizational perspective, when the DF-41 is deployed, it will very likely ensure that the PLASAF maintains its status as the cornerstone of China's strategic nuclear deterrent even after the PLAN's *Jin*-class SSBNs begin conducting deterrence patrols later this year.

As with the rest of the PLA, albeit perhaps to a lesser extent given the extreme gravity of its mission, PLASAF software



in the form of personnel and training has long lagged behind hardware. That is now changing as recent Chinese leaders, and Xi in particular, have charged the PLA with enhancing training realism. While the PLASAF lacks real combat experience, authoritative sources such as its official newspaper, *Rocket Forces News*, and the PLA's *Liberation Army Daily* document extensively that it is implementing more realistic and rigorous training. Particular emphasis is placed on preparing the PLASAF to conduct future joint operations and operate under what are known as "informatized" conditions. Specifically, the PLASAF's latest known volume, *China Strategic Missile Force Encyclopedia*, emphasizes the importance of a "mobile command post" and "minimum communication support." As a "necessity of high-tech localized warfare," the "New Three Defenses" are likewise stressed to protect the PLASAF against precision attack, electronic interference and reconnaissance. Initiated in 2001 by an editorial committee led by PLASAF commanders, the tome endeavors to support the PLASAF's development by offering detailed entries in such areas as doctrine, operations, command and control, logistics, management and history.

Meanwhile, hardware to support such efforts is being improved still further, in the form of capabilities such as the integrated

command platform. China is improving command and control over its nuclear arsenal. Over the past decade, a wide range of demanding technical standards have been promulgated and implemented. Technical talents are being recruited through such pipelines as the Defense Student Program, China's version of ROTC, to ensure that the PLASAF is able to operate and maintain its increasingly sophisticated equipment effectively.

As part of his rapid, vigorous consolidation of leadership, Xi has emphasized the importance of developing reliable war-fighting capabilities. Along with the development and deployment of a more modern, survivable nuclear deterrent, China also seems to be improving the readiness of its strategic forces. Scholars have long thought that all of China's nuclear weapons were kept in centralized storage facilities and that its nuclear-missile forces were kept at an extremely low level of readiness, especially in contrast to those of the United States and Russia. Indeed, at least one Chinese scholar has suggested that China might not have any nuclear weapons that would be considered operationally deployed by U.S. and Russian standards. Yet passages in recent Chinese missile-force publications indicate that even in peacetime China stores at least a small number of

nuclear warheads at missile bases and suggest that some PLASAF units maintain a higher level of readiness than others.

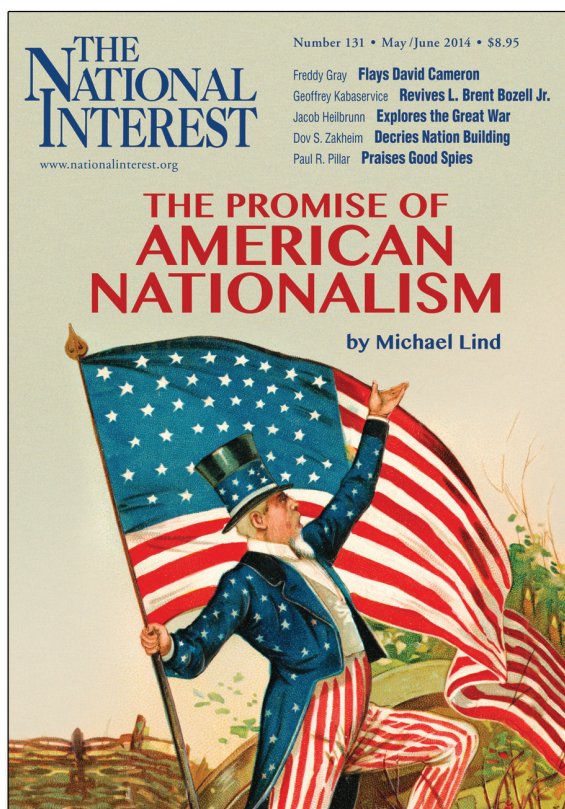
These sources indicate that China has been increasing the readiness of its forces, which is consistent with its transition to a strategic deterrent that will be composed largely of mobile missiles and SSBNs. Indeed, China's most recent national-defense white paper indicated that the PLASAF "keeps an appropriate level of readiness in peacetime," and "has formed a complete system for combat readiness and set up an integrated, functional, agile and efficient operational duty system to ensure rapid and effective responses to war threats and emergencies." Moreover, the white paper states:

If China comes under a nuclear threat, the nuclear missile force will act upon the orders of the [Central Military Commission], go into a higher level of readiness, and get ready for a nuclear counterattack to deter the enemy from using nuclear weapons against China. If China comes under a nuclear attack, the nuclear missile force of the PLASAF will use nuclear missiles to launch a resolute counterattack either independently or together with the nuclear forces of other services. The conventional missile force is able to shift instantly from peacetime to wartime readiness, and conduct conventional medium- and long-range precision strikes.

As a result of the PLASAF's growing capabilities for nuclear deterrence, rapidly improving long-range conventional-strike capabilities, increasingly sophisticated command-and-control systems, and more rigorous and realistic training, China's strategic missile force poses an increasingly serious set of strategic, operational and tactical challenges for the United States and its regional allies and partners. Likewise, China's conventional missile force poses an increasingly serious threat to regional bases and may also enable China to target U.S. aircraft carriers. As for the modernization of the PLASAF's nuclear forces, China continues to derive considerable advantages from adhering to its current nuclear policy, but a larger and more diverse nuclear missile force may also give Chinese leaders a broader range of policy and strategy options. China's growing nuclear capabilities could create fresh challenges for U.S. regional extended deterrence, particularly with respect to Japan. Moreover, the United States will need to continue developing and refining new operational concepts and capabilities, and work even more closely with its allies and partners to respond to the challenges posed by China's growing conventional missile-force capabilities. If it chooses not to do so, then it will discover that this, too, is a choice with potentially dire implications for American security. □

THE NATIONAL INTEREST

Number 131 • May / June 2014



EDITOR *Jacob Heilbrunn*

The National Interest • 1025 Connecticut Avenue, N.W. • Suite 1200 • Washington, D.C. 20036
Phone (202) 467-4884 • Fax (202) 887-5222 • editor@nationalinterest.org

The contents of *The National Interest* are copyrighted. ©2014 The National Interest, Inc.
All rights reserved. Reproduction and distribution of this material is permitted only
with the express written consent of *The National Interest*.