

Chinese PLA Intrusions into Taiwan's ADIZ (2)

The “system” that enables multi-aircraft formation intrusions.

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Introduction

The rhetoric and actions of the People's Republic of China (PRC), which has been increasing its military presence around Taiwan, are causing strong alarm not only for surrounding countries but also for the international society. There are marked differences in military capabilities between China and Taiwan, prompting fears that the PRC with a hardline posture and ambition to assert power will invade Taiwan by 2027.¹ Following the outbreak of the Ukraine war in February 2022, the international community has become more cognizant of China's attempts to change the status quo.² For Taiwan, which is faced with direct military threat, Chinese military actions have become an unavoidable issue.³

A representative example is the intrusions of People's Liberation Army (PLA) aircraft into Taiwan's air defense identification zone (ADIZ). The intrusions began in around 2020 and have been happening daily. The Taiwan Ministry of National Defense (MND) has continued to disclose Taiwan's plight every day since September 17, 2020, and three years passed on September 16, 2023.

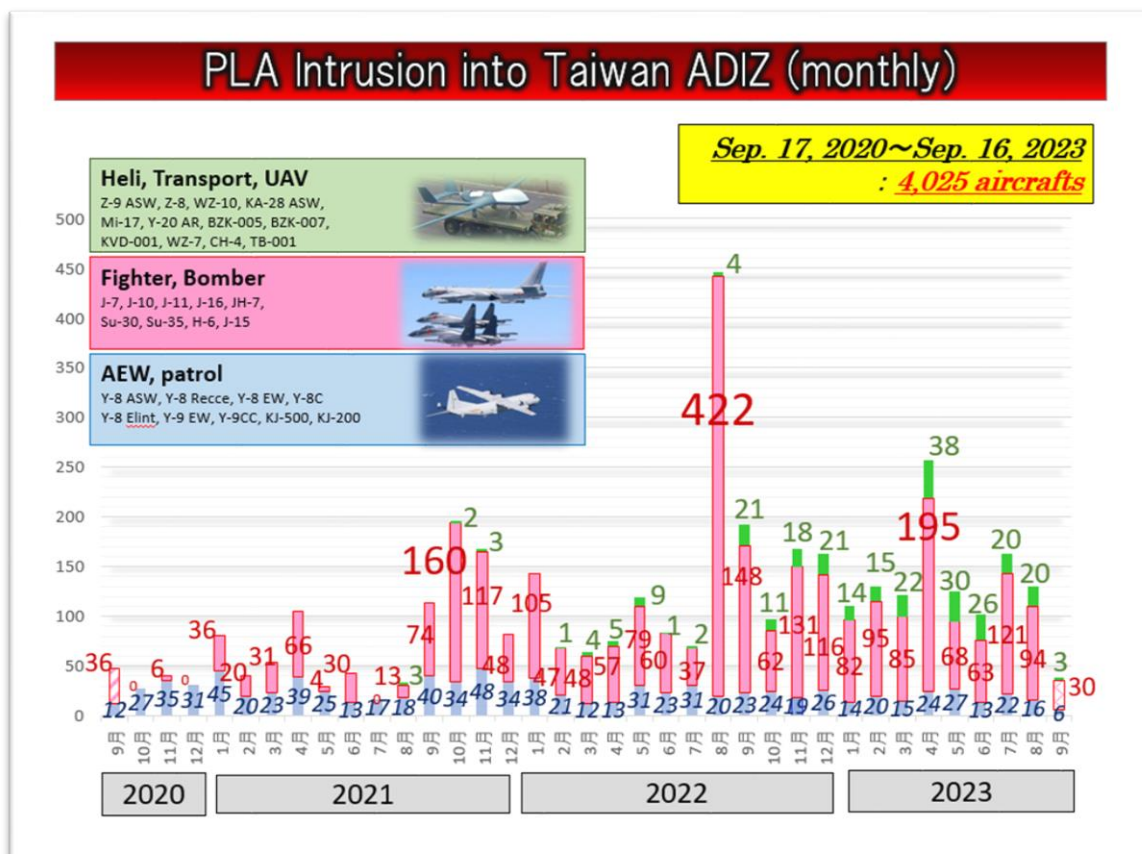
This article aims to examine the physical infrastructure or “system” that enables PLA aircraft's intrusions into Taiwan's ADIZ. As explained in detail below, a key clue to the ADIZ intrusions is “multi-aircraft formation intrusion.” To understand China's military actions, we must first consider the “system” that makes such actions possible. However, reports and discussions to date have not provided sufficiently convincing arguments, noting simply that “China sent numerous aircraft into Taiwan's ADIZ in response to politically sensitive events.”⁴ To help illuminate the situation, this article presents the unique viewpoint of the author, who has consistently followed the intrusions, as well as the author's perspective, shaped by practical experience in flight operation.

This article contends that the PLA may have developed a “system” for conducting intrusions into Taiwan's ADIZ by flying multiple, different types of PLA aircraft in formations. The article consists of two parts. As a follow-up to Commentary No. 246 published last year (“Chinese PLA Intrusions into Taiwan's ADIZ (1): The Past Two Years”),⁵ the first part summarizes the intrusions over the past three years and identifies developments that require continued attention. The second part focuses on the PLA's distinctive multi-aircraft formation intrusions and examines what makes them possible.

PLA intrusions into Taiwan's ADIZ (by month, past three years)

Figure 1 amalgamates all data from September 17, 2020, when the Taiwan MND began releasing the intrusions on the Internet, to September 16, 2023, and shows the number of aircraft that intruded into Taiwan's ADIZ. The total over the three-year period was as many as 4,025 aircraft.⁶ To grasp the numerous types of PLA aircraft that intruded into the ADIZ, they are classified into three broad categories: (1) "patrol aircraft and airborne early warning and control (AEW&C) aircraft" (blue); (2) "fighter and bomber" (pink); and (3) "helicopter, transport aircraft, and unmanned aerial vehicle (UAV)" (green). Aircraft models are indicated in Figure 1.

Figure 1 Aircraft intruding into the Taiwan ADIZ by month (past three years)



Source: Figures were tallied and analyzed by the author based on information available on the Taiwan MND website, among other sources. The monthly totals from the first to the last day of the month were tallied. Monthly numbers that could be tallied only up to the middle of the month are italicized.

(<https://www.mnd.gov.tw/PublishTable.aspx?Types=%E5%8D%B3%E6%99%82%E8%BB%8D%E4%BA%8B%E5%8B%95%E6%85%8B&title=%E5%9C%8B%E9%98%B2%E6%B6%88%E6%81%AF>)

As the graph makes evident, (2) “fighter and bomber”-class aircraft in pink have accounted for most intrusions since August 2022. (1) “Patrol aircraft and AEW&C aircraft” in blue have been fluctuating at around an average of 25 aircraft per month, suggesting they are routine patrol flights.

As last year’s commentary reported, the number of (2) “fighters and bombers” in pink witnessed a surge in August 2022 at 422 aircraft in total. They were part of China’s military exercise in protest the Taiwan visit conducted around this time by U.S. House of Representatives Speaker Nancy Pelosi. In addition, in the past year, a total of 195 aircraft intruded in April 2023. They were part of China’s military exercise in protest the U.S. visit by President Tsai Ing-wen at the end of March. These outliers correspond with the PLA’s trend of multi-aircraft formation intrusions, many of which involved multiple, different types of aircraft carrying out air-to-ship or other organized air strike exercises in formations.

Since last year’s commentary, a new trend has been observed with the (3) “helicopter, transport aircraft, and UAV”-class aircraft in green. Namely, a consistent number of UAVs has begun to intrude since September 2022, and they accounted for most of the intrusions by this aircraft class (green) in Figure 1.

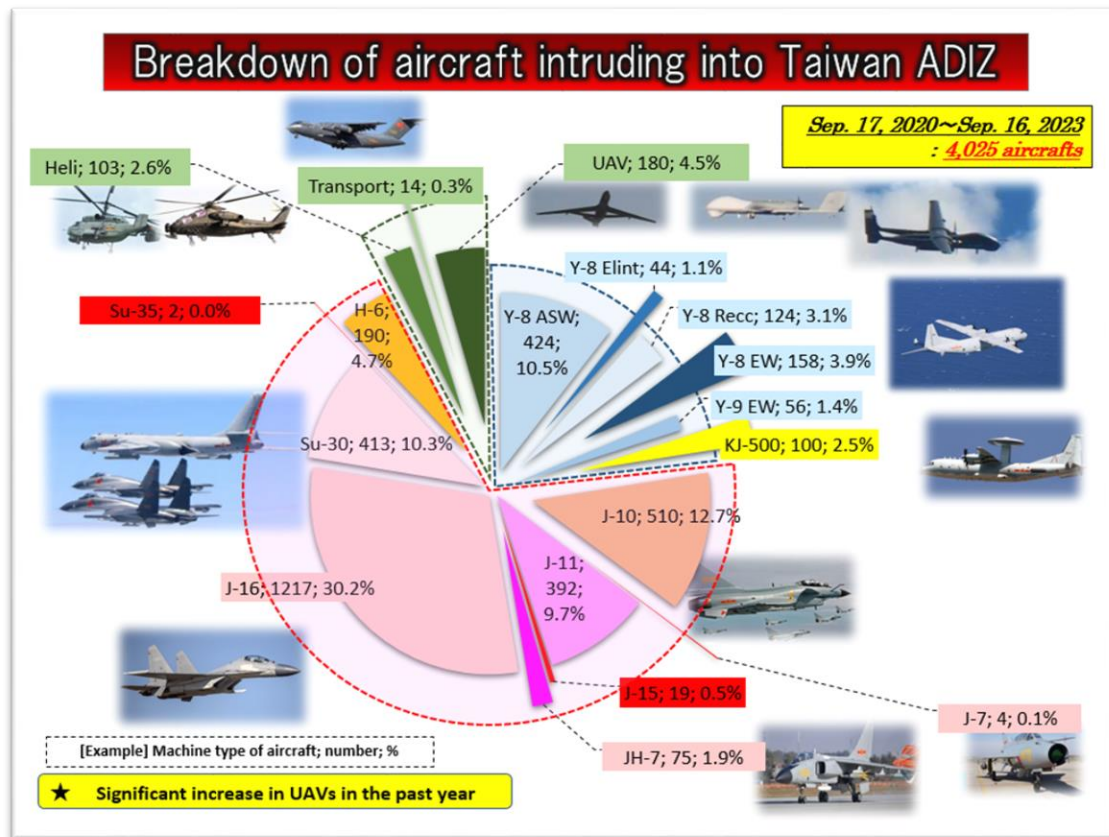
PLA intrusions into Taiwan’s ADIZ (by aircraft type, past three years)

The 4,025 PLA aircraft consisted of the following types: (1) 906 “patrol aircraft and AEW&C aircraft” (22.5%); (2) 2,822 “fighters and bombers” (70.1%); and (3) 297 “helicopters, transport aircraft, and UAVs” (7.4%) (see Figure 2).

The detailed breakdown of (1) “patrol aircraft and AEW&C aircraft,” shaded in blue, was as follows. The Y-8ASW (anti-submarine warfare aircraft) comprised the largest share with 424 aircraft, followed by 158 Y-8EWs (electronic warfare aircraft), 124 Y-8Recces (reconnaissance aircraft), 100 KJ-500s (AEW&C aircraft), 56 Y-9EWs (electronic warfare aircraft), 44 Y-8Elints (electronic intelligence aircraft), and more.⁷ (2) “Fighters and bombers,” shaded in pink, consisted of the following fighters. The J-16 made up the largest share with 1,217 aircraft, followed by 510 J-10s, 413 Su-30s, 392 J-11s, 75 JH-7s, 4 J-7s, and 2 Su-35s. In addition, as many as 190 H-6 strategic bombers intruded into the Taiwan ADIZ.

As in last year’s report, which summarized the intrusions over a two-year period, intrusions by the J-16 continued to make up a significantly greater share than those by other types. Of note is the rapid increase in J-10 intrusions. Last year’s report noted that the number of J-10 intrusions had increased steadily since November 2021, and that considering the trend in J-10 jet engine replacement, China’s domestically produced Taihang jet engine may have enhanced its performance. This last year saw as many as 334 more J-10 intrusions, further suggesting that China’s domestically produced jet engine has made reliability improvements.

Figure 2 Types of aircraft intruding into the Taiwan ADIZ (past three years)



Source: Figures were tallied and analyzed by the author based on information available on the Taiwan MND website, among other sources.

(<https://www.mnd.gov.tw/PublishTable.aspx?Types=%E5%8D%B3%E6%99%82%E8%BB%8D%E4%BA%8B%E5%8B%95%E6%85%8B&title=%E5%9C%8B%E9%98%B2%E6%B6%88%E6%81%AF>)

Surprisingly, the PLA Air Force (PLAAF) rarely conducted flights over the sea until around 2005. It was around 2015 that primarily twin-engine fighters started flying over the waters near the Chinese coast.⁸ If the reliability of China's domestically produced jet engines has improved such that single-engine J-10s are frequently flown over the sea, more PLA fighters are expected to expand their area of activity.

To avoid overstatements, the intrusions into the ADIZ by China's carrier-borne J-15 fighter need additional explanation. In protest the aforementioned U.S. visit by President Tsai Ing-wen, China conducted military exercises (April 8–10) during which carrier-borne aircraft of the PLA Navy (PLAN) intruded from the southeastern part of Taiwan's ADIZ. Some major media outlets thus reported that Taiwan was "sealed off."⁹ Indeed, J-15s on the *Shandong* PLAN aircraft carrier, which sailed in the Pacific from April 9 to 10, intruded into Taiwan's ADIZ a total of 19 times. On April 10, the PLA Eastern Theater Command issued a statement announcing *Shandong's* participation in the military exercises. The belief then spread that J-15s encircled

Taiwan from the southeastern part of the ADIZ.¹⁰ However, as far as the J-15s' trajectory map released by the Taiwan MNS shows, it seems the J-15s did not "encircle" Taiwan but briefly intruded into the ADIZ during carrier landing training in the sea.

For flying the PLAN's carrier-borne J-15 fighter, the PLA has had to continue focusing on training young carrier-based aircraft pilots and conferring carrier landing qualifications (called "carrier qualification" in the U.S. Navy). Moreover, the J-15, which launches using a ski ramp, can carry only a limited amount of fuel and weapons, suggesting that the threat posed by the J-15 remains limited.¹¹ From around 2020, the PLAN has fundamentally transformed its training program for carrier-based aircraft pilots. The guidelines changed from training even pilots with over 1,000 flight hours on third-generation fighters [三代机 1000 小时以上的飞行经验], to training young pilots with less than 100 flight hours on third-generation fighters [三代机飞行时间不足百个小时].¹² It is within such context that the J-15 must be assessed.

Lastly, the detailed breakdown of (3) "helicopters, transport aircraft, and UAVs" in green was as follows. As was reported last year, UAV intrusions began in September 2022. As a result, the share of (3) "helicopters, transport aircraft, and UAVs" jumped from 45 aircraft (1.9%) over a two-year period to 297 aircraft (7.4%) over a three-year period, of which UAVs made up the majority. UAV intrusions rose by 180 aircraft in total (4.5%), marking a new trend in intrusions into Taiwan's ADIZ. The detailed breakdown of the UAVs was 87 BZK-005s, 28 WZ-7s, 25 CH-4s, 19 TB-001s, 19 BZK-007s, and 2 KVD-001s. Overall, BZK-005 appears to be used preferentially. Among non-UAV models, helicopters such as Z-9ASW, Z-8, WZ-10, and KA-28ASW saw a steady increase, numbering 103 in total. Additionally, a total of 14 transport aircraft, such as Y-20AR (aerial refueling transport aircraft), have intruded into the ADIZ.

Why can numerous PLA aircraft keep intruding into the ADIZ?

When events occur that are politically sensitive for China, as when U.S. House Speaker Pelosi visited Taiwan in August 2022, the PLA tends to send numerous aircraft into Taiwan's ADIZ. The past year was no exception. Following President Tsai Ing-wen's U.S. visit in March 2023, multi-aircraft formations conducted daily intrusions as part of China's military exercises.

Formations consisting of some 20 to 50 aircraft may intrude at one time. However, by no means is it easy to organize a large formation to intrude into Taiwan's ADIZ. It should be emphasized that, even with 20 PLA aircraft, conducting mid-air rendezvous after each aircraft has taken off and navigating them into the ADIZ involve extremely challenging operations.

To use a more familiar example, consider 20 moving cars converging into a single line and being driven to a specific destination 100 kilometers away. Then, without the drivers taking any breaks, the cars turn back to their departure point, disband, and return to their respective garages. This is even more difficult to do with aircraft that cannot pause mid-air. If 20 aircrafts attempt to return and land at their home base, air traffic controllers would instantly be saturated with incoming traffic. In addition to this sequence, the PLA

Eastern Theater Command, responsible for the Taiwan front, must simultaneously take into account several parameters, such as the fuel remaining in each of the 20 aircraft, weather conditions, and collision avoidance with other aircraft. The theater command is conducting complex command and control operations, and we can imagine that they were carefully coordinated in advance.

This is all the more reason a strong determination can be sensed from the PLA, which has repeated these extremely challenging tasks and sought to continue them for over three years. The question is: why can the PLA continue to carry out such difficult multi-aircraft formation intrusions? To understand what allows multiple different aircraft to demonstrate their capabilities seamlessly, one must recognize that the PLA has the physical infrastructure or “system” to keep sending aircraft.¹³ One could further infer that numerous different aircraft models can constantly conduct these flights because of a “system” that makes intrusions by multi-aircraft formations possible. What, then, is this system?

What China’s domestic oriented report elucidates about the “system”?

Such inference about a “system” can be made from the 160 aircraft intrusions recorded in October 2021, shown in Figure 1. From October 1, for four days, the PLA simultaneously sent 149 aircraft into the ADIZ. China’s military actions during this period cannot be explained from a political context, such as high-level exchanges between U.S. and Taiwan officials. The actions were conducted on the basis of China’s argument for legitimacy.

The October 1, 2021 intrusion by PLA aircraft into Taiwan’s ADIZ was reported in the October 3 issue of the *Huanqiu Shibao* [环球时报], an official newspaper of the Chinese Communist Party. The article stated, “Our military did well,” and “The National Day aerial parade was conducted over the strait.”¹⁴ In addition, it noted that China highlighted its national strength during the interval between China’s National Day (October 1) and Taiwan’s National Day (October 10). In other words, the PLA’s deployment of multiple aircraft into Taiwan’s ADIZ was linked to the persisting perception in China of Taiwan as part of an “unfinished civil war.” At that time, the *Huanqiu Shibao* not only reported that “The National Day aerial parade was conducted over the strait;” it also proclaimed, “Repeat 1949 ‘Beiping’ in Taiwan!” drawing parallels with the “Beiping” event where the Kuomintang army was encircled in Beijing in 1949.¹⁵

Furthermore, this domestically oriented article provides three clues that support the inference (which is that the PLA has established a system that makes multi-aircraft formation intrusions possible). The first clue is: the PLA has the capability to launch combat sorties around the clock.¹⁶ It embodies Central Military Commission (CMC) Chairman Xi Jinping’s request for the PLA to pursue practical training and calls to mind the PLA’s efforts to enhance nighttime flight capabilities. Interestingly, two H-6s, six Su-30s, and four J-16s intruded at night during the four-day period from October 1. The second clue is the section stating, “PLA aircraft fly from multiple bases and come together over the sea.”¹⁷ It suggests that a mechanism has been developed for coordinating such flight operations. In fact, the number of aircraft that can take off from a single airfield per unit of time is limited. Different aircraft take off from airfields based on their maintenance

needs and assemble in the air en route. This was the method the U.S. forces used during the Gulf War. The third and final clue is the section stating, "The PLA has numerous units with experience approaching Taiwan, and veteran pilots can be deployed!"¹⁸ This suggests the PLA has established a training system that rotates flying units and ensures as many pilots as possible experience intrusions into Taiwan's ADIZ. Regardless of how advanced flight simulators are, the experience and confidence gained through actual flights are irreplaceable for pilots. It is therefore natural that the department planning the trainings would want to have as many pilots as possible experience intrusions into Taiwan's ADIZ.

Considering all three clues embedded in the domestic oriented report, the following hypothesis can be formulated: China may be operating PLA aircraft while imitating a command style similar to the air tasking order (ATO) developed by the U.S. Air Force to centrally control multi-aircraft formations.

Bitter experiences for China's air power and a focus on the ATO

To further explain, the ATO created by the U.S. Air Force is a standardized command style for the Joint Forces commander to control many flying units in a centralized manner. Specifically, it presents a comprehensive 24-hour schedule for all units and makes inter-formation relationships easily understandable by setting forth certain rules, callsigns, aircraft types, aircraft numbers, and missions.¹⁹ To continually issue such ATOs, personnel such as pilots, maintenance crew, controllers, and support staff have their respective air tasks cyclically assigned. Through adherence to the indicated orders by the respective personnel, large-scale air operations can be executed continuously.²⁰

Conversely, the PLAAF has had bitter experiences in air operations across the Taiwan Strait. In the 1996 Third Taiwan Strait Crisis, it is well known that, despite launching a few ballistic missiles, the PLA could not counter in any way due to the presence of U.S. Navy aircraft carriers in waters near Taiwan.²¹

Against this backdrop, the PLAAF assembled a significant number of its then-mainstay fighter, the J-7, and other aircraft within a radius of 500 kilometers of Taiwan. However, these efforts proved not useful for China's military actions at the time. Too many PLA aircraft were concentrated at the frontlines and caused confusion. Other contributing factors included poor logistics and rear support capabilities, along with PLA aircraft's unsustainable operational availability.²² Furthermore, PLA pilots had little experience flying over the sea. These bitter experiences served as valuable lessons for the PLA's air operations.

The PLA's efforts based on lessons learned and ATO.

What, then, did the PLA learn from these lessons? To answer this question, the PLA's efforts are examined.

Amidst the PLA's modernization, the PLA National Defense University conducted research over many years considering the lessons. In 2014, it reported its research findings on air-ground attack directives based on

its analysis of the composition and combat processes of air-ground assault units.²³ Subsequently, Xi Jinping announced his military reform in 2015, and the PLA, which reorganized into five theater commands, began exploring the efficient and effective use of the air power of the PLA's Army, Navy, Air Force, and Strategic Support Force under a joint structure. In 2017, PLAAF aviation regiment commander Liu Rui called for "regular, systematic and actual combat training," leading to the initiation of cross-organizational utilization of air power.²⁴

In 2020, thorough research was undertaken regarding Western ATO, and attention focused on how ATO could be applied to large-scale sustained air operations.²⁵ There was also discussion within the PLA Navy Air Force (PLANAF) of the role the PLAN should play for establishing mechanisms for joint trainings.²⁶ Then, in February 2021, CMC Chairman Xi Jinping instructed the entire PLA to pursue practical training that incorporates air power.²⁷ This directive marked a significant turning point for the PLA's air operations.

Taking the above into account, it can be considered that the PLA's efforts during its modernization process are contributing to improving pilot proficiency, increasing sortie rates, and implementing sustained air operations. At the same time, it can be assumed that the PLA is imitating the U.S. Air Force's ATO and building a new operational system.

If a new operational system has been initiated since Xi's directive to the whole PLA in February 2021, the notable increase in multi-aircraft formation intrusions into Taiwan's ADIZ from around October 2021, half a year later, can be explained as it aligns temporally, as shown in Figure 1. This new operational system may be functioning as a core system for air operations under the command and control of the PLA Eastern Theater Command responsible for the Taiwan front.

An article titled "The Internal Mechanisms of Joint Air Operations and Command" was published in the PLA newspaper, the *PLA Daily* [解放军报], dated September 5, 2023. It emphasized that the PLA "needs to abandon service-specific perspectives, firmly establish the concept of centralized command in joint air operations, and fully recognize the structural complexity of the joint air operations system consolidated by advanced technology [技术高度密集的联合空中作战体系]."²⁸ At the very least, China's newly constructed operational system may be commanding and controlling intrusions into Taiwan's ADIZ.

Conclusion

As a follow-up of Commentary No. 246 published in November of last year, the first part of this article provided a summary of the intrusions over the past three years. A total of 4,025 PLA aircraft intruded into Taiwan's ADIZ over the three-year period, and the upward trend continues. It noted on the PLA's tendency to send numerous PLA aircraft when politically sensitive events for China occur. Furthermore, considering the developments in the past year, it is expected that not only intrusions by various UAVs will increase, but that the fighters' area of activity will also expand due to improved reliability of domestically produced Chinese jet engines.

The second part of this article focused on the distinctive feature of China's military actions, namely, multi-aircraft formation intrusions, and examined what makes them possible. In doing so, it explored the idea that the PLA has established a "system" to enable such formation maneuvers. The discussion suggested that the PLA may have imitated the ATO created by the U.S. Air Force, and that by building a unique new operational system that allows for continuous intrusions by numerous PLA aircraft, the PLA may be using this system for intruding into Taiwan's ADIZ.

This article could not address numerous aspects due to space constraints. Points that warrant further study will be reported in future commentaries.

¹ United States Senate Committee on Armed Services, Hearing to Receive Testimony on United States INDO-PACIFIC Command in Review of the Defense Authorization Request for Fiscal Year 2022 and the Future Years Defense Program, March 9, 2021, pp. 47-48, https://www.armed-services.senate.gov/imo/media/doc/21-10_03-09-2021.pdf.

² Taiwan recognizes the limitations of responding by relying only on its capabilities and has been making diplomatic efforts to obtain the cooperation of the international community, including the United States. Yasuda, Jun [安田淳] and Momma, Rira [門間理良], eds., *Security over Taiwan* [台湾をめぐる安全保障], Keio University Press, 2016; Igarashi Takayuki [五十嵐隆幸], "Punishing Taiwan? Challenging the U.S.? China's aim in establishing diplomatic relations with Honduras [台湾に対する懲罰か？米国に対する挑戦か？：ホンジュラスと国交を樹立した中国の狙い]," *NIDS Commentary*, No. 259, May 11, 2023, National Institute for Defense Studies (NIDS).

³ Various experts have conducted analyses of Taiwan within the framework of international politics or international law. Kamo, Tomoki [加茂具樹] et al., *The Sources of China's External Action* [中国対外行動の源泉], Keio University Press, 2017; Noffke, Ariel N., International Law In Absentia: Legal Constraints and Clarity in a China-Taiwan Scenario, Air University, May 21, 2021, https://www.airuniversity.af.edu/Portals/10/ISR/student-papers/AY21-22/InternationalLawInAbsentia_Noffke.pdf, pp. 4-7. Noffke warns that the informal international legal landscape surrounding Taiwan and the increasingly strong domestic laws of China and the United States will further create an uncertain and unstable situation where the United States will have to operate if a China-Taiwan scenario unfolds.

⁴ Trent, Mercedes, Over the Line: The Implications of China's ADIZ Intrusions in Northeast Asia, Federation of American Scientists, 2020, <https://uploads.fas.org/2020/08/ADIZ-Report.pdf>, pp. 22-42.

⁵ Aita, Moriki [相田守輝], "Chinese PLA Intrusions into Taiwan's ADIZ (1): The Past Two Years [中国人民解放軍の台湾 ADIZ 進入①：この2年間を概観する]," *NIDS Commentary*, No. 246, November 17, 2022, NIDS, <https://www.nids.mod.go.jp/english/publication/commentary/pdf/commentary246e.pdf>.

⁶ Figures were tallied and analyzed by the author based on data released by the Taiwan MND on its website and Twitter, among other sources. (<https://www.mnd.gov.tw/PublishTable.aspx?Types=%E5%8D%B3%E6%99%82%E8%BB%8D%E4%BA%8B%E5%8B%95%E6%85%8B&title=%E5%9C%8B%E9%98%B2%E6%B6%88%E6%81%AF>)

⁷ One Y-8C with communication capabilities and 16 Y-9CCs intruded, but for aggregation purposes, they are recorded in Y-8EW and Y-9EW, respectively. In addition, two KJ-200s (airborne early warning aircraft) intruded, but for aggregation purposes, they are recorded in KJ-500. It is noteworthy that the number of Y-9CC intrusions increased to 19 in the past year.

⁸ Cozad, Mark 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.

⁹ BBC News, "China simulates hitting 'key targets' on Taiwan [中国、台湾の「主要目標」攻撃をシミュレーション_軍事演習2日目]," April 10, 2023, <https://www.bbc.com/japanese/65229105>, accessed on September 7, 2023.

¹⁰ BBC News, "China-Taiwan: Aircraft carrier 'seals off' island on third day of drills [中国、空母も参加し台湾を「封鎖」_軍事演習の最終日]," April 11, 2023, <https://www.bbc.com/japanese/65236581>, accessed on September 7, 2023.

¹¹ The aircraft carrier *Liaoning's* carrier-borne J-15 fighter was improved based on Russia's Su-27. Despite inadequate engine output, it must rely on the short takeoff but arrested recovery (STOBAR) method using a ski-jump deck, which limits the takeoff weight and prevents the aircraft from carrying significant armament. The J-15 is therefore inadequate from the perspective of showcasing air power from the aircraft carrier. "Demerly, Tom, China's New Video of Their Naval Aviation Blows "Top Gun" Away," *The Aviationist*, June 26, 2018,

<https://theaviationist.com/2018/06/26/chinas-new-video-of-their-naval-aviation-blows-top-gun-away/>, accessed on February 11, 2021.

¹² Zhang, Qingbao [张青宝], "The legend of the blue sky taught by the 'J-15' ['飞鲨' 教育的蓝天传奇]," *Modern Navy* [当代海军], November 2019, People's Navy, p. 9.

¹³ Aita, Moriki [相田守輝], "Digital Transformation of the Chinese Air Force: Initiatives Observed in the PLAAF's Introduction of a New Maintenance Management System [中国空軍をめぐるデジタル・トランスフォーメーション：新しい整備管理システム導入から見える取り組み]," *Security & Strategy* [安全保障戦略研究], Vol. 3, No. 2, 2023, pp. 85-104, https://www.nids.mod.go.jp/publication/security/pdf/2023/202303_05.pdf.

¹⁴ "The National Day parade moved to the Taiwan Strait! Well done PLA! [这是国庆阅兵移到了台湾海峡啊！解放军干得漂亮！]," *Global Times* [环球时报], October 3, 2021.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Yanagida, Osamu [柳田修], "The U.S. Military's Air Tasking Cycle and its Challenges: From the viewpoint of establishing an 'Operation Cycle' [米軍エアー・タスキング・サイクルとその課題：作戦サイクル構築の視点から]," *Air Power Studies*, Vol. 5, December 2018, pp. 138-158.

²⁰ An air tasking (AT) cycle clarifies scheduling and the division of tasks among the departments of the operational command headquarters in order to continually issue ATOs that require extensive prior coordination.

²¹ Porch, Douglas, The Taiwan Strait Crisis of 1996: Strategic Implications for the United States Navy, , Summer 1999, Vol. 52, No. 3, pp. 15-48.

²² Allen, Kenneth W., "Logistics Support for PLA Air Force Campaigns", China's Growing Military Power Perspectives on Security, Ballistic Missiles, and Conventional Capabilities, September 2002, Lulu.com, pp. 279-314.

²³ Ding, Guangzhao [丁光照], "Air-Ground Assault Instruction Generating System Framework Faced to the Simulation Test Bed [面向仿真试验床的空地突击指令生成系统框架]," *Command Control & Simulation* [指挥控制与仿真], Vol. 36, No. 2, 2014, National Defense University.

²⁴ Lu, Lishih, "PLA war of attrition takes toll on air force," *Taipei Times*, March 2, 2021,

<https://www.taipeitimes.com/News/editorials/archives/2021/03/02/2003753073>, accessed on September 27, 2021.

²⁵ Chen, Yuan [陈元], "Study of Foreign Military Air Tasking Orders [外军空中任务指令研究]," *Electronics Quality* [电子质量], No. 6, 2020.

²⁶ "The naval aviation division of the Eastern Theater Command strives to create a systematic drill environment: Operational capabilities of a new quality are integrated into joint exercises [东部战区海军航空兵某师努力构设体系练兵环境：新质作战力量融入连演连训]," *PLA Daily* [解放军报], December 21, 2020.

²⁷ Mei, Shixiong [梅世雄], "Keep in mind the Commander-in-Chief's interest and mandate and open up a new phase of troop construction from a new starting point: President Xi Jinping's visit to an Air Force aviation division on the eve of the Spring Festival gets a strong reaction from the whole military [牢记统帅关爱重托 在新的起点上不断开创部队建设新局面：习近平主席春节前夕视察看望空军航空兵某师在全军引起强烈反响]," *Xinhua* [新华社], February 7, 2021, http://www.gov.cn/xinwen/2021-02/07/content_5585786.htm, accessed on October 27, 2021.

²⁸ Bao, Zhenfeng [鲍振峰], Li, Geng [李耕], "The internal mechanisms of joint air operations and command [联合空中作战与指挥的内在机理]," *PLA Daily* [解放军报], September 5, 2023.

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