

SECTION 2: CHINA'S MILITARY MODERNIZATION IN 2017

Key Findings

- China's military modernization program seeks to advance Beijing's security interests, prevent other countries from challenging those interests, and defend China's sovereignty claims to disputed areas along its border and maritime periphery. The weapons and systems under development and those that are being fielded by China's military—such as intermediate-range ballistic missiles, bombers with long-range precision strike capabilities, and guided missile nuclear attack submarines—are intended to provide China the capability to strike targets further from shore, such as Guam, and potentially complicate U.S. responses to crises involving China in the Indo-Pacific.
- China will continue to modernize strategic air and sea lift capabilities, which will enable China's military to conduct expeditionary operations. The continued production of the Chinese navy's amphibious lift ships and the air force's heavy lift transport aircraft will increase China's ability to deliver troops abroad and to conduct expeditionary operations beyond the first island chain, humanitarian assistance operations, and noncombatant evacuation operations.
- China's increasingly accurate and advanced missile forces are intended to erode the ability of the United States to operate freely in the region in the event of a conflict and are capable of holding U.S. forces in the region at risk.
- China's continued focus on developing counterspace capabilities indicates Beijing seeks to hold U.S. intelligence, surveillance, and reconnaissance satellites at risk in the event of conflict.
- The consolidation of space, cyber, electronic warfare, signals, and potentially human intelligence capabilities under the Strategic Support Force provides China a centralized all-source intelligence apparatus to support national-level decision makers. Furthermore, this development could strengthen the Chinese military's ability to conduct integrated joint operations by providing a wide range of collection capabilities including intelligence, surveillance, and reconnaissance support to commanders responsible for operational forces under the military's five theater commands.

Recommendations

The Commission recommends:

- Congress authorize U.S. defense spending at levels sufficient to address the growing challenge to U.S. interests posed by Chi-

na's ongoing military modernization program and to ensure the United States will have the capacity to maintain readiness and presence in the Asia Pacific.

Introduction

China is pursuing military modernization efforts to improve its warfighting, force projection, and nuclear deterrence capabilities, in addition to developing capabilities to conduct operations in space and cyberspace. According to the U.S. Department of Defense (DOD), China also continues to develop its antiaccess/area denial (A2/AD) capabilities "to attack, at long ranges, adversary forces that might deploy or operate within the western Pacific Ocean in the air, maritime, space, electromagnetic, and information domains."* The forces under development also provide China the capability to conduct military operations beyond its land borders, as well as into disputed waters along its maritime periphery in the East and South China seas. (See Chapter 2, Section 3, "Hotspots along China's Maritime Periphery," for a detailed discussion of how a military conflict with China in these areas might unfold.) China's ongoing military modernization disrupts stability in East and Southeast Asia and creates challenges for U.S. freedom of action in the region.

This section examines the latest modernization efforts associated with the People's Liberation Army (PLA) ground, naval, air, and missile forces, as well as the new Strategic Support Force. It concludes with a discussion of the implications of China's military modernization for the United States. This section is based on several hearings and briefings the Commission conducted during 2017, the Commission's March 2017 trip to U.S. Pacific Command and May 2017 trip to Asia, unclassified statements by U.S. officials, and open source research and analysis.

China's 2017 Defense and Security Budget

In March 2017, China announced a 2017 military budget of 1.02 trillion renminbi (\$151.1 billion)[†] in central government expenditures,[‡] an increase of 7.2 percent over the announced 2016 budget, but the lowest rate of growth in seven years.¹ This figure represents approximately 10.7 percent of China's total central government out-

*According to DOD, "antiaccess" actions are intended to slow the deployment of an adversary's forces into a theater or cause them to operate at distances farther from the conflict than they would prefer. "Area denial" actions affect maneuvers within a theater, and are intended to impede an adversary's operations within areas where friendly forces cannot or will not prevent access. China, however, uses the term "counterintervention," reflecting its perception that such operations are reactive. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013*, 2013, i, 32, 33; U.S. Department of Defense, *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013, 2.

[†]Unless noted otherwise, this section uses the following exchange rate throughout: \$1 = RMB 6.77.

[‡]China omitted defense and public security expenditure figures from its National People's Congress budget documents in 2017 for the first time since 1980, later announcing its military budget publicly instead. Unlike in previous years, China also announced total military spending of 1.04 trillion renminbi (\$154.3 billion), which likely includes expenditures by provincial governments. To allow comparison with figures from previous years, the figure for central government expenditures is used here. Xinhua, "China's 2017 Defense Budget to Grow 7 Pct: Finance Official," March 6, 2017; David Tweed and Keith Zhai, "China's Defense-Spending Confusion Highlights Strategic Worries," Bloomberg, March 5, 2017; Center for Strategic and International Studies China Power, "What Does China Really Spend on its Military?" August 4, 2017.

lays budgeted for 2017* and approximately 1.3 percent of projected gross domestic product (GDP).² Observers offer varying estimates of China's defense budget, having long noted the impossibility of accepting China's official figures at face value.³ DOD estimates have added roughly 25 percent to China's reported budget in each of the past five years,⁴ projecting it exceeded \$180 billion in 2016.⁵ The Stockholm International Peace Research Institute typically estimates China's military budget to be around 50 percent higher than reported.⁶ The International Institute for Strategic Studies, another source of independent estimates, added around 40 percent to Beijing's reported budget from 2008 to 2015.⁷

Although China's reported nominal military budget increases have outpaced its GDP growth for six years in a row,⁸ when adjusted for inflation they have generally aligned with its GDP growth.⁹ DOD stated in 2017 that "China's official military budget grew at an average of 8.5 percent per year in inflation-adjusted terms" from 2007 to 2016,¹⁰ close to its average real GDP growth rate of 9.3 percent during this time.¹¹ DOD also reported China still has the "fiscal strength and political will to sustain increased defense spending," and can do so "for the foreseeable future."¹²

Overview of Guidance for Military Modernization

China's military modernization is tied to Beijing's national security objectives and intended to prepare forces to meet the "state's core security needs," build the capability to win "informationized wars," and "[accomplish] diversified military tasks."[†]¹³ At the national level, the Central Military Commission's (CMC) Equipment Development Department‡ plays a central role in military modernization by overseeing weapons development across the entirety of the PLA. The department determines priorities, coordinates across the military services (and ensures service modernization initiatives align with overall national efforts), and eliminates redundancies.¹⁴

At the service level, modernization requirements are driven by service strategy, which is shaped by national-level military strategy.¹⁵ Each service has an "equipment department" responsible for developing acquisition plans and managing the acquisition process.¹⁶ Within the PLA Army and Air Force, service modernization efforts also are being shaped by "new-type Army"§ and "strategic

*China's central government general public budget includes "central government expenditures, tax rebates for local governments, general transfer payments to local governments, special transfer payments to local governments, and payments to central government reserve funds." If only the central government expenditures category is counted, China's 2017 defense budget represents 34 percent of projected central government spending. China's National People's Congress, *Full Text: Report on China's Central, Local Budgets (2017)*, March 5, 2017.

†The concept of "diversified military tasks"—which emphasizes the need for the PLA to prepare not only for traditional military missions, but also nontraditional military operations such as military operations other than war—was introduced in China's 2006 defense white paper and further discussed in white papers published by China's State Council Information Office through 2015. China's State Council Information Office, *China's Military Strategy*, May 2015; China's State Council Information Office, *Diversified Employment of China's Armed Forces*, April 2013; China's State Council Information Office, *China's National Defense in 2010*, March 2010; China's State Council Information Office, *China's National Defense in 2008*, January 2009; China's State Council Information Office, *China's National Defense in 2006*, December 2006.

‡The Equipment Development Department replaced the General Armament Department in 2016 as part of the ongoing reform and reorganization of the PLA.

§The "new-type Army" concept is described in the 2013 edition of *The Science of Military Strategy* as transitioning the ground force from a mechanized force focused on "zone" defense to a

Air Force”* concepts, respectively, while PLA Navy modernization is being shaped by “‘offshore waters defense’ with ‘open seas protection’”† missions.¹⁷ The following sections provide an overview of service modernization efforts pursued during 2017 (for a summary of these developments, see addenda I–III, “PLA Theater Commands,”¹⁸ “PLA Order of Battle,”¹⁹ and “PLA Organization of Theater Forces”²⁰).

PLA Army

Although the PLA Army is undergoing significant restructuring following Chinese President and General Secretary of the Chinese Communist Party Xi Jinping’s call for a reduction of 300,000 troops,²¹ the ground forces remain relevant to many PLA missions, such as defending China’s land borders and responding to a Taiwan crisis.‡ PLA Army modernization efforts associated with a smaller and more mobile force reflect the “new-type Army” concept. Phillip C. Saunders and John Chen of the National Defense University note the PLA Army’s “chief modernization priority has been in developing ‘new type forces’ better suited for offensive operations. These include special operations, helicopter, electronic warfare, light mechanized, and long-range artillery units that may have more applicability to maritime and overseas missions.”²²

- *Army aviation:* The PLA Army continues to improve the capabilities of its attack and transport helicopters for conducting mobile, offensive, and defensive air operations.²³ According to DOD, the PLA Army is arming attack helicopters “with precision-guided munitions (including dedicated air-to-air missiles for helicopter-to-helicopter aerial combat).”²⁴ The Z–10 and Z–19 attack helicopters, for example, are armed with advanced air-to-air missiles.²⁵ Furthermore, the army appears to be upgrading

lighter, more maneuverable force capable of “full-zone maneuver.” In July 2016, Chinese President Xi Jinping indicated the PLA Army should develop “new-type Army” capabilities to conduct three-dimensional assault, rapid reaction, and long distance mobility operations. Li Xuanliang and Li Huaqing, “Xi Jinping Inspects Headquarters of PLA Army on Eve of Army Day,” Xinhua, July 27, 2016. Translation; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 201. Translation.

*The 2013 edition of *The Science of Military Strategy* indicates the “objective of the Air Force’s future development is to build a modern Air Force suited to China’s international position, adapted to safeguarding national security and development interests, capable of comprehensively carrying out strategic and campaign missions, and having ‘air and space integration, with both attack and defense [capability].” Christina Garafola, a project associate-China specialist at RAND Corporation, indicates this PLA Air Force objective “has been referred to in official state media and other sources as constituting a ‘strategic air force.’” Christina L. Garafola, “The Evolution of PLAAF Missions, Roles, and Requirements,” in Joe McReynolds, ed., *China’s Evolving Military Strategy*, Jamestown Foundation, April 2016, 83; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 221. Translation.

†China’s 2015 defense white paper, *China’s Military Strategy*, indicated the PLA Navy “will gradually shift its focus from ‘offshore waters defense’ to the combination of ‘offshore waters defense’ with ‘open seas protection,’ and build a combined, multi-functional and efficient marine combat force structure.” The 2013 edition of *The Science of Military Strategy* discusses this transition, indicating that the PLA Navy is “extend[ing] the strategic forward edge from offshore to blue waters which involve the state’s survival and development interests.” Both documents make a case for the PLA Navy needing to enhance its strategic deterrence and counterattack, maritime maneuver, joint operations, and operational support capabilities. China’s State Council Information Office, *China’s Military Strategy*, May 2015; Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 209. Translation.

‡The 2013 edition of *The Science of Military Strategy* states the PLA Army has an “irreplaceable [role] in ensuring China’s land border security, in maintaining social stability, in deterring ... opponents, in containing ... crises, and ... supporting the expansion of the state’s interests.” Shou Xiaosong, ed., *The Science of Military Strategy*, Military Science Press, 2013, 198–199. Translation.

helicopters with improved sensors, data links, and electronic warfare equipment for conducting operations under “informationized” conditions.²⁶ These improved sensors and electronic warfare equipment are likely being incorporated in both attack and transport helicopters.

- *Armored vehicles and artillery*: One objective of ground force modernization is to continue to develop equipment that is capable of being rapidly deployed.²⁷ DOD indicates the PLA Army is improving “tracked and wheeled artillery systems, self-propelled anti-tank guns, ... wheeled and tracked armored vehicles, and air defense systems with advanced target-acquisition capabilities.”²⁸ Furthermore, the PLA Army’s “improved networks provide real-time data transmissions within and between units, enabling better [command and control] during operations,” according to DOD.²⁹ A mobile and easily deployable force with the ability to share data should contribute to the PLA’s efforts to conduct long-range operations while increasing the effectiveness of its firepower.³⁰
- *Special operations force*: PLA special operations force* units conduct antiterrorism operations, reconnaissance, and direct action missions (raids).³¹ The PLA Army is focusing on developing its special operations force’s capability to build a more flexible and deployable force† for supporting operations at home and abroad.³²

Developing a more mobile ground force capable of being rapidly deployed will enhance the PLA’s ability to conduct expeditionary operations beyond China’s territorial boundaries.

PLA Navy

China’s 2015 defense white paper, *China’s Military Strategy*, elevated the maritime domain in China’s strategic thinking, asserting that “the traditional mentality that land outweighs sea must be abandoned.”³³ It noted China will increasingly shift from focusing exclusively on its near seas to a “combination of ‘offshore waters defense’ with ‘open seas protection.’”³⁴ To this end, DOD notes the PLA Navy is “conducting operational tasks outside the ... ‘first island chain’ [see Figure 1] with multi-mission, long-range, sustainable naval [ships] that have robust self-defense capabilities.”³⁵ This has led the PLA Navy to focus on investment in aircraft carriers and carrier aviation, development of large amphibious ships suited for expeditionary operations, construction of multi-mission surface combatants and corvette class ships, and modernization of the submarine force.³⁶

*Dennis Blasko, former military attaché in China, notes PLA special operations forces are more “highly trained light infantry or commando units than elite multi-purpose counter-terrorist organizations found in many other countries (though some of the most elite members of special operations force units can perform those specialized functions).” Dennis J. Blasko, “SOF a Priority in China,” *Cipher Brief*, March 15, 2017.

†Focusing on expanding special operations force capabilities will result in an increase in the overall size of this force with the creation of brigades for all the group armies. Dennis J. Blasko, “Recent Developments in the Chinese Army’s Helicopter Force,” *China Brief*, June 9, 2017.

Figure 1: First and Second Island Chains

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2012*, May, 2012, 40.

- **Aircraft carriers:** The PLA Navy continues to make progress integrating its first aircraft carrier, the refurbished KUZNETSOV-class *Liaoning* (CV-16), into the fleet as its first indigenous carrier, CV-17, moves closer to entering service. CV-17 will have a ski-jump design similar to *Liaoning*, which will limit the carrier to air defense and possibly antisubmarine warfare operations.³⁷ Future carriers are likely to be flat-deck ships with catapults, like U.S. aircraft carriers, which would enable the PLA Navy to launch aircraft armed with heavier munitions for maritime strike or land attack missions.³⁸ According to DOD, China could build several aircraft carriers in the next 15 years.³⁹ China may ultimately build five ships—for a total of six carriers—for the PLA Navy.⁴⁰
 - *Liaoning* (CV-16, Type 001): Imported from Ukraine and refurbished, *Liaoning* is making progress in carrier aviation operations.⁴¹ For the first time, *Liaoning* visited Hong Kong (by transiting the Taiwan Strait) and sailed through the East China Sea and Western Pacific.⁴² In December 2016, *Liaoning* conducted a live-fire drill in the Bohai Sea⁴³ and carrier-task group integration training in the South China Sea.⁴⁴ It may eventually embark a total of 36 aircraft: 24 J-15 fighters, 6 antisubmarine warfare helicopters, 4 airborne early warning helicopters, and 2 rescue helicopters.⁴⁵

- CV-17 (Type 001A): In April 2017, China launched its second aircraft carrier, CV-17—its first indigenously designed and constructed carrier. Although CV-17 shares similar characteristics with *Liaoning*, such as the ski-jump flight deck and conventional steam-driven turbines, it is slightly larger, with a displacement between 65,000 and 70,000 tons compared to *Liaoning*'s 60,000.⁴⁶ CV-17 is expected to accommodate up to 8 more aircraft than *Liaoning*'s 36.⁴⁷ According to DOD, the carrier will probably be operational by 2020.⁴⁸
- *Amphibious lift*: The PLA Navy operates amphibious transport docks, tank landing ships, and medium landing ships, which provide the PLA Navy a range of capabilities, from delivering troops to conducting amphibious and humanitarian assistance operations and providing logistical support. Furthermore, the PLA Navy's amphibious transport docks are well suited to supporting humanitarian assistance and disaster relief operations, noncombatant evacuation operations, and antipiracy operations abroad.⁴⁹
- Amphibious transport dock (LPD): In June 2017, the PLA Navy launched its fifth Type 071 (YUZHAO-class) LPD, which likely will enter service in 2018.⁵⁰ More will follow.⁵¹ The YUZHAO LPD can carry up to four air cushion landing craft, four helicopters, armored vehicles, and troops for long-distance deployments.⁵² The ship will help improve the PLA's amphibious assault capabilities and expeditionary operations.⁵³ DOD assesses the PLA Navy likely will continue construction of YUZHAO LPDs as it pursues a new class of amphibious assault ship.⁵⁴
- Landing helicopter dock: Media reports indicate the Type 075 landing helicopter dock is currently under construction. Potentially entering service as early as 2020, the ship would be larger than the YUZHAO and reportedly will have a greater capacity to carry helicopters.⁵⁵
- Tank landing ship (LST): According to DOD, several new Type 072 II (YUTING II-class) LSTs were built in 2016 to replace older Type 072 (YUKAN-class) LSTs.⁵⁶ The new LSTs reportedly will be used for supporting logistics operations, primarily in the South China Sea.⁵⁷
- *Surface combatants*: The PLA Navy continues to commission new surface combatants, including destroyers, frigates, and corvettes. The addition of these ships is aimed at improving the PLA Navy's capabilities in air defense, antisurface warfare, antisubmarine warfare, and combat close to China's shores.⁵⁸
- Guided missile destroyer: In January 2017, the PLA Navy commissioned its fifth Type 052D (LUYANG III-class) destroyer, the first of its most advanced destroyers assigned to the North Sea Fleet.⁵⁹ The ships will improve the North Sea Fleet's air defense and antisubmarine warfare capabilities for an East China Sea contingency. China's first next-generation

“destroyer,”* the Type 055, was launched in June 2017, and is expected to enter service in 2019. Reports indicate it is equipped with phased array radars and a multipurpose vertical launch system for surface-to-air, antiship cruise missiles, and antisubmarine missiles.⁶⁰

- Guided missile frigate: Since December 2016, the PLA Navy has commissioned three Type 054A (JIANGKAI II-class) frigates, bringing the total number of frigates in this class to 25.⁶¹ Comprising the largest number of China’s modern surface ships,† the JIANGKAI II is designed for fleet and littoral defense missions.⁶²
- Corvette: Since December 2016, the PLA Navy has commissioned four Type 056A (JIANGDAO-class) corvettes.⁶³ DOD assesses the latest ships put in service are antisubmarine warfare variants. According to DOD, “China may build more than 60 of this class, ultimately replacing older ... destroyers and frigates,” nearly doubling the number of corvettes currently in service.⁶⁴ The U.S. Office of Naval Intelligence assesses the ship is best equipped for patrolling waters within the first island chain, which includes both the East and South China seas.⁶⁵
- *Submarines:* The PLA Navy operates a range of submarines, including diesel-powered attack, nuclear-powered attack, and nuclear-powered ballistic missile submarines. The fleet consists primarily of conventional submarines equipped with antiship cruise missiles, which are increasing in range.⁶⁶ According to DOD, China’s total submarine fleet “will likely grow to between 69 and 78” by 2020, compared to 66 in 2017.⁶⁷
 - Diesel attack submarine: DOD assesses the PLA Navy commissioned one diesel attack submarine in 2016, which likely is a Type 039 (YUAN-class) diesel attack submarine—China’s most advanced conventional submarine and only conventional submarine in production.⁶⁸ DOD projects China will build three more YUANs by 2020, for a total of 20.⁶⁹
 - Nuclear attack submarine: As of January 2017, China built four Type 093A (SHANG II-class) nuclear attack submarines, an improved variant of the SHANG-class (of which it has two), but they have not entered service, according to DOD.⁷⁰ The Office of Naval Intelligence assesses these four new SHANG IIs will replace the three aging HAN-class nuclear attack submarines remaining in service.⁷¹ DOD projects that over the next decade China will build a new variant of the SHANG, the Type 093B guided missile nuclear attack submarine.⁷²
 - Nuclear-powered ballistic missile submarine: Complementing China’s four JIN-class nuclear-powered ballistic missile submarines, which represent China’s sea-based second-strike

*According to DOD, the ship is classified as a RENHAI-class cruiser, though the PLA Navy calls it a destroyer. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2017*, May 15, 2017, 25.

†Modern surface ships are defined as multi-mission platforms with significant capabilities in at least two warfare areas. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2010*, August, 2010, 45.

nuclear capability, will be the Type 096. This submarine may be armed with the JL-3 submarine-launched ballistic missile, which is capable of striking the continental United States.⁷³ According to DOD, construction on this next-generation submarine is likely to start in the early 2020s.⁷⁴

- *Naval aviation developments*: China’s modernization of its naval aviation forces contributes to its broader effort to build its capability to conduct air operations far from China’s shores.⁷⁵ These developments will strengthen the PLA’s ability to support contingency operations along China’s maritime periphery. The PLA Navy operates a variety of fighter aircraft; fighter bombers; H-6 bombers; and an array of special mission aircraft, KJ-200 airborne early warning and control aircraft, and SH-5 seaplanes.⁷⁶
 - J-15: China’s first operational regiment of carrier-based J-15 fighters continues to train on *Liaoning*.⁷⁷ From December 2016 to January 2017, *Liaoning*-based J-15s conducted exercises in the South China Sea, Bohai Sea, Yellow Sea, and in the Western Pacific.⁷⁸ China reportedly will deploy J-15s on its new CV-17 aircraft carrier.⁷⁹
 - AG-600 seaplane: In May 2017, China conducted the first flight of the AG-600, the world’s largest seaplane.⁸⁰ The plane reportedly has a maximum payload of 60 tons and will increase China’s ability to resupply the land features it controls in the South China Sea.⁸¹ It could also be used for surveillance, antisubmarine warfare, search and rescue, and humanitarian assistance and disaster relief operations.⁸²

The PLA Navy’s continuing development, acquisition, and deployment of multi-mission ships is increasing its capability to operate at greater distances from China and project force into the Western Pacific.

PLA Air Force

According to the 2013 edition of *The Science of Military Strategy*,* an authoritative book published by the PLA’s Academy of Military Science, the objective of PLA Air Force modernization is to “build a modern Air Force suited to China’s international position, adapted to safeguarding national security and development interests, capable of ... carrying out strategic and campaign missions, and having ... both attack and defense [capabilities].”⁸³ These requirements have been further shaped by the PLA Air Force’s interest in pursuing the “strategic air force” concept.⁸⁴ Michael S. Chase, senior political scientist at the RAND Corporation, and Christina Garafola, project associate-China specialist at RAND, note the PLA Air Force

**The Science of Military Strategy* is published by the Military Strategy Studies Department of the PLA’s Academy of Military Science. *The Science of Military Strategy* is part of a body of PLA military publications, to include *The Science of Campaigns*, which provides insight into how the PLA thinks about preparing for conflict at the strategic and campaign levels of warfare. The Academy of Military Science first published *The Science of Military Strategy* in 1987; two additional editions were published in 2001 and 2013. The 2001 edition of *The Science of Military Strategy* was translated into English by the Academy of Military Science in 2005. For a comparison of the 2001 and 2013 editions of *The Science of Military Strategy*, see M. Taylor Fravel, “China’s Changing Approach to Military Strategy: The Science of Military Strategy from 2001 and 2013,” in Joe McReynolds, ed., *China’s Evolving Military Strategy*, Jamestown Foundation, April 2016, 46–75.

has undergone an impressive transformation over the past two decades, emerging as one of the world's premier air forces. As it continues to modernize, it is focused on becoming a 'strategic air force.' [PLA Air Force] strategists suggest this means the air force should play a decisive role in protecting Chinese national interests, field modern capabilities commensurate with China's standing as a major power and enjoy the institutional status befitting its role as a 'strategic service,' an important consideration given the historical dominance of ground forces in China's military.⁸⁵

Thus, the PLA Air Force's efforts are focused on developing long-range strike, fifth-generation fighter, airborne early warning and control, aerial refueling, strategic lift, air defense, as well as intelligence, surveillance, and reconnaissance (ISR) aircraft.⁸⁶

- *Fighters*: The PLA Air Force continues to further its capabilities to conduct offensive and defensive air operations by importing fighters or developing and producing indigenous fighters with advanced stealth, radar, avionic, and electronic countermeasure features, among other capabilities.⁸⁷ The PLA Air Force operates fourth-generation and older fighter aircraft and is developing two fifth-generation fighters, the J-31 and J-20.
 - Su-35: In December 2016, China received its first delivery of four Su-35 fighters ordered from Russia in 2015.⁸⁸ The Su-35, with its advanced avionics and targeting and passive electronically scanned array radar systems, will improve China's counter-air and strike capabilities.⁸⁹ Moreover, the aircraft's range (reportedly approximately 2,200 miles [mi] and 2,800 mi with fuel tanks) will enhance the PLA's ability to conduct operations in the South China Sea and Western Pacific.⁹⁰ China will receive a total of 24 Su-35s by the end of 2018.⁹¹
 - J-31: China has conducted frequent flight tests of its indigenous fifth-generation J-31 since its first flight in December 2016.⁹² According to DOD, the J-31 will feature "high-maneuverability, low-observability, and an internal weapons bay. ... [as well as] modern avionics and sensors that offer more timely situational awareness for operations in network-centric combat environments; radars with advanced tracking and targeting capabilities; protection against enemy electronic countermeasures; and integrated [electronic warfare] systems."⁹³ The J-31's suite of advanced capabilities could rival those of the U.S. F-35 fighter and challenge U.S. aircraft in the Western Pacific. The J-31 could enter service as early as 2018.⁹⁴
 - J-20: In November 2016, China conducted the first public flight of the indigenous fifth-generation J-20,⁹⁵ thought to be modeled on the U.S. F-22 and F-35.⁹⁶ According to a broadcast on the state-run television, in March 2017 the PLA Air Force accepted its first batch of J-20s.⁹⁷ In September 2017, a Ministry of National Defense spokesperson confirmed the J-20 has been officially commissioned into service.⁹⁸ The

J-20 is expected to be similar to the J-31 in terms of its capabilities and role in air operations.⁹⁹

- *Strike*: China is pursuing greater strike* capabilities, which will improve its ability to support firepower strike† and ground operations. The PLA Air Force’s strike aircraft include JH-7 fighter bombers, several variants of the H-6 bomber, and unmanned combat aerial vehicles with strike capabilities.
 - H-6K bomber: According to DOD, the latest variant of the H-6, the H-6K, has “turbofan engines to extend range and the capability to carry six land-attack cruise missiles, giving the PLA a long-range standoff precision strike capability that can [target] Guam.”¹⁰⁰ In December 2016, images emerged in Chinese media of an H-6K long-range bomber capable of carrying larger payloads.¹⁰¹
 - H-20 bomber: China is developing a long-range stealth bomber, the H-20. According to DOD, “These new Chinese bombers will have additional capabilities with full-spectrum upgrades over the current bomber fleet, and will employ many fifth-generation technologies in their design.”¹⁰² The H-20 could add a new component to China’s nuclear deterrent and increase its ability to conduct air operations far from China’s shores.¹⁰³ The H-20 reportedly will have a range of at least 5,000 mi, far enough to strike Hawaii.¹⁰⁴
- *Aerial refueling*: China is developing more capable air refueling aircraft to upgrade its aging and outdated fleet. These aircraft will improve China’s ability to support air operations into the Western Pacific and farther into the South China Sea. The PLA Air Force operates approximately 12 aging H-6U refueling tankers, refitted versions of the H-6 bomber.¹⁰⁵ In the past four years, China has acquired three Ukrainian IL-78 MIDAS tankers, which outrange the H-6U by nearly 2,000 mi and can carry seven times the fuel for refueling.¹⁰⁶ China’s indigenous Y-20 aircraft could be adapted for use as a refueling tanker, and likely would be more capable than the IL-78.¹⁰⁷
- *Strategic lift*: China’s growing fleet of strategic lift aircraft will enhance the PLA’s limited ability to rapidly move cargo, troops, and heavy equipment across long distances to support integrated joint operations.¹⁰⁸ China’s fleet of strategic lift aircraft comprises a small number of IL-76 aircraft.¹⁰⁹ According to DOD, China’s new strategic lift aircraft are “intended to support airborne [command and control], logistics, paradrop, aerial refueling, and strategic reconnaissance operations, as well as [humanitarian assistance and disaster relief] missions.”¹¹⁰

*DOD defines “strike” as an “attack to damage or destroy an objective or a capability.” An air strike is “an attack on a specific objective by fighter, bomber, or attack aircraft on an offensive mission.” Joint Chiefs of Staff, *JP-3-0 Joint Operation*, January 17, 2017, GL-15; U.S. Department of Defense, *Dictionary of Military Terms*, Greenhill Books, 1995, 28.

†Firepower strikes are conventional missile strikes against enemy targets. A “joint firepower strike campaign” is a PLA campaign led by the PLA Rocket force and supported by the PLA Air Force and Navy. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2016*, April 26, 2016, 89; Hu Limin and Ying Fucheng, *Study on Joint Firepower Warfare Theory*, National Defense University Press, 2004, 42–50. Translation.

- Y-20: The first Y-20 strategic lift aircraft entered service in June 2016.¹¹¹ The Y-20 is a heavy lift aircraft in the same category as the Russian IL-76 or the U.S. C-17.¹¹² The Y-20 reportedly has a maximum payload of roughly 66 tons.¹¹³ The Y-20 reportedly will achieve initial operational capability in 2017 and full operational capability in the next several years.¹¹⁴
- An-225: In 2016, the Aerospace Industry Corporation of China, a state-owned corporation, agreed with Antonov State Company, a Ukrainian aircraft manufacturer, to restart production of the Soviet-built An-225 strategic lift aircraft.*¹¹⁵ The An-225 is the largest transport aircraft in the world and has a maximum payload of approximately 280 tons.¹¹⁶ China might conduct first flights of newly produced An-225s in 2019.¹¹⁷
- *Air defense*: China has a large force of long-range surface-to-air missile (SAM) systems, including Russian-built SA-20 and indigenous HQ-9 systems.¹¹⁸ China is developing and acquiring more SAM systems with greater capabilities and longer ranges. These systems will increase China's ability to challenge an adversary's attempt to control airspace or conduct strike operations on China's periphery.
 - S-400: In 2017, Russia reportedly will deliver the first S-400 SAM units that it agreed to sell to China in 2015.¹¹⁹ The deal reportedly is worth \$3 billion.¹²⁰ With a 250-mi range, S-400s based in mainland China could cover all of Taiwan and much of the East China Sea. The S-400 could also greatly improve China's monitoring and air defense capabilities in the South China Sea if deployed to Chinese-occupied land features in the area.† The S-400 might also be capable of intercepting ballistic missiles.¹²¹
 - *Special mission aircraft*: The PLA Air Force's command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) aircraft include airborne early warning and control aircraft such as the KJ-2000 MAINRING, KJ-200 MOTH, KJ-500, and Y-8J. According to DOD, these aircraft will increase the PLA's "capabilities to detect, track, and target threats in varying conditions, in larger volumes, and at greater distances."¹²² The PLA also operates dedicated unmanned aerial vehicles (UAVs) and antisubmarine warfare aircraft with ISR capabilities.¹²³
 - UAV: China is developing UAVs with advanced C4ISR capabilities and integrating them into its network of C4ISR assets. Many UAVs deployed by the PLA Air Force in the past

*Only one An-225 was produced in 1985 and it first flew in 1988. Gareth Jennings, "China and Ukraine Agree to Restart An-225 Production," *IHS Jane's*, August 31, 2016.

†China deployed HQ-9s to Woody Island in the Paracel Islands in February 2016. China has not deployed SAM systems to the Spratly Islands, but in February AMTI published satellite imagery of facilities under construction at Fiery Cross, Mischief, and Subi reefs in the Spratly Islands that apparently would be capable of housing SAM launchers and shielding them from attack. Center for Strategic and International Studies Asia Maritime Transparency Initiative, "A Look at China's Sam Shelters in the Spratlys," February 23, 2017; Arshad Mohammed and J.R. Wu, "U.S. Expects 'Very Serious' Talks with China after Missile Reports," Reuters, February 16, 2017.

ten years—including the BZK-005 and Pterodactyl I (or Wing Loong) variants GJ-1 (similar in size to the U.S. MQ-1 Predator) and WJ-1—have advanced monitoring and targeting capabilities, as well as longer ranges, higher speeds, and greater payload capacities than older Chinese UAVs.¹²⁴ As the PLA deploys these and several more advanced UAVs in development, its C4ISR and integrated precision strike capabilities in China's near seas will grow.¹²⁵

The PLA Air Force's continuing development, acquisition, and deployment of increasingly advanced aircraft is furthering its ability to project force into the Western Pacific and challenge "strong enemies," such as the United States.*

PLA Rocket Force

The PLA Rocket Force provides China with land-based conventional and nuclear missile capabilities.¹²⁶ The Rocket Force continues to improve both its conventional and nuclear forces to enhance long-range strike and deterrence capabilities,¹²⁷ and its modernization program is specifically focused on improving and increasing the reliability and effectiveness of both conventional and nuclear missile systems.¹²⁸

- *Conventional strike:* Since the early 1990s, the Rocket Force has rapidly added conventional strike capabilities to its arsenal, formerly composed entirely of nuclear ballistic missiles.¹²⁹ Today, the Rocket Force's conventional arsenal includes solid-fueled, road-mobile intermediate-range ballistic missiles (IRBMs), medium-range ballistic missiles (MRBMs), short-range ballistic missiles, and antiship ballistic missiles. It also includes ground-launched land-attack cruise missiles (for a discussion on the drivers, progress, and implications of China's development of antiship ballistic missiles, see Chapter 4, Section 2, "China's Pursuit of Advanced Weapons").¹³⁰ China continues to invest in extending the range and accuracy of its conventional missile force.
 - DF-16A MRBM: The U.S. National Air and Space Intelligence Center confirmed in 2017 that a variant of the DF-16 MRBM, the DF-16A, is in service with the Rocket Force.¹³¹ A Chinese state-run media report stated the DF-16A features a maneuverable warhead and several additional fins. Its range exceeds 1,000 kilometers (km) (621 mi) and its accuracy is similar to that of a cruise missile.¹³²
- *Nuclear strike:* China's land-based nuclear missile arsenal includes silo-based, liquid-fueled intercontinental ballistic missiles (ICBMs) and newer road-mobile, solid-fueled ICBMs, IRBMs, and MRBMs.¹³³ China continues to develop and improve carriers and warheads for its land-based deterrent.
 - DF-41 ICBM: China continues its efforts to develop the DF-41, which will be its first multiple independently targetable

*The PLA often uses the term "strong enemy" in military writings to refer to the United States. U.S.-China Economic and Security Review Commission, *Hearing on Hotspots along China's Maritime Periphery*, written testimony of Mark R. Cozad, April 13, 2017.

reentry vehicle-capable, road-mobile ICBM (China's enhanced silo-based DF-5B ICBM also has this capability).¹³⁴

- DF-26 IRBM: In 2016, China began fielding the DF-26 IRBM, which reportedly is capable of nuclear and conventional strikes against ground targets, and conventional strikes against naval targets.¹³⁵ It has a stated maximum range of 4,000 km (2,500 mi) and could reach Guam.¹³⁶
- Reentry vehicles and warheads: Rocket Force modernization efforts for delivery systems continue. China is focusing on reentry vehicles with penetration aids, multiple independently targetable reentry vehicles, and maneuverable vehicles across a range of nuclear and conventional missile systems to counter U.S. ballistic missile defense capabilities.¹³⁷ Furthermore, China is likely continuing nuclear research and development efforts and producing new nuclear warheads.¹³⁸

China seeks to maintain nuclear forces capable of assured retaliation, ensuring its ability to inflict unacceptable damage in the event of a nuclear attack on China,¹³⁹ and to further extend the range of its conventional precision strike capabilities. Conventional developments could improve China's ability to hold adversary assets at risk—particularly fixed bases,¹⁴⁰ key nodes,¹⁴¹ and large ships—at greater distances from China's coastline. The PLA's goal is to erode the United States' ability to operate freely in the Western Pacific freely in the event of a conflict.¹⁴²

PLA Strategic Support Force

The Strategic Support Force—which will have responsibility for cyber, electronic, information, and space operations—was established in December 2015¹⁴³ as part of China's military reform and reorganization when it absorbed signals collection capabilities from the former PLA General Staff Department's Third Department and electronic collection capabilities from the Fourth Department.¹⁴⁴ The Strategic Support Force also might include some elements from the Second Department, to include human intelligence collection capabilities.*¹⁴⁵ Furthermore, this force also may develop and deploy cutting-edge capabilities such as directed-energy weapons.¹⁴⁶ Chinese media reporting indicates the force also will provide intelligence and reconnaissance to the rest of the PLA and enable integrated joint operations.¹⁴⁷ The Strategic Support Force appears to have incorporated signals intelligence capabilities, electronic warfare and electronic countermeasures, as well as aerospace reconnaissance capabilities.¹⁴⁸

- *Cyber*: Chinese writings commonly refer to cyber warfare as “network warfare,” a concept that encompasses offensive, defensive, and reconnaissance activities in networked informa-

*Before the PLA reform and reorganization effort dissolved the General Staff Department, the most prominent PLA organizations responsible for foreign intelligence collection were the second, third, and fourth departments of the General Staff Department. The Second Department was responsible for the collection and analysis of human intelligence, imagery intelligence, and tactical reconnaissance. The Third Department was responsible for collecting signals intelligence and conducting cyber operations. The Fourth Department was responsible for electronic warfare and electronic countermeasures. U.S.-China Economic and Security Review Commission, *2016 Annual Report to Congress*, November 2016, 290.

tion space.¹⁴⁹ The Chinese government's *International Strategy of Cooperation on Cyberspace*, which it published in February 2017, states China will “expedite the development of a cyber force and enhance capabilities in terms of situational awareness [and] cyber defense.”¹⁵⁰

- *Electronic warfare*: According to DOD, the PLA's electronic warfare doctrine “emphasizes using electromagnetic spectrum weapons to suppress or to deceive enemy electronic equipment. The PLA's strategy focuses on radio, radar, optical, infrared, and microwave frequencies, in addition to adversarial computer and information systems.”¹⁵¹
- *Space and counterspace*: According to a paper by two DOD analysts, the Strategic Support Force's military-related space missions probably can be divided into space support and offensive missions.¹⁵² The PLA possesses and continues to develop space support capabilities such as space-based communication; position, navigation, and timing; space-based ISR; ballistic missile warning, space launch detection, and characterization; and environmental monitoring.¹⁵³ It possesses or is developing offensive systems such as direct-ascent antisatellite missiles, co-orbital systems,* and ground-based directed energy weapons. (See Chapter 4, Section 2, “China's Pursuit of Advanced Weapons,” for further discussion of China's counterspace weapons.)
 - Space support capabilities: Among recent developments, in January 2017, the Chinese government announced that the Gaofen-3 satellite—China's first high-resolution synthetic aperture radar satellite—was operational.¹⁵⁴ Also, in June 2017, Beijing launched two remote-sensing satellites, the first in a constellation of such satellites it is building.¹⁵⁵ In 2015 and 2016, Beijing launched the Gaofen-4—China's first remote-sensing satellite in geosynchronous orbit,†¹⁵⁶ as well as additional Yaogan and Shijian satellites.¹⁵⁷ All of these satellites could be used to improve the PLA's ISR capabilities. In 2016, China also launched the 23rd satellite in the Beidou Navigation Satellite System.¹⁵⁸ China plans to launch a total of 30 Beidou satellites from 2016 to 2020 in pursuit of its objective to complete a global satellite navigation system by 2020.¹⁵⁹ Moreover, state media reported that in 2016 China launched the world's first experimental quantum communications satellite, which later tested technology that could eventually enable secure digital communication using a virtually unbreakable encryption key.¹⁶⁰
 - Offensive space capabilities: China has tested two direct-ascent antisatellite missiles: rocket and missile tests of the SC-19, one of which successfully destroyed a target in low Earth orbit; and a rocket test of the larger DN-2, which reached

* Co-orbital systems involve a satellite already in orbit being deliberately maneuvered to collide with another satellite, dock with an uncooperative satellite, or detonate a small warhead in the vicinity of a satellite.

† Geosynchronous Earth orbit can be achieved at about 22,000–23,000 mi above the equator. The highest orbital band within geosynchronous Earth orbit in frequent use is known as “geostationary Earth orbit.” At this altitude, satellites move at the same speed as the Earth's rotation, enabling them to cover large geographic areas.

higher orbits where Global Positioning System and most U.S. intelligence satellites reside.¹⁶¹ Concerning co-orbital systems, David D. Chen, an expert on China's space programs, testified to the Commission that China has launched six space missions involving "rendezvous and proximity operations"* over the past decade.¹⁶² Such operations could be applied to counterspace missions.¹⁶³ In the area of directed-energy weapons, DOD reported in 2006 that China was pursuing "at least one ... ground-based laser designed to damage or blind imaging satellites."¹⁶⁴ China also tested a laser against a U.S. satellite in 2006, temporarily degrading its functionality; it is unclear whether this was intended to determine the satellite's location or to test China's ability to "dazzle," or temporarily blind, the satellite.¹⁶⁵ Also, since the mid-2000s China has acquired a number of foreign and indigenous ground-based satellite jammers designed to disrupt an adversary's communications with a satellite by overpowering the signals being sent to or from it.¹⁶⁶

The Strategic Support Force could strengthen the PLA's ability to conduct integrated joint operations by providing operational support to the other services through space-based ISR and cyberspace operations.¹⁶⁷

Implications for the United States

China's military modernization efforts continue to improve PLA A2/AD capabilities, which have significant implications for the United States' ability to operate military forces inside the ranges of China's A2/AD weapon systems. Furthermore, China is working to improve its capability to conduct expeditionary operations, respond to perceived challenges in the air and maritime domains, and enhance conventional and nuclear deterrence. Progress in these areas also has implications for the United States, regardless of whether PLA operations are conducted during peacetime, crisis, or conflict.

Since the early 2000s, China's A2/AD advancements have focused on developing forces to counter a "strong enemy," namely the United States.¹⁶⁸ China's efforts to develop these capabilities have focused on construction of modern multi-warfare capable ships capable of operations beyond the first island chain, aircraft capable of conducting long-range strikes against U.S. forces in the Asia Pacific, and medium- and intermediate-range missiles capable of striking ships at sea or U.S. troops based in Japan and Guam.¹⁶⁹ Dr. Chase indicates China's A2/AD modernization efforts "are intended to ensure that U.S. conventional forces will be unable to prevent China

*In his written statement to the Commission, Mr. Chen indicated China in the last ten years has "launched half-a-dozen space missions ... with a suite of technologies for conducting what is known as 'rendezvous and proximity operations' (RPO)... . These include satellites which have been used to maneuver with and observe target spacecraft, such as Banfei Xiaoweixing-1 and -2, the first of which was launched by the Shenzhou-7 manned mission and infamously passed within 50 km of the International Space Station. These also include the Aolong-1, launched in June 2016, a satellite equipped with a robotic manipulator purportedly for de-orbiting space debris, but which even an expert at the Chinese Academy of Sciences says is an 'unrealistic' mission. And, in November 2016, the Shijian-17 satellite was launched, with a suspected inspection or signals intelligence mission, bringing Chinese RPO technologies into the geosynchronous belt for the first time." U.S.-China Economic and Security Review Commission, *Hearing on China's Advanced Weapons*, written testimony of David Chen, February 23, 2017.

from achieving its military and political objectives in a regional conflict.¹⁷⁰

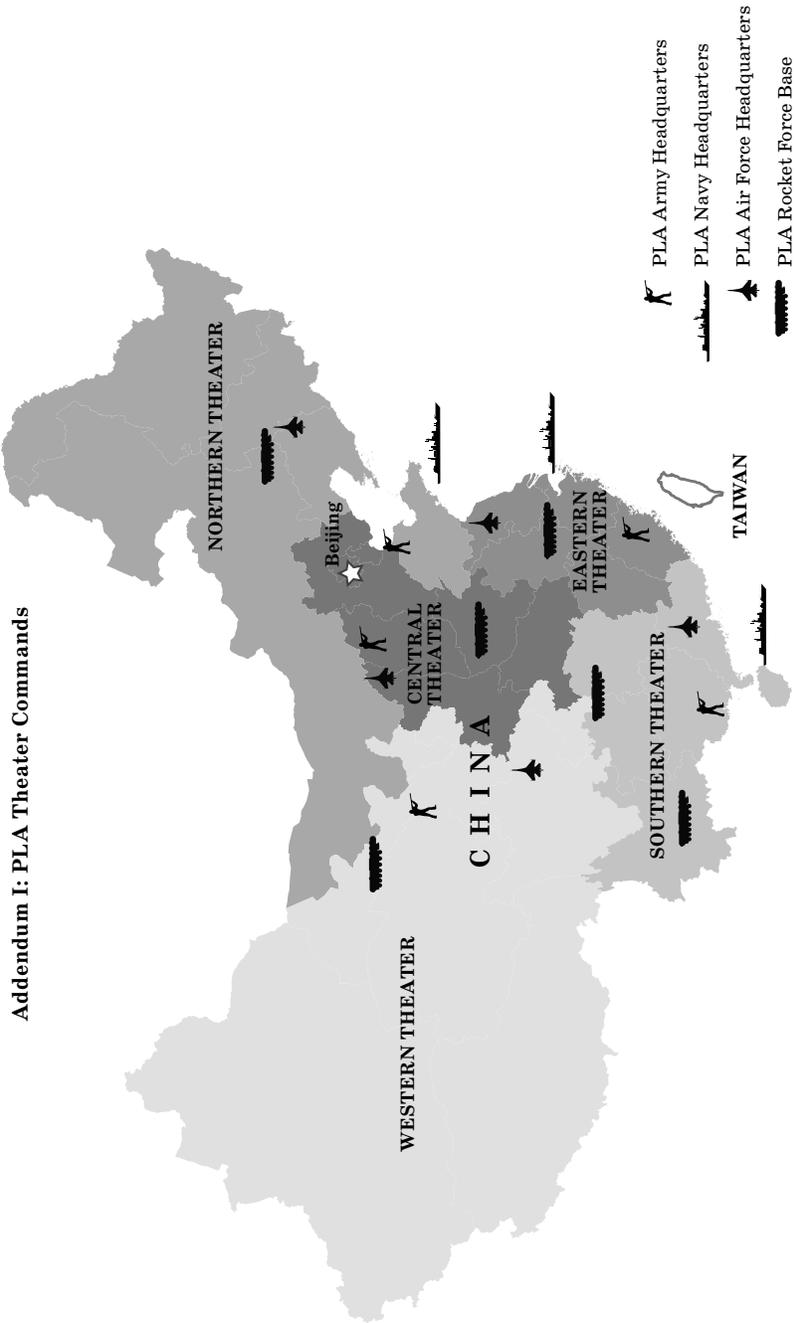
China's efforts to build a smaller and more mobile ground force reflect the PLA Army's goal of building a force that is better suited for offensive operations.¹⁷¹ The Army's focus on developing special operations units, helicopters, and light mechanized units not only enables the PLA Army to conduct operations along China's land and maritime borders, but also to conduct counterterrorism, noncombatant evacuation, and disaster relief operations abroad.¹⁷² Furthermore, China views the development of a "new-type Army" as necessary for enhancing long-distance strike capabilities.¹⁷³ The development of these types of forces will help China further develop expeditionary capabilities and expand Beijing's ability to respond to perceived threats along China's periphery and beyond to defend Chinese interests and citizens abroad.¹⁷⁴ This expanding capability could result in U.S. and Chinese forces conducting missions within the same operational space.¹⁷⁵

China's naval modernization, driven by the shift from focusing on the "near seas" to "offshore waters defense with open seas protection," is enhancing the PLA Navy's capability to conduct operations beyond the first island chain with multi-mission, long-range, sustainable ships that have robust self-defense capabilities.¹⁷⁶ The PLA Navy's investment in aircraft carriers and carrier aviation, large amphibious ships, modern surface combatants, and the submarine force are intended to enhance China's ability to engage enemies further from its coast.¹⁷⁷ Furthermore, the PLA Navy's continued focus on the Type 096 ballistic missile submarine and the JL-3 submarine-launched ballistic missile indicates the navy is committed to enhancing China's nuclear deterrence capabilities.¹⁷⁸ This likely will result in Chinese ships conducting missions further from China and in closer proximity to U.S. forces operating in the Indo-Pacific. The U.S. Navy should anticipate a larger forward operational presence by the PLA Navy in the Indo-Pacific at the outset of conflict should a crisis between China and a U.S. ally escalate to hostilities. U.S. Navy Rear Admiral (Ret.) Michael A. McDevitt, a senior fellow with CNA Corporation, argues that "U.S. authorities can no longer assume unencumbered freedom to posture U.S. naval forces off Middle East and East African hotspots if Chinese interests are involved and differ from Washington's."¹⁷⁹

The goal of PLA Air Force modernization—under the "strategic air force" concept—is to build a force capable of enhancing China's international position, safeguarding security interests, and enhancing offensive and defensive capabilities further from China's coast.¹⁸⁰ Recent air operations have included simulated strike training and patrols over waters between Japan and Taiwan (the Miyako Strait) and between Taiwan and the Philippines (the Bashi Channel), which are sensitive and strategic waters for U.S. allies, friends, and partners in the region.¹⁸¹ The United States should expect these types of missions to continue to increase, and at greater distances from China's coastline. Furthermore, U.S. bases—from which forward-deployed U.S. forces operate—in the Asia-Pacific could be vulnerable to strikes by H-6K bombers armed with long-range land attack cruise missiles.¹⁸²

The PLA Rocket Force is focusing on improving China's long-range strike and deterrence capabilities by increasing the reliability and effectiveness of both conventional and nuclear missile systems.¹⁸³ By modernizing PLA Rocket Force nuclear capabilities, China seeks to maintain a counterattack capability sufficient to deter a nuclear attack.¹⁸⁴ The 2013 edition of *The Science of Military Strategy* suggests this deterrent posture can be enhanced by increasing the "proportion" of deployed missiles with "intercontinental ranges" capable of "counterattack" against China's "primary strategic opponent."¹⁸⁵ Dr. Chase indicates this "can be seen as an implicit acknowledgment that preparing for the possibility of nuclear deterrence against the United States is a primary driver of PLA nuclear strategy."¹⁸⁶ Furthermore, the continued modernization of the conventional missile force could improve China's ability to hold U.S. forces at risk—particularly those at bases in the Asia Pacific and large ships at sea—at greater distances from China's coastline.¹⁸⁷ Furthermore, DOD indicates "China's [land-attack cruise missiles] and ballistic missiles have also become far more accurate and are now more capable against adversary air bases, logistic facilities, communications, and other ground-based infrastructure. PLA analysts have concluded that logistics and power projection are potential vulnerabilities in modern warfare...."¹⁸⁸

China's creation of the PLA Strategic Support Force—which combines cyber, electronic, information, and space operations—is focused on developing and deploying cutting-edge capabilities and providing intelligence and reconnaissance support to the entirety of the PLA through its incorporated signals intelligence capabilities, electronic warfare and electronic countermeasures, as well as aerospace reconnaissance capabilities.¹⁸⁹ Furthermore, the Strategic Support Force—if it has assumed a human intelligence collection capability¹⁹⁰—would be capable of providing all-source intelligence support to the Central Military Commission. As Dean Cheng, senior research fellow at the Heritage Foundation, testified before the U.S. House Committee on Foreign Affairs, the development of the PLA Strategic Support Force "reflects the ongoing Chinese effort at being able to establish 'information dominance,' which the PLA considers critical to fighting and winning future wars."¹⁹¹ James E. Fanell, formerly the director of Intelligence and Information Operations for the U.S. Pacific Fleet and currently a government fellow with the Geneva Center for Security Policy, testified to the Commission that the Strategic Support Force "will provide precise situational awareness, target identification of opposing forces, network defenses, and real-time command and control" for PLA operations.¹⁹² The United States must assume the force would contribute to A2/AD operations through cyber attacks against forward-deployed U.S. troops conducting operations in the region, as well as attacks against U.S. logistics nodes. Furthermore, the targeting support the Strategic Support Force is likely to provide PLA air and missile forces could enhance joint firepower strike operations conducted against U.S. forces and bases in the Indo-Pacific during a conflict.



Addendum II: PLA Order of Battle

PLA Ground Forces

- 850,000 Troops
- 13 Group Armies
- 78 Combined Arms Brigades
- 2 Infantry Brigades
- 4 Infantry Divisions
- 1 Mechanized Infantry Brigade
- 15 Air Defense Brigades
- 14 Army Aviation Brigades
- 15 Artillery Brigades
- 1 Airborne Corps
- 15 Special Operations Brigades
- 7,000 Tanks
- 8,000 Artillery Pieces

PLA Navy

- 1 Aircraft Carrier
- 26 Destroyers
- 55 Frigates
- 34 Corvettes
- 86 Coastal Patrol (Missile) Boats
- 27 Tank Landing Ships
- 4 Amphibious Transport Docks
- 21 Medium Landing Ships
- 57 Diesel Attack Submarines
- 5 Nuclear Attack Submarines
- 4 Nuclear Ballistic Missile Submarines

PLA Air Force and Naval Aviation

- 1,700 Fighter Aircraft
- 400 Bombers / Attack Aircraft
- 475 Transport Aircraft
- 115 Special Mission Aircraft

PLA Rocket Force

- 75-100 Intercontinental Ballistic Missiles
- 200-300 Medium-Range Ballistic Missiles
- 1,200 Short-Range Ballistic Missiles
- 200-300 Ground-Launched Cruise Missiles
- 200-300 Land-Attack Cruise Missiles

Addendum III: PLA Organization of Theater Forces

EASTERN THEATER COMMAND

PLA Army

71st Group Army*

Up to 6 Combined Arms
Brigades (Bdes)
Artillery Bde†
Air Defense Bde
Special Operations Bde
Army Aviation Bde

72nd Group Army

Up to 6 Combined Arms Bdes
Artillery Bde†
Air Defense Bde
Special Operations Bde
Army Aviation Bde

73rd Group Army

Up to 6 Combined Arms Bdes
Artillery Bde†
Air Defense Bde
Special Operations Bde
Army Aviation Bde

PLA Navy

East Sea Fleet

7 Naval Aviation Bdes
3 Frigate Squadrons
2 Destroyer Flotillas
Landing Ship Flotilla
2 Submarine Flotillas
Fastboat Flotilla

PLA Air Force

Eastern Theater Air Force

9 Fighter/Attack Bdes
Bomber Division (Div)
Specialized Air Div
Specialized Air Bde
3 Surface-to-Air Missile
(SAM) Bdes
Surface-to-Surface Missile
(SSM) Air Bde

PLA Rocket Force‡

61 Base

7 Missile Bdes

SOUTHERN THEATER COMMAND

PLA Army

74th Group Army

Up to 6 Combined Arms Bdes
Artillery Bde†
Air Defense Bde
Special Operations Bde
Army Aviation Bde

75th Group Army

Up to 6 Combined Arms Bdes
Artillery Bde†
Air Defense Bde
Special Operations Bde
Army Aviation Bde

PLA Navy

South Sea Fleet

8 Naval Aviation Bdes
2 Frigate Squadrons
2 Destroyer Flotillas
Fastboat Flotilla
2 Submarine Flotillas
Landing Ship Flotilla
2 Marine Bdes

PLA Air Force

Southern Theater Air Force

4 Fighter/Attack Air Bdes
3 Fighter Divs
Specialized Air Div
Bomber Div
Transport Div
SAM Bde

PLA Rocket Force

62 Base

5 Missile Bdes

63 Base

5 Missile Bdes

WESTERN THEATER COMMAND

PLA Army

76th Group Army

Up to 6 Combined Arms Bdes
Artillery Bde
Air Defense Bde
Special Operations Bde
Army Aviation Bde

77th Group Army

Up to 6 Combined Arms Bde
Artillery Bde
Air Defense Bde
Special Operations Bde
Army Aviation Bde

Tibet Military District

Mechanized Infantry Bde
2 Mountain Infantry Bdes
Artillery Bde†
Air Defense Bde
Special Operations Bde
2 Army Aviation Detachments
from 77th Group Army

Xinjiang Military District

4 Infantry Divs
Artillery Bde†
Air Defense Bde
Special Operations Bde
Army Aviation Bde

PLA Air Force

Western Theater Air Force

Fighter Div
5 Fighter/Attack Air Bdes
Specialized Air Div
Transport Div
SAM Bde

PLA Rocket Force

64 Base

4 Missile Bdes

Addendum III: PLA Organization of Theater Forces—Continued**NORTHERN THEATER COMMAND****PLA Army****78th Group Army**

Up to 6 Combined Arms Bdes
 Artillery Bde
 Air Defense Bde
 Special Operations Bde
 Army Aviation Bde

79th Group Army

Up to 6 Combined Arms Bdes
 Artillery Bde
 Air Defense Bde
 Special Operations Bde
 Army Aviation Bde

80th Group Army

Up to 6 Combined Arms Bdes
 Artillery Bde
 Air Defense Bde
 Special Operations Bde
 Army Aviation Bde

PLA Navy**North Sea Fleet§¶**

7 Naval Aviation Bdes
 Liaoning Carrier Formation w/
 2 Air Bdes assigned
 3 Destroyer Flotillas
 Motorized Infantry Bde
 2 Submarine Flotillas
 Fastboat Flotilla
 Special Operations Regiment (Rgt)

PLA Air Force**Northern Theater Air Force**

4 Fighter Divs
 9 Air Bdes
 Ground Attack Air Div
 Specialized Air Div
 2 SAM Bdes

PLA Rocket Force**65 Base**

3 Missile Bdes

CENTRAL THEATER COMMAND**PLA Army******81 Group Army**

Up to 6 Combined Arms Bdes
 Artillery Bde
 Air Defense Bde
 Special Operations Bde
 Army Aviation Bde

82 Group Army

Up to 6 Combined Arms Bdes
 Artillery Bde
 Air Defense Bde
 Special Operations Bde
 Army Aviation Bde

83 Group Army

Up to 6 Combined Arms Bdes
 Artillery Bde†
 Air Defense Bde
 Special Operations Bde
 Army Aviation Bde

PLA Air Force**Central Theater Air Force**

Fighter Div
 8 Fighter/Attack Air Bdes
 2 Bomber Divs
 Specialized Air Rgt
 Transport Div
 SAM Div
 4 SAM Bdes
 PLA Air Force Airborne Corps

PLA Rocket Force**66 Base**

4 Missile Bdes

Note: The order of battle and theater structure presented in addenda I through III reflect Commission assessments based on available open-source information. It is necessarily partial, due to several factors, including: incomplete reporting on China's military modernization developments; uncertainties surrounding China's military reform and reorganization, which is only partially complete; and the general opacity surrounding China's military modernization and reforms. The Commission will continue to track these developments and provide periodic updates.

Addendum III: PLA Organization of Theater Forces—Continued

* In addition to the ground units identified for the theater group army, each group army also has an engineering and chemical defense brigade, and a service support brigade.

† Long-range multiple rocket launcher systems have been reported in at least six group army artillery brigades, the artillery brigades in Xinjiang and Tibet Military districts, and an Eastern Theater Command Coastal Defense Brigade.

‡ Nuclear forces are subordinate to the Central Military Commission, not theater commands. PLA Rocket Force conventional missile forces likely coordinate their operations with the theater commands.

§ The Liaoning aircraft carrier formation and its aviation force are subordinate to the Central Military Commission.

¶ Early in 2017, the former 77th Motorized Infantry Brigade of the former 26th Group Army, stationed in Shandong in the Northern Theater Command, was reported to have been transferred to the Marines, but this has not been confirmed by official Chinese sources.

** The Central Theater Command has troops that are not assigned to group armies. The 112th Mechanized Infantry Division is assigned to the Central Theater Command Army Headquarters. There are also two infantry divisions subordinate to the Beijing Garrison: one combat infantry division (with infantry, armored, and artillery regiments) and one guard division responsible for providing installation security at military facilities and performing military police-type functions in the city.

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