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China Maritime Report No. 19: The PLA Airborne Corps in a Joint Island Landing Campaign

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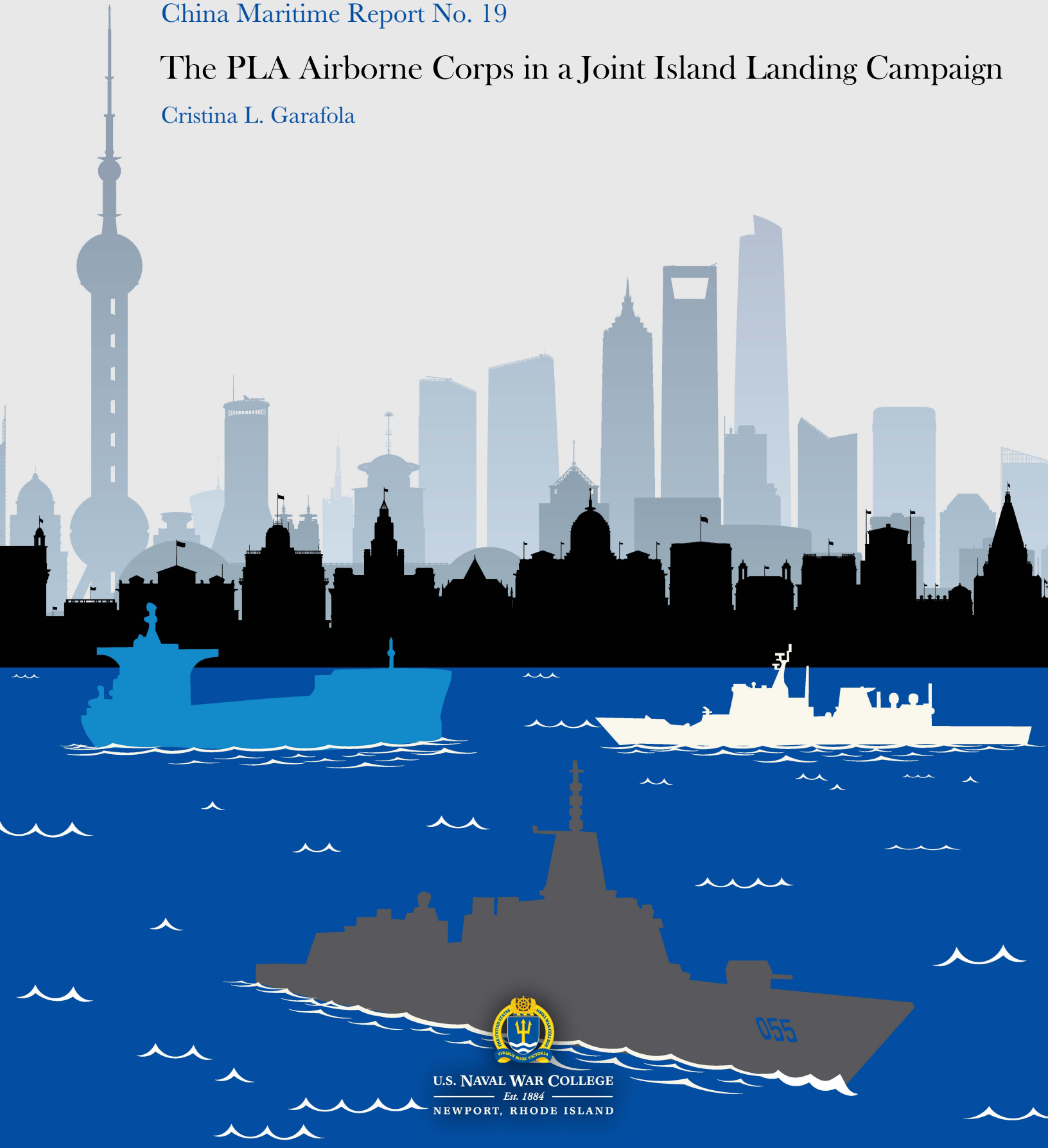

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Summary
The People's Liberation Army (PLA) Airborne Corps would likely play an important role in a cross-strait invasion through operations behind enemy lines. During the landing campaign, the Corps would conduct paradrops or landing operations onto Taiwan, facilitated by PLA Air Force (PLAAF) aircraft. Once on island, airborne forces would seize and hold terrain and conduct a variety of operations to support the broader invasion. In recent years, the Corps has reorganized to improve its capability for mechanized maneuver and assault, leveraging the PLAAF's larger inventories of transport aircraft, particularly the Y-20; improved the sophistication of its training at home; and gleaned insights from abroad via training with foreign militaries. Nevertheless, it is uncertain to what extent the Corps is able to overcome key challenges relevant to a cross-strait campaign. These include ensuring effective integration with similar ground force and marine units; carrying out operations in complex or degraded environments; transcending the Corps' lack of relevant combat experience; and obtaining adequate air support.

Introduction

In May 2018, the People's Liberation Army (PLA) announced a major new milestone for its Airborne Corps (空降兵): Chinese paratroopers made their inaugural jump from the Y-20, the country's first indigenously-built aircraft in its strategic airlift fleet. In the same exercise, the Corps, which is part of the PLA Air Force (PLAAF), completed its first heavy equipment drop from the new aircraft—marking another important achievement in its modernization.[1]

Despite these developments and other recent modernization efforts underway within the airborne forces, the Airborne Corps' potential role in a cross-strait invasion has received relatively little attention compared to the development of key ground and naval invasion forces.[2] Lack of focus in the past on the capability of airborne units may stem from the extreme capacity limitations of the PLA's strategic airlift forces, which restricted the PLA's ability to deploy significant quantities of airborne troops across the strait. However, the 2018 exercise and other recent milestones presage a potentially much more active and significant role for the Airborne Corps in future cross-strait operations.

In recent years, the PLA Airborne Corps has undergone significant reorganization and modernization to improve capabilities relevant for cross-strait operations. The Corps also appears to be increasing its training on complex topics, including in combined arms and joint contexts. However, like the PLA writ large and the PLAAF in particular, the Airborne Corps suffers from a lack of combat experience. It has not conducted combat operations abroad, but rather has been tasked to support the regime during periods of domestic turmoil or for domestic humanitarian assistance and disaster relief (HA/DR) operations. Key questions also remain regarding the Corps' ability to integrate with other

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[1] Huang Panyue, ed., "Paratroops Jump Out of Y-20 Transport Aircraft," *China Military Online*, May 10, 2018, http://eng.chinamil.com.cn/view/2018-05/10/content_8028273.htm; Li Qiang, "Y-20's Completion of First Heavy Equipment Airdrop is of Great Significance," *China Military Online*, June 12, 2018, http://english.pladaily.com.cn/view/2018-06/12/content_8059912.htm.

[2] A notable exception is Roderick Lee, "The PLA Airborne Corps in a Taiwan Scenario," forthcoming from National Defense University. On ground and naval forces' role in an invasion, see, for example, Eric Heginbotham, Michael Nixon, Forrest E. Morgan, Jacob L. Heim, Jeff Hagen, Sheng Tao Li, Jeffrey Engstrom, Martin C. Libicki, Paul DeLuca, David A. Shlapak, David R. Frelinger, Burgess Laird, Kyle Brady, and Lyle J. Morris, *The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power, 1996–2017* (Santa Monica, CA: RAND Corporation, 2015), https://www.rand.org/pubs/research_reports/RR392.html.

PLA units and conduct operations in complex or degraded environments, as well as the PLAAF's broader ability to secure the command of the air needed to enable airborne troops to land on Taiwan.

This report chronicles the changing capabilities of the PLA Airborne Corps over the past decade and provides a foundation for assessing the Corps' role in a cross-strait invasion. It comprises four main sections. Section one briefly summarizes the force structure of the Corps. Section two reviews the Airborne Corps' stated roles and missions in a joint island landing campaign. Section three examines recent efforts to strengthen the Corps' ability to conduct operations relevant to a cross-strait invasion. Section four discusses ongoing challenges that the PLA Airborne Corps must overcome to effectively perform large-scale operations of this kind. The report concludes with a summary of main findings and a roadmap for future research on this topic.

Exhibit 1. Chinese paratroopers prepare to board a PLAAF Y-20 transport aircraft (May 2018).[3]

History and Force Structure

Unlike the U.S. Armed Forces, the Airborne Corps has always been subordinate to the PLAAF rather than the PLA ground forces. The Airborne Corps traces its roots to 1950, with the Central Military Commission's establishment of an Air Force Marine Brigade. The unit underwent several changes over the subsequent decade, successively becoming the Air Force Marine First Division, the Paratroops Division, and the Airborne Division until it was finally restructured into a corps-level organization. Table 1 lists key organizational and operational milestones in the Corp's development.

[3] "Paratroopers Jump Out of a Y-20 Transport Aircraft," *China Military Online*, May 10, 2018, http://eng.chinamil.com.cn/view/2018-05/10/content_8028273_5.htm.

Table 1. Key Events in the Airborne Corps' Development[4]

Year(s)	Event
1950	The Central Military Commission (CMC) establishes an Air Force Marine brigade.
1961	Now known as the PLAAF 15th Airborne Corps, the unit's headquarters is located in Xiaogan, Hubei Province.
1967	The Corps deploys to Wuhan to subdue an uprising during the Cultural Revolution.
Mid-1970s	The Airborne Corps consists of three airborne divisions.
Mid-1980s	The Corps' three divisions are reduced to three brigades.
1989	The Corps deploys to Beijing during the Tiananmen Square crisis and military crackdown.
1992	The Airborne Corps is officially designated a lead unit within the PLA's rapid-reaction force (快速反应部队), even though it had already been training in that role.[5]
1993	The airborne brigades are upgraded to three divisions of about 10,000 troops each.
Mid-1990s	For the first time, the Airborne Force commander is selected as one of the PLAAF's four deputy commanders (1993), possibly reflecting increased leadership attention on the role of airborne forces. The PLAAF also receives its first Il-76 transports.
2008	Airborne forces support earthquake relief efforts in Sichuan.
2017-2018	As part of broader PLA reforms, the Corps is renamed from the PLAAF 15th Airborne Corps to the PLA Airborne Corps, but remains part of the PLAAF. Its three division headquarters are abolished and its six regiments are converted into brigades.
2020	The Airborne Corps supports COVID relief efforts in Wuhan.

Today, the Corps includes the following known units:

- Six airborne combined-arms brigades (空降兵旅), consisting of three light motorized brigades, two mechanized brigades, and one air assault brigade[6]
- One transport aviation brigade (运输航空兵旅), which may include the pre-reorganization helicopter regiment[7]
- One special operations brigade (特种作战旅)

[4] Adapted from Kenneth W. Allen and Cristina L. Garafola, *70 Years of the PLA Air Force* (Montgomery, AL: China Aerospace Studies Institute, 2021), 140, https://www.airuniversity.af.edu/Portals/10/CASI/documents/Research/PLAAF/2021-04-12%20CASI_70%20Years%20of%20the%20PLAAF_FINAL%20ALL.pdf?ver=hTom1CXAjt0VTGTJzJBGAQ%3d%3d .

[5] For more on the development of rapid reaction units and forces, see Dennis J. Blasko, *The Chinese Army Today: Tradition and Transformation for the 21st Century* (New York, NY: Routledge, 2012), 84-85, 104, 175.

[6] Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2021* (Washington, D.C.: Department of Defense, November 2021), 58. The report notes that each of these six brigades "typically commands four combined arms battalions (identified as either mechanized, motorized, or assault), an artillery battalion, a reconnaissance and pathfinder battalion, an operations support battalion, a service support battalion, and possibly a transportation battalion."

[7] Roderick Lee finds that one of the combined arms brigades has a helicopter regiment. Lee, "The PLA Airborne Corps in a Taiwan Scenario."

- One combat support brigade (作战支援旅)
- One training base (训练基地)
- One new training brigade (训练旅)[8]

Table 2 lists major equipment types in the PLA Airborne Corps' order of battle. Table 3 provides the PLAAF transport aircraft available to the force.

Table 2. PLA Airborne Corps Aircraft and Other Equipment[9]

TRANSPORT AIRCRAFT 40:
Medium: 6 Y-8
Light: 34: 20 Y-5; 2 Y-7; 12 Y-12D
HELICOPTERS
8 WZ-10K attack helicopters
8 Z-8KA combat search and rescue helicopters
12 Z-9WZ multi-role helicopters
ARMOURED FIGHTING VEHICLES
180 ZBD-03 airborne combat vehicles
4 ZZZ-03 armored personnel carriers (command posts)
Modified CS/VN3 armored utility vehicles
ANTI-TANK/ANTI-INFRASTRUCTURE
Some self-propelled HJ-9
ARTILLERY 162+:
122mm towed**:** estimated 54 PL-96 (D-30)
107mm multiple-rocket launchers**:** estimated 54 PH-63
54+ mortars: some 82mm; 54 100mm
AIR DEFENCE
Point-defense SAMs: QW-1 (CH-SA-7)
25mm towed guns: 54 PG-87

[8] Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2019* (Washington, D.C.: Department of Defense, May 2019), 40; Lawrence Trevethan, "'Brigadization'" of the PLA Air Force," China Aerospace Studies Institute, 2019, 6-7; Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020* (Washington, D.C.: Department of Defense, September 2020), 53; Allen and Garafola, *70 Years of the PLA Air Force*, 140-141; *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2021*, 58. For a detailed review of the Airborne Corps' organizational structure, see Lee, "The PLA Airborne Corps in a Taiwan Scenario."

[9] Adapted from The International Institute for Strategic Studies, *The Military Balance* (London: IISS, 2022), 260-263.

Table 3. PLAAF Transport Units and Aircraft[10]

Units	Aircraft
1 regiment with Il-76MD/TD *Candid* 1 regiment with Il-76MD *Candid*; Il-78 *Midas* 1 regiment with Y-7 2 regiments with Y-9 2 regiments with Y-20/Y-20U	**TRANSPORT AIRCRAFT** 247+ total aircraft: **Heavy** 51+: 20 Il-76MD/TD *Candid*; 31+ Y-20 **Medium** 55+: 30 Y-8C; 25+ Y-9 **Light** 111: 70 Y-5; 41 Y-7/Y-7H

One additional element of note in the Corps' force structure is the CH-802 small drones operated by the airborne brigades.[11]

The Role of the PLA Airborne Corps in a Cross-Strait Invasion

The 2006 *Science of Campaigns* summarizes the role of the Airborne Corps as follows: "Through air mobility, the airborne force carries out operational activities in the enemy's depth in order to achieve specific strategic and campaign goals."[12] In the context of a cross-strait invasion, the Corps' key role would be to support a joint island landing campaign (JILC).[13] *Science of Campaigns* cites three main phases in a JILC: 1) preliminary operations; 2) assembly, embarkation, and transit; and 3) the assault landing and the establishment of the campaign landing site (beachhead). Airborne forces would likely participate in the first and third phases. During the preliminary phase, forces would be inserted via airborne operations to conduct "sabotage raids" behind enemy lines to help the PLA seize command of the air. Described as "elite special operations units," these forces would target key enemy airfield, radar, command and control, and munitions infrastructure.[14]

The Airborne Corps would also likely play a supporting role during the assault landing phase, when the first echelon of the invasion, including both amphibious assault and vertical landing forces, maneuver toward their objective areas.[15] According to *Science of Campaigns*, this operation is described as an airborne landing combined "with [a] frontal assault onto land… to assist and complement landing force operations with active actions."[16] Airborne forces would then do the following:

> "[I]mmediately initiate attacks against predetermined targets, taking advantage of the situation when the enemy's state is unclear and they cannot organize effective resistance in time and the counter-airborne landing units have not arrived, to quickly seize and occupy

[10] Table 3 excludes VIP transport units operating personnel aircraft. The Y-8Cs listed in the aircraft count were previously described as part of a mixed Y-8C/Y-20 regiment, but this is now listed as a Y-20-only unit. Military Balance 2022 lists the new Y-20Us as tanker/transport aircraft, with three in inventory for 2022.

[11] *PLA Aerospace Power: A Primer on Trends in China's Military Air, Space, and Missile Forces* (Montgomery, AL: China Aerospace Studies Institute, 2019), 2nd ed., 109, https://www.airuniversity.af.edu/Portals/10/CASI/Books/Primer_2nd_Edition_Web_2019-07-30.pdf.

[12] 张玉良 [Zhang Yuliang], ed., 战役学 [*Science of Campaigns*] (Beijing: National Defense University Press, 2006), 589.

[13] Ibid., 310-312.

[14] It is not clear if these references are to airborne force-specific or SOF units in general. Ibid., 319-320.

[15] Ibid., 327-329.

[16] Ibid., 329.

> objectives, actively complement landing force operations, and accelerate the speed of the assault onto land, ensuring that the assault onto land succeeds in one stroke."[17]

Airborne forces are also expected to support the resistance against counterattacks that enemy forces undertake against the PLA's lodgment.[18]

The *Science of Campaigns* sheds light on how the PLAAF would likely approach a major airborne campaign. It highlights four main elements. First, the PLA would need to seize information superiority (制信息权) and command of the air (制空权). The text describes these as "preconditions" (前提条件) for a successful airborne campaign.[19] Second, the PLA would conduct preparatory fires (火力准备). Third, the airborne troops would be transported, in this case across the Taiwan Strait, and conduct paradrops or landings in selected locations. Once they had landed, the troops would begin the campaign's fourth phase: ground operations (地面作战). In this phase, they would capture landing sites, set up PLA operations at the sites for follow-on landings, carry out ground offensives, and transition to defensive operations as needed.[20]

As this sequence suggests, PLAAF aviation forces are a key enabler for the airborne campaign, encompassing not only the transport units themselves but also aircraft that can seize command of the air, target enemy forces in the landing area, and defend vulnerable cargo aircraft. Information is also a key enabler of airborne operations—not only information regarding the enemy's whereabouts, but also the locations of other PLAAF and PLA unit movements to time airborne operations for maximum effect. Maintaining that situational awareness becomes challenging once airborne units land, and sustaining their combat power (which is relatively limited compared to regular ground forces) is also difficult.[21]

Science of Campaigns details other attributes of airborne campaigns worth noting. First, it highlights the use of deception during transport to confuse the adversary. Second, it calls for leveraging night and poor weather for operations. Third, it recommends that airborne forces "strive to [move]… to the target area using one single flight." Last, it prescribes taking out vital links or targets once dropped or landed, including suppressing enemy attacks.[22]

[17] Ibid., 329.

[18] Ibid., 329.

[19] Ibid., 594-595.

[20] Ibid., 589, 598-602.

[21] Ibid., 593-594.

[22] Ibid., 592.

Exhibit 2. Chinese paratroopers jump from a Y-20 aircraft.[23]

Building New Capabilities Relevant for a Cross-Strait Invasion

The PLA Airborne Corps is building capabilities directly relevant to the roles it would likely play in a cross-strait invasion. It is undergoing significant reorganization efforts to bolster its capability for mechanized maneuver and assault, benefiting from growth in the PLA's airlift capacity, increasing training complexity, and learning from foreign outreach and training abroad.

Reorganizing to Improve Its Capability for Mechanized Maneuver and Assault

Over roughly the past decade, the Airborne Corps' force structure for mechanized maneuver and assault has grown. A 2011 PLA-linked source described the Corps of the mid-to-late 2000s as "a lightly armed mode of 'one person, one parachute, one gun,' and light weapons with mortar."[24] One U.S. Department of Defense (DoD) assessment likewise found that the pre-2018 reform Airborne Corps was a "traditional motorized force" that emphasized parachuting operations.[25] The Corps' mechanized force structure developed during this period, with one of its three divisions featuring a mechanized company that was later expanded to a battalion. This unit consisted of infantry fighting vehicles capable of being dropped by parachute. Another division had a special operations group and a small helicopter group (大队).[26] This helicopter unit was established in 2005 and later expanded to a regiment in 2012.[27] Some reports indicate the Corps' special operations group had also become a

[23] "Paratroopers Jump Out of a Y-20 Transport Aircraft."

[24] Ian Burns McCaslin and Andrew S. Erickson, "Selling a Maritime Air Force: The PLA Air Force Campaign for a Bigger Piece of the Maritime Domain," China Aerospace Studies Institute, February 2019, 19, fn. 72, https://www.airuniversity.af.edu/Portals/10/CASI/Books/CASI_Maritime_CAF_Web_Version.pdf.

[25] *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2019*, 40.

[26] Blasko, *The Chinese Army Today*, 104.

[27] *PLA Aerospace Power*, 25.

regiment prior to the reforms.[28] These airborne special operations forces were expected to conduct reconnaissance operations, raids, sabotage, harassing attacks, and special technical attacks.[29]

Following the broader trend of "brigadization" for PLA ground forces and some PLAAF units (begun in 2015 and 2016), the Corps was reorganized in 2018 to integrate combined arms units at the brigade level and therefore increase the Corps' overall combat capability after arriving on the battlefield. At least one brigade has also been outfitted with the ZBD-03 infantry fighting vehicle. Mechanized equipment helps improve units' combat power and maneuverability once on the ground, potentially alleviating some of the challenges of post-landing operations that are identified in PLA strategy texts.[30]

Exhibit 3. ZBD-03 airborne combat vehicles participate in a military parade.[31]

Leveraging Growing Airlift Capacity

Airlift capacity is repeatedly highlighted as a constraint facing the PLAAF, both in terms of enabling activities such as PLA-wide operational maneuver, and as "an important mark of a strategic air force more broadly," especially in fielding high capacity, long-range transport aircraft. The 2013 *Science of Military Strategy* states that "the PLA should … do everything possible to see that strategic air transport capability realizes historic leaps within a short time span and ensures peacetime and

[28] Xi Zhigang and Jiang Long, "In-depth: A Close Look at Chinese Airborne Troops," *China Military Online*, August 30, 2017, link now broken but available at http://china-defense.blogspot.com/2017/09/in-depth-close-look-at-chinese-airborne.html.

[29] Blasko, *The Chinese Army Today*, 132.

[30] For a detailed examination of the Airborne Corps' mechanized forces, see Lee, "The PLA Airborne Corps in a Taiwan Scenario."

[31] 低可视涂装运-20 首次曝光 高调展示重装空投步战车 ["First Exposure of the Low-Visibility Coating on Y-20; High-Profile Display of Heavy Air-Dropped Infantry Fighting Vehicle"], 新浪军事 [*Sina Military*], August 13, 2021, https://mil.news.sina.com.cn/china/2021-08-13/doc-ikqcfncc2678610.shtml.

wartime ability to conduct long-range, rapid, large-scale air projection maneuver."[32] The 2020 *Science of Military Strategy* similarly calls on the PLAAF to continue to improve its airlift and airborne capabilities.[33]

Consisting of small and medium transport aircraft, the PLA Airborne Corps' organic aviation brigade cannot adequately support the Corps' mobility. Therefore, the force must rely on other PLAAF medium and heavy transport and, potentially, search and rescue units to support large-scale operations.[34] Numbers of such aircraft have increased dramatically in recent years, directly benefiting the Corps' ability to rapidly deploy in a variety of scenarios.

DoD assesses that a related objective in the restructuring of the Corps "was to create a responsive and streamlined airborne corps capable of air-delivering modular combat units—including aerial drop of mechanized infantry forces."[35] These drops are most effectively accomplished with large transport aircraft, which until the past few years have been a significant capacity gap for the PLAAF. A 2017 RAND study found that the small number of heavy transport aircraft available prior to 2016, probably no more than two dozen aging Il-76 aircraft in total, likely constrained the PLAAF's ability to rapidly deploy the Corps across the country to one airborne division at a given time, or only a third of the Corps' operational strength.[36] However, the Y-20 indigenous transport aircraft was officially delivered to operational units beginning in 2016, and its inventories have grown rapidly since then. Total PLAAF inventories of heavy transport aircraft have more than doubled in the past five years, with at least 31 new Y-20s outnumbering the 20 older Il-76s as of 2022.[37] If China continues to build and field Y-20s at similar rates over the next few years, this long-standing capacity constraint on rapid deployment of the Corps could be effectively mitigated.

[32] 寿晓松 [Shou Xiaosong], ed., 战略学 [*Science of Military Strategy*] (Beijing: Academy of Military Science Press, 2013), 221.

[33] 肖天亮 [Xiao Tianliang], ed., 战略学 [*Science of Military Strategy*] (Beijing: National Defense University Press, 2020), 374-377.

[34] Trevethan, "'Brigadization'" of the PLA Air Force," 26. The International Institute for Strategic Studies states that the Corps' transport brigade has Y-5, Y-7, Y-8, and Y-12 aircraft. The International Institute for Strategic Studies, *The Military Balance*, 2022, 261. See also Lee, "The PLA Airborne Corps in a Taiwan Scenario."

[35] Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2018* (Washington, D.C.: Department of Defense, August 2018), 97; *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2019*, 86.

[36] Cristina L. Garafola and Timothy R. Heath, *The Chinese Air Force's First Steps Toward Becoming an Expeditionary Air Force* (Santa Monica, Calif.: RAND Corporation, RR-2056-AF, 2017), https://www.rand.org/pubs/research_reports/RR2056.html.

[37] The International Institute for Strategic Studies, *The Military Balance* (London: IISS, 2021), 218, 232; The International Institute for Strategic Studies, *The Military Balance*, 2022, 261.

Exhibit 4. A Y-20 performs an equipment drop (August 2020).[38]

Improving the Sophistication of Training at Home

The Airborne Corps has made steady progress in its training over the past twenty years, with particular focus on sophistication and realism since 2018. The Corps has incorporated more complex topics into its training regimen, including training for nighttime operations; with greater numbers of aircraft, troops, and equipment; in complex geographic and weather conditions; and with other PLA and PLAAF forces. Some of these efforts are long-standing; the below list summarizes select training activities within China's borders from 2001 to 2010:

- 2001: Liberation 1 (解放一号), a joint exercise, took place with three operational phases and nearly 100,000 troops; the training site was selected for its resemblance to Taiwan. Following an information war, the second phase included a nighttime airborne landing in support of a joint ocean crossing and amphibious landing exercise.[39]
- 2008: Airborne forces reportedly performed their first "integrated parachuting" of both troops and heavy equipment.[40]
- 2009: Airborne Movement (空降机动) 2009 saw elements of all three airborne divisions participate in a 20-day exercise, in what one Chinese source calls "the largest ever Chinese airborne force trans-regional campaign mobility comprehensive training exercise."[41]
- 2009: The Vanguard (前锋) 2009 joint exercise focused on ground and air force unit training, featuring an exercise headquarters staffed by both ground and air force officers. Along with

[38] 王明亮 [Wang Mingliang], 空降兵为什么被称为"战略拳头" ["Why the Airborne Corps is Called a 'Strategic Fist'"], 中国青年报 [*China Youth Online*], September 17, 2020, p. 8, http://zqb.cyol.com/html/2020-09/17/nw.D110000zgqnb_20200917_2-08.htm.

[39] Blasko, *The Chinese Army Today*, 187.

[40] McCaslin and Erickson, *Selling a Maritime Air Force*, 19, fn. 72.

[41] Dennis J. Blasko, "PLA Exercises March Toward Trans-Regional Joint Training," *China Brief*, November 4, 2009, https://jamestown.org/program/pla-exercises-march-toward-trans-regional-joint-training/.

the participation of airborne troops, helicopters and fixed-wing aircraft supported ground operations during the exercises.[42]

- 2010: Paratroopers from the Corps conducted the PLA's "first organic and large-scale parachute drill" on the Tibetan Plateau, with over 600 troops dropped.[43]

More recent exercises continue this emphasis on increasing the complexity of training topics. Following a 2014 adjustment to the PLA's top military strategic guidance that placed increasing emphasis on warfighting in the maritime domain, air force leaders have pushed for a greater PLAAF role in overseas operations, including for the Airborne Corps.[44] In 2017, an air transport brigade from the airborne forces conducted "low-altitude, penetration tactical training" over an unfamiliar area of open sea, which one China Aerospace Studies Institute report assessed was one of multiple recent training activities to practice island airdrop operations.[45]

As mentioned in the introduction, in 2018 airborne troops completed their first jumps from the Y-20, and the new transport aircraft completed its first heavy equipment drop.[46] DoD also noted that during the year, the Corps undertook training leveraging "long-range raid and airborne operations based on actual war plans" as well as focusing on combat realism and staffs' ability to conduct command and control.[47] One of these 2018 exercises included the Corps' participation for the first time in Red Sword (红剑), one of the PLAAF's premier training "brands" conducted annually that emphasizes force-on-force confrontation.[48] In 2019, the PLA held a seminar in Beijing focused on integrating the Corps into joint operations and improving other airborne training topics.[49] Exercises in 2020 and 2021 saw the Corps perform a number of training events with Y-20 aircraft, including Y-20s dropping equipment and paratroopers in August 2020, moving elements of a brigade along with Il-76 and Y-9 aircraft in September 2020, and conducting day and night airborne training in April 2021.[50] In 2020, the Corps also operated with a PLAN unit in a maritime environment, conducted opposition-force training with PLAA units, and leveraged military and civilian logistics for rapid long-distance

[42] Blasko, "PLA Exercises March Toward Trans-Regional Joint Training"; Blasko, *The Chinese Army Today*, 184-5.

[43] Wang Haitao and Zhao Qigang, "Airborne Troops Realize Rapid High-Altitude Combat in Organic Unit," *PLA Daily*, August 13, 2010, link now broken but article reproduced at http://china-defense.blogspot.com/2010/08/15th-airborne-corps-conducts-large.html.

[44] For more on PLAAF leaders' increasing push for the air force to adopt a maritime role, see Mark R. Cozad and Nathan Beauchamp-Mustafaga, *People's Liberation Army Air Force Operations over Water: Maintaining Relevance in China's Changing Security Environment* (Santa Monica, CA: RAND Corporation, 2017), https://www.rand.org/pubs/research_reports/RR2057.html; McCaslin and Erickson, *Selling a Maritime Air Force*; Allen and Garafola, *70 Years of the PLA Air Force*.

[45] McCaslin and Erickson, *Selling a Maritime Air Force*, 19, citing Lu Xiaoping, *The PLA Air Force* (Beijing: Intercontinental Press, 2011), 105; 尹闻博, 蒋龙 [Yi Wenbo and Jiang Long], 全域直达练就能降: 空降兵某航运旅对陌生海岛目标实施模拟空降训练小记 ["Achieving Airdrop Capability Through All-Domain Direct Reach Operations: Air Force Airborne's Air Transport Brigade Carries Out Simulated Airdrop Over Unfamiliar Island Targets"], 空军报 [*Air Force Daily*], June 7, 2017, 1.

[46] Huang, "Paratroops Jump Out of Y-20 Transport Aircraft"; Li, "Y-20's Completion of First Heavy Equipment Airdrop is of Great Significance."

[47] *Military and Security Developments Involving the People's Republic of China 2019*, 23, 86.

[48] Ibid., 23.

[49] *Military and Security Developments Involving the People's Republic of China 2020*, 53.

[50] "First Exposure of the Low-Visibility Coating on Y-20."

mobility.[51] Many of these latest training milestones reflect focus on capabilities relevant to support a future JILC.

Learning from Foreign Militaries

Airborne troops have trained with other militaries in China since 2005, and since 2011 they have conducted overseas exercises with other militaries. These exercises have likely been in support of PRC diplomacy as well as to gain a better understanding of counterparts' tactics, techniques, and procedures. The list below summarizes select training events during multilateral and bilateral engagements:[52]

- 2005: For the first time, China's airborne troops participated in an international exercise, Peace Mission, though their paradrops took place in China. Russia also took part.
- 2007: Airborne troops jumped with Russian counterparts in Peace Mission in China.
- 2011: Airborne troops traveled to Belarus for their first overseas exercise, Divine Eagle.
- 2011: Airborne troops conducted a counterterrorism exercise, Cooperation, with Venezuela.
- 2013 and 2014: Airborne troops conducted two iterations of the Sharp Knife Airborne series with Indonesian counterparts.
- 2014: Chinese airborne troops again joined the Peace Mission exercise in China.
- 2015: Airborne troops returned to Belarus for a second counterterrorism exercise.
- 2016 and 2017: A Chinese airborne platoon participated in a competition during the International Army Games in 2016 (Russia) and 2017 (China). The platoon conducted jumps with a helicopter.[53]
- 2017: During the Shaheen VI China-Pakistan Air Force combined training event, Chinese airborne special forces troops and PLAAF and PLAN aircraft and ground units participated alongside Pakistani counterparts.[54]
- 2018: Il-76 and Y-9 transport aircraft conducted low-altitude drops of troops and equipment during the Aviadarts portion of the International Army Games in Russia.[55]
- 2019: Airborne troops represented the PLA for the first time in the small-scale survival exercise Kowari, a trilateral exercise with the United States and Australia.[56]
- 2019: Units from a Corps brigade joined the Tsentr Russian-led multilateral exercise in Russia. They reportedly performed paradrops and "airborne landing operations" with Russian counterparts, although the degree to which these combined operations were truly integrated is not known.[57]

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[51] *Military and Security Developments Involving the People's Republic of China 2021*, 58.

[52] For more details on the operations from 2005 to 2016, see Garafola and Heath, *The Chinese Air Force's First Steps Toward Becoming an Expeditionary Air Force*.

[53] "China's Airborne Troops Win 11 Events in Int'l Army Games," *CGTN*, August 12, 2017, https://www.youtube.com/watch?v=OJFzWbVQyOY.

[54] *PLA Aerospace Power*, 75. It does not appear that airborne forces participated in Shaheen VII, VIII, or IX.

[55] *Military and Security Developments Involving the People's Republic of China 2019*, 62.

[56] Xu Yi, ed., "China-Australia-US Joint Exercise 'KOWARI 2019' Held," *China Military Online*, September 5, 2019, http://eng.chinamil.com.cn/view/2019-09/05/content_9611995.htm.

[57] *Military and Security Developments Involving the People's Republic of China 2020*, 53.

- 2020: Airborne troops participated in Airborne Platoon, a contest part of the International Army Games in Russia, and operated using Russian infantry vehicles for the first time.[58]
- 2021: Airborne troops joined the Zapad/Western-Joint (西部·联合) exercise with Russia that took place in China. One commentary stated that the PLA forces conducted "low-altitude parachute landing of airborne troops at multiple altitudes, and mixed delivery of both personnel and equipment for the army aviation and special operations forces" for the first time.[59]

Some international exercises involving the PLA have provided significant learning opportunities for Chinese airborne troops, at least as portrayed in PLA media. One 2017 article provides this anecdote summarized by Western analysts: "One infantry fighting vehicle company commander in the PLA airborne forces noted… that foreign forces strongly emphasized various forms of night training. The commander compiled his knowledge and led his entire company in subject-based night training upon his return to China" to improve the unit's skills.[60]

Exhibit 5. Chinese paratroopers participate in "Zapad 2021."[61]

[58] *Military and Security Developments Involving the People's Republic of China 2021*, 58.

[59] Li Wei, "Interview: Highlights of China-Russia Joint Exercise Zapad/Interaction-2021," *China Military Online*, August 10, 2018, http://english.chinamil.com.cn/view/2021-08/10/content_10073992.htm.

[60] John Chen and James Mulvenon, "PLA Foreign Training Exchanges: More Than Military Diplomacy?" in Roy Kamphausen, ed., *The People of the PLA 2.0* (Carlisle, PA: U.S. Army War College Press, July 2021), 317–318, https://press.armywarcollege.edu/cgi/viewcontent.cgi?article=1940&context=monographs.

[61] "西部·联合-2021"演习展开前期适应性训练 ["'Zapad-2021' Exercise Conducts Preliminary Acclimation Training"], 新华社 [Xinhua], August 7, 2021, http://www.mod.gov.cn/photos/2021-08/07/content_4891248.htm.

Key Questions Regarding Capabilities Needed for a Cross-Strait Invasion

Although advancements in Airborne Corps mechanization, airlift capacity, and training indicate the force is improving its overall capabilities, key questions remain regarding the extent to which the Corps has mastered the significant operational complexities required to effectively support a cross-strait invasion. While a detailed examination into these topics is beyond the scope of this report, key issue areas are summarized below.

Unity of Effort? Integrating Operations by Similar Units

In order to operate most effectively, the PLA Airborne Corps must develop the ability to integrate its operations with the PLA's other airborne forces. The PLA Army (PLAA) and PLA Navy Marine Corps (PLANMC) are also developing their own air assault units.[62] *SMS* 2020 calls on the PLAA to continue developing air landing and paradrops capability to help realize a three-dimensional Army, along with Army aviation forces to form the backbone of the Army's aerial assault strength.[63] PLAA air assault brigades equipped with helicopters can undertake "force projection and air insertion missions," and DoD notes that these PLAA air assault brigades can augment the Airborne Corps' brigades for some types of operations.[64] Recent training suggests that some level of PLAAF fixed-wing airlift support to PLAA aviation and other units is already occurring. In summer 2021, Y-20 transport aircraft began training with the PLAA, including helicopter and special operations units. One 2021 joint exercise involving a Xinjiang-based PLAA aviation brigade, PLAAF units, special operations forces, and electronic countermeasure troops saw the transport aircraft moving ground-based support elements to the exercise and undertaking other unspecified operations.[65] In the maritime domain, PLAAF leaders are pursuing a growing array of overwater missions for air force units, including "vertical amphibious landings" for the Corps, but the PLANMC also has this capability.[66] There is additionally potential overlap between the Airborne Corps' special operations brigade and airborne-qualified personnel in PLAA special operations and reconnaissance units.[67] Like the PLAA aviation brigades, PLAA special operations units began conducting paradrops training from the new Y-20 aircraft in 2021.[68] Overall, it is likely that both PLAA air assault and special operations forces along with PLANMC units have unique missions in support of combined arms operations within the ground and naval forces. However, the extent to which airborne forces and sister units in other services are able to coordinate directly or via higher headquarters in the event of a contingency is not clear. Future research on this issue could survey the extent to which joint training occurs among these units, as well as whether detailed reporting on their overall training activities provides more information on areas of mission overlap.

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[62] *Military and Security Developments Involving the People's Republic of China 2019*, 40.

[63] Xiao, *Science of Military Strategy*, 351, 354.

[64] *Military and Security Developments Involving the People's Republic of China 2019*, 32.

[65] "First Exposure of the Low-Visibility Coating on Y-20." Another article also summarized a series of CCTV television reports on PLA exercises: 运-20 列装 5 周年：解锁新战法！首次和武直-10 协同奔袭作战 ["Five-Year Anniversary of the Y-20 Entering Service: Unlocking New Tactics! First Coordinated Assault Operations with WZ-10"], 腾讯网 [*Tencent Network*], July 6, 2021, https://new.qq.com/omn/20210706/20210706A098E000.html. See additionally Li Xuanzuan, "China's Y-20 Cargo Aircraft Joins 1st Helicopter Assault Drill, Celebrates 5th In-Service Anniversary," *Global Times*, July 6, 2021, https://www.globaltimes.cn/page/202107/1228004.shtml.

[66] McCaslin and Erickson, *Selling a Maritime Air Force*, 19.

[67] Blasko, *The Chinese Army Today*, 104.

[68] "Five-Year Anniversary of the Y-20 Entering Service," 2021.

Operating in Complex or Degraded Conditions

Reporting on airborne forces' training activities suggests the Corps is working to improve its operational capabilities under complex or degraded conditions. PLA discussion of this topic tends to focus on carrying out training in poor weather, harsh climates, or at night. During Peace Mission 2007, transport aircraft from China and Russia carried out paradrops and equipment drops during a storm.[69] In 2018, an airborne brigade air defense unit undertook a month-long opposition force training drill in the mountains of Gansu Province, including nighttime training.[70] Other airborne training discussions note an emphasis on precise timing and understanding of aircraft flight routes, airdrop trajectories, and other information, such as for troop and equipment drops conducted as part of the Peace Mission 2014 exercise.[71] But whether airborne troops can adapt to degraded or missing information is another question; the article on the 2014 exercise merely quoted a pilot as saying that lacking precise information about those elements would lead to "mission failure."[72] Future research on this training topic could examine the extent to which airborne forces are training under complex electromagnetic or other conditions resulting in degraded information, as well as the extent to which they encounter these training topics during opposition force training.

Lack of Relevant Experience

A third area of concern relates to the Corps' lack of large-scale combat experience. The PLA writ large experienced its last major combat operations during the 1979 invasion of Vietnam, and the Corps' sister branch, the PLAAF aviation forces, last fought during the Second Taiwan Strait Crisis in 1958.[73] However, all historical employment of China's airborne forces has consisted of domestic deployments during periods of internal upheaval in China. In 1967, airborne forces helped put down a regional uprising in Wuhan during the Cultural Revolution, and they also deployed to Beijing in 1989 during the Tiananmen Square crisis and military crackdown.[74]

In addition to the Corps being untested in combat, domestic missions may potentially detract from its combat capabilities. One China Aerospace Studies Institute assessment finds that a regime preservation role may limit deployments to only a portion of the Corps' end-strength: "it is unlikely that more than four airborne brigades augmented" by special operations and combat support elements "would participate in a single operation because of the requirement to have brigades available to defend the regime."[75] In recent years, internal humanitarian assistance and disaster relief missions have also resulted in deployments for airborne troops. Following the 2008 earthquake in Wenchuan, Il-76 aircraft conducted airdrops from low altitude, while troops parachuted into the area to set up communication channels.[76] In 2020, airborne forces conducted COVID-19-related missions in Wuhan.[77] While major internal disaster relief missions may not occur frequently enough to detract

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[69] Garafola and Heath, *The Chinese Air Force's First Steps Toward Becoming an Expeditionary Air Force*, 13–14.

[70] Allen and Garafola, *70 Years of the PLA Air Force*, 300, fn. 1642.

[71] "Chinese Il-76 to Conduct Heavy-Equipment Air Dropping," *China Military Online*, August 24, 2014, https://www.globaltimes.cn/content/877805.shtml.

[72] Ibid.

[73] Allen and Garafola, *70 Years of the PLA Air Force*, 46-47, 77-78.

[74] Ibid., 80.

[75] Trevethan, "'Brigadization'" of the PLA Air Force," 26.

[76] Garafola and Heath, *The Chinese Air Force's First Steps Toward Becoming an Expeditionary Air Force*, 21.

[77] Zhao Lei, "1,400 Military Medics Arrive in Wuhan to Fight Epidemic," *China Daily*, February 13, 2020, https://www.chinadaily.com.cn/a/202002/13/WS5e44f7a5a310128217277562.html; 空军运-20飞抵武汉！首次参加非战争军事行动 ["PLAAF Y-20 Flies to Wuhan! First Time Participating in MOOTW"], 新华 [*Xinhua*], February 13, 2020, http://www.xinhuanet.com/2020-02/13/c_1125569747.htm.

from the Corps' readiness and combat capabilities, future research could explore the extent to which the Corps supports additional smaller-scale domestic missions, and whether PLA analysts assess trade-offs for preparing for wartime missions.

Reliance on Aviation Forces

Finally, as a RAND review of PLAAF employment concepts noted, sufficient air support is a requirement for successful airborne operations. Specifically, the PLAAF must suppress enemy air defenses so that transport aircraft can ferry troops within close proximity to the landing zone.[78] It must also achieve command of the air. Once on the ground, airborne forces would likely still benefit from some form of support from PLAAF aircraft as well as PLA logistics units, even if their organic fires, mobility, and defensive capabilities are becoming more robust.[79] Future research examining this problem set more closely would need to assess the PLAAF's ability to defend airborne packages in contested environments, as well as its ability to surge and maintain high operational tempos to support the specific windows required to execute cross-strait airborne operations.

Conclusions and Roadmap for Future Research

The Airborne Corps is expected to support a cross-strait invasion by penetrating behind enemy lines. During the JILC, the Corps' role would be to conduct paradrops or landing operations onto Taiwan, facilitated by PLAAF aircraft. Once on island, airborne forces are expected to seize and hold terrain and conduct a variety of operations that support the broader invasion. In recent years, the Corps has reorganized to improve its capability for mechanized maneuver and assault, leveraging the PLAAF's larger inventories of transport aircraft, particularly the Y-20; improved the sophistication of its training at home; and gleaned insights from abroad via training with foreign militaries, while also supporting the CCP's and PLA's broader diplomacy efforts.

That said, key questions remain regarding the extent to which the Corps has solved potential challenges to its ability to successfully conduct airborne operations. These include effectively integrating with similar ground force and marine units, which have overlapping roles; carrying out operations in complex or degraded environments; overcoming the Corps' lack of relevant combat experience; and delivering sufficient air support and successfully suppressing enemy fires to escort vulnerable transport aircraft behind enemy lines.

To address these gaps, future research can identify the combined arms and joint exercises in which the Corps participates and assess the frequency and complexity of those exercises. Changes to the types of aircraft or helicopter forces from which they operate may provide indications of evolving operational concepts. Also, overseas exchanges and training may offer additional insights into the Corps' evolving capabilities and focus areas for improvement.

Finally, while this report reviews substantial evidence that the PLA expects its airborne forces to support cross-strait operations, some caution may be warranted.[80] Historically, large-scale airborne operations in highly contested environments resulted in significant casualties to airborne units. Risks to airborne forces in modern warfare have only grown; capable opponents today can pose a wide

[78] Zhang, *Science of Campaigns*, 593-594.

[79] Roger Cliff, John Fei, Jeff Hagen, Elizabeth Hague, Eric Heginbotham, and John Stillion, *Shaking the Heavens and Splitting the Earth: Chinese Air Force Employment Concepts in the 21st Century* (Santa Monica, Calif.: RAND Corporation, MG-915-AF, 2011), 166.

[80] The author thanks Scott Boston for his review of this report and for raising the following points.

array of threats to airborne forces, as well as to the transport aircraft supporting them.[81] The opportunity costs of deploying airborne forces into high-end conflict scenarios—particularly if air dropped—may therefore be significant, given that transport aircraft can perform an array of other valuable missions. While there is no indication that the PLA is radically rethinking roles for the Airborne Corps, a 2020 commentary by a PLAAF Command Academy researcher took an expansive view of the Corps' future roles, describing the PLA's airborne force as "strategic fists" that can not only support major conflicts central to a country's national security, but also to "defend national interests and expand [the country's] national security space on a global scale."[82] It is possible that the PLA will increasingly seek to leverage airborne forces for a broader array of operations farther afield and in less contested environments.

[81] John Gordon, IV, Agnes Gereben Schaefer, David A. Shlapak, Caroline Baxter, Scott Boston, Michael McGee, Todd Nichols, and Elizabeth Tencza, *Enhanced Army Airborne Forces: A New Joint Operational Capability* (Santa Monica, CA: RAND Corporation, 2014), especially pp. 15-30 on threats, https://www.rand.org/pubs/research_reports/RR309.html.

[82] 王明亮 [Wang Mingliang], 空降兵为什么被称为"战略拳头" ["Why Airborne Troops are Called 'Strategic Fists'"], 新浪 [*Sina*], September 17, 2020, https://news.sina.com.cn/o/2020-09-17/doc-iivhvpwy7147522.shtml.

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