

Chinese PLA Intrusions into Taiwan's ADIZ (1): The Past Two Years

AITA Moriki, America, Europe, and Russia Division, Regional Studies Department

NIDS コメンタリー

No. 246 November 17, 2022

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.¹ There are marked differences in military capabilities between China and Taiwan, prompting fears that the PRC will invade Taiwan by 2027 with a hardline posture and ambition to assert power.²

A typical example of Chinese military actions is frequent intrusions into Taiwan's air defense identification zone (ADIZ) by aircraft of the People's Liberation Army (PLA) since around 2020.³ Taiwan has been reporting every incident on the Internet since September 17, 2020 and, already, more than two years have passed.⁴

The purpose of this study is to examine the implications of Chinese military actions.⁵ As a first step, this article analyzes and assesses all factual data from the past two years released by the Taiwan Ministry of National Defense (MND), and provides an overview of the incursions into Taiwan's ADIZ by PLA aircraft. The analysis is supplemented by background information based on the author's observation of the situation over the last two years.

China's military actions have many characteristics. However, due to space limitations, this article will provide an overview of only the incursions into Taiwan's ADIZ. Discussions of aspects requiring further elaboration will be left for future NIDS commentaries.

¹ In this article, "Taiwan" refers to the Republic of China after the temporary capital was moved to Taipei in December 1949.

² United States Senate Committee on Armed Services, *Hearing to Receive Testimony on United States INDOPACIFIC 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, accessed on August 26, 2021.

³ In this article, "PLA aircraft" refers to aircraft of the PLA Air Force, PLA Naval Air Force, PLA Army, and other forces. To avoid an over-broadening of the discussion, this article does not describe the individual specific military services to which the aircraft belong.

⁴ The Taiwan Ministry of National Defense continues to post on not only its website but also its official Twitter account. (<https://twitter.com/MoNDefense/status/1427571314487808002/photo/2>, accessed on August 18, 2021)

⁵ The following previous studies were referenced: Momma Rira, "Kinpakuka suru Taiwan honto shuhen josei [1]: Chugokugun oyobi beigun no katsudo jittai [Growing tension around Taiwan Main Island [1]: Situation of PLA and U.S. Force Operations]," *NIDS Commentary*, No. 119, June 4, 2020, National Institute for Defense Studies (NIDS); Momma Rira, "Chugoku gunki, Taiwan ADIZ shinnyu kibo wo kakudai [Scaled up incursions of PLA aircraft into Taiwan's ADIZ]," *Toa [East Asia]*, No. 647, May 2021, Kazankai, pp. 36-43; Momma Rira, "Chugoku gunki ga Taiwan boku shikibetsuken ni daikibo shinnyu [PLA aircraft make large-scale incursions into Taiwan's Air Defense Identification Zone]," *Toa [East Asia]*, No. 653, November 2021, Kazankai, pp. 38-45; Momma Rira, "Koseisei wo tsuyomeru Chugoku no gunji senryaku to kappatsuka suru gunyoki kunren hiko no kankei [The relationship between China's increasingly aggressive military strategy and increasingly active military aircraft training flights]," *NIDS Commentary*, No. 172, June 15, 2021, NIDS; Momma Rira, "Taiwan ni yoru Chugoku jinmin kaihogun no tai Taiwan togosakusen e no hyoka to Taiwan no kokubo taisai no seibi [Does 'Taiwan can help' apply to Taiwan itself? Taiwan's assessment of the People's Liberation Army's joint operations against Taiwan and the development of Taiwan's national defense system]," *Anzenhosho Senryaku Kenkyu [Security & Strategy]*, Vol. 2, No. 2, March 2022, NIDS, pp. 1-22.

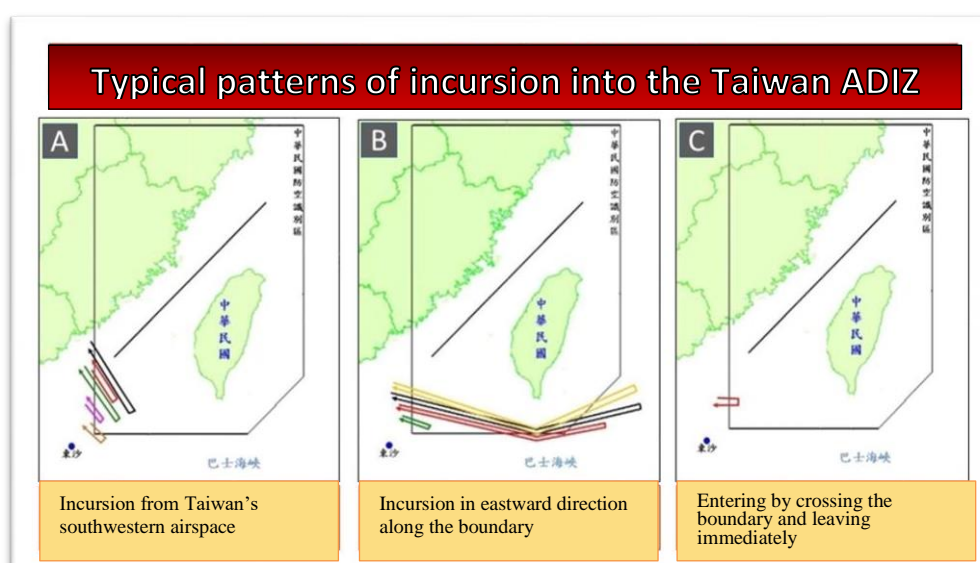
What Are Intrusions into Taiwan's ADIZ?

ADIZ refers to an airspace established for the purpose of identifying aircraft early, before they intrude into a country's territorial airspace. It is stipulated that a sovereign state can require aircraft to follow special identification and/or reporting procedures to ensure the safety of air traffic. The United States, Japan, and Taiwan established ADIZs in the 1950s. When discussing Taiwan's ADIZ, the historical context must be taken into account.

As shown in Figure 1, the Taiwan ADIZ enclosed by a boundary is almost rectangular in shape. A part of it extends deep into mainland China, reaching as far as Jiangxi Province. On the Internet, the Taiwan MND discloses incursions of PLA aircraft into the Taiwan ADIZ, based on maps dating to the signing of the 1954 Mutual Defense Treaty between the United States and the Republic of Taiwan. The plight that Taiwan is urgently calling attention to is the events that are occurring in airspace enclosed by a boundary south of the median line shown in the figure. This median line was established by the United States to prevent and self-restrain a large-scale confrontation by China and Taiwan across the Taiwan Strait.⁶

How do PLA aircraft actually intrude into Taiwan's ADIZ? According to the Taiwan MND website, PLA aircraft taking off from airfields on mainland China intrude into the Taiwan ADIZ in various patterns, as illustrated in Figure 1. The most common and typical is pattern A in the figure: flying from airspace south of the median line off the southern coast of Fujian Province into airspace southwest of Taiwan, and reversing course northward before returning to the mainland.

Figure 1 Typical patterns of the PLA aircraft's intrusions into the Taiwan ADIZ



Source: Compiled by the author based on the Taiwan MND website.

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

As seen in pattern B, there are also cases where PLA aircraft fly along the southern boundary, albeit not necessarily coinciding with the Taiwan ADIZ boundary, and over waters east of Taiwan before turning back. In patterns A and B, U.S. Navy vessels and other major vessels were sometimes sailing along the extended flight path of PLA aircraft, suggesting that the aircraft were conducting demonstrations of anti-ship missile and other launches while flying in formation. Pattern C is observed with many PLA fighters often crossing the ADIZ boundary and then immediately turning back.

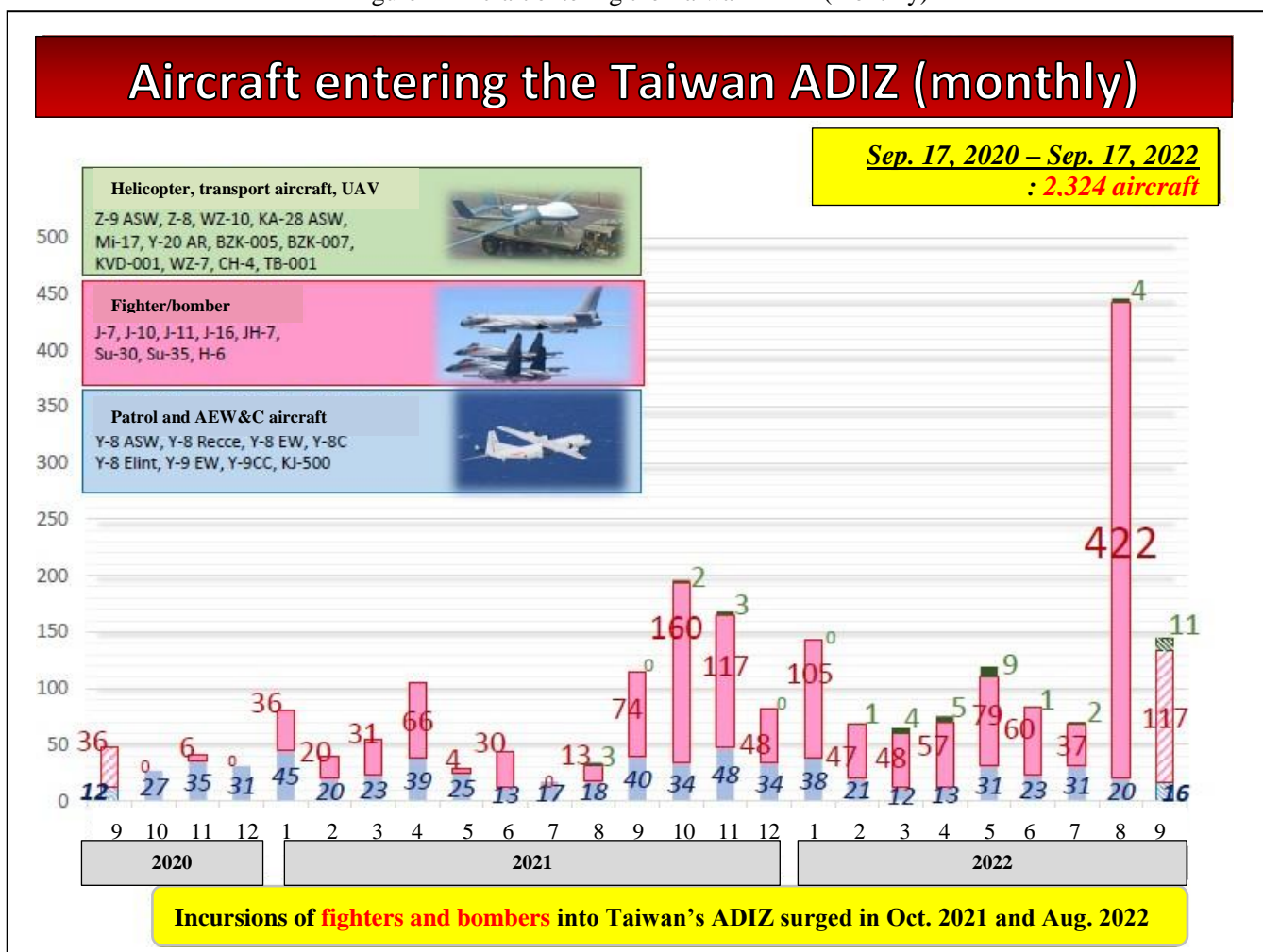
⁶ Presentation for Habiebie Center 30 Nov 2021, *China Aerospace Studies Institute*, Air University of U.S. Air Force, November 30, 2021, <https://www.youtube.com/watch?v=SN-bSt7WRzI>, accessed on September 7, 2022.

Intrusions by PLA Aircraft into Taiwan’s ADIZ over the Past Two Years

How did PLA aircraft intrude into the Taiwan ADIZ during the two-year period from September 17, 2020, when the Taiwan MND began disclosing the incursions on the Internet, to September 17, 2022?

The number of aircraft intrusions into Taiwan’s ADIZ is as shown in Figure 2, with the two-year total reaching 2,324 aircraft according to all counted data.⁷ To grasp an overview, this article classifies PLA aircraft that intruded into the ADIZ 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 2.

Figure 2 Aircraft entering the Taiwan ADIZ (monthly)



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>)

⁷ Figures were tallied and analyzed by the author based on Twitter data disclosed by the Taiwan MND, among other sources (<https://twitter.com/MoNDefense/status/1427571314487808002/photo/2>).

As is clear from the graph, the number of PLA aircraft intruding into the Taiwan ADIZ has gradually increased. The monthly average for (1) “patrol aircraft and AEW&C aircraft,” colored in blue, has remained stable at around 27. In fact, patrol aircraft such as the Y-8ASW have tended to intrude into the ADIZ at least once every two days, indicating that they are routine patrol flights.

By contrast, the timing of incursions by (2) “fighters and bombers,” colored in pink, has fluctuated. The number increased gradually from September 2020 and jumped to 160 aircraft in October 2021 and to 422 aircraft in August 2022. Analyzing the factors behind these trends provides a useful perspective for examining China’s military actions.

If we recall two years back to September 17, 2020 when Taiwan began disclosing the incursions, U.S. Under Secretary of State for Economic Growth, Energy, and the Environment Keith Krach visited Taiwan to attend the funeral for former President Lee Teng-hui on September 19.⁸ On September 18, 18 PLA aircraft intruded into the ADIZ, and on the following day, 19 aircraft. The incursions by 36 or so PLA fighters made shocking news back in September 2020.

By August 2022, triggered by U.S. House Speaker Nancy Pelosi’s visit to Taiwan, a total of 422 PLA fighters intruded into the ADIZ that month, far exceeding the figure in 2020. China conducted “important military exercises” in the vicinity of Taiwan⁹ and flew many fighters as part of these exercises.

Every time U.S. senior government officials and others visit Taiwan, or whenever U.S. forces and others conduct activities in areas around Taiwan, Chinese authorities send (2) “fighter and bomber”-class aircraft into the ADIZ as a “means of expressing dissatisfaction.” Several factors may be behind the sudden increase in fighters to 160 in October 2021.

The first is the announcement of the formation of AUKUS by the United States, United Kingdom, and Australia just prior to the incursions in September 2021, coupled with the Taiwanese government’s announcement of its intention to join the Trans-Pacific Partnership (TPP). Other drivers may have included Freedom of Navigation Operations (FONOP) in the South China Sea and exercises in waters near Taiwan by naval vessels of several countries, including the UK Royal Navy aircraft carrier HMS *Queen Elizabeth*.¹⁰ Furthermore, the increase can be construed as the PRC manifesting differences in national strength between itself and Taiwan through China’s National Day (October 1) celebrations and Taiwan’s National Day (October 10) celebrations. Beijing may be making political use of air power, which is relatively easy to use, as a means of countering a politically sensitive situation.

Various types of aircraft from the (3) “helicopter, transport aircraft, and UAV” category have begun to intrude into the Taiwan ADIZ frequently since around summer 2021. Specifically, there were intrusions by the Z-9 ASW (anti-submarine warfare helicopter) on August 26, 2021, the Y-20AR (aerial refueling type transport aircraft) on November 28, 2021, and UAVs such as the BZK-005 (reconnaissance type UAV) from September 5, 2022.

What Predictions Can Be Made from the Aircraft Type?

What types of aircraft comprised the 2,324 PLA aircraft?

It was found that the breakdown was as follows: (1) a total of 666 “patrol aircraft and AEW&C aircraft” (28.7%); (2) a total of 1,613 “fighters and bombers” (69.4%); and (3) a total of 45 “helicopters, transport aircraft, and UAVs” (1.9%) (see Figure 3).

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 307 aircraft, followed by 131 Y-8EWs (electronic warfare aircraft), 90 Y-8Recces (reconnaissance aircraft), 67 KJ-500s (AEW&C aircraft), 38 Y-8Elints (electronic

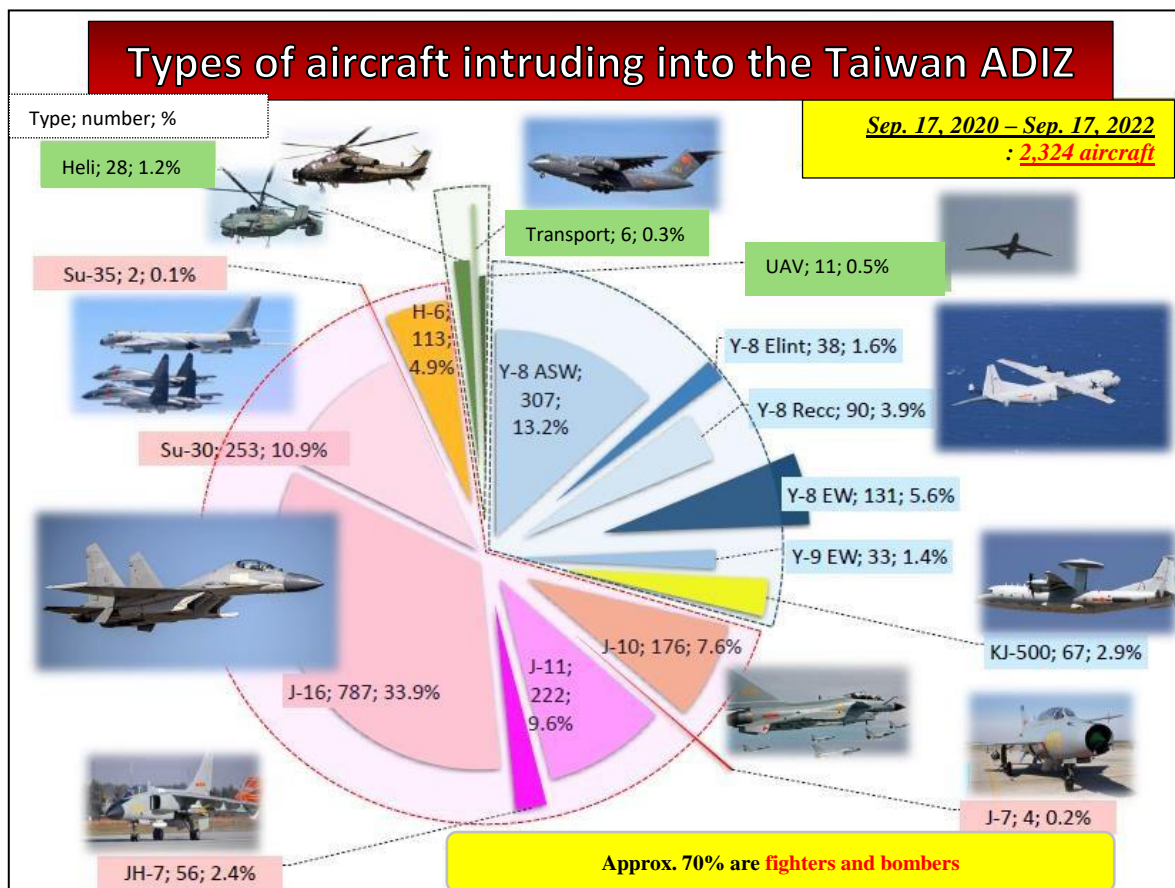
⁸ Krach was the highest-level U.S. government official to officially visit Taiwan since 1979. China was vehemently opposed from shortly before the visit, sending several PLA fighters across the median line. This prompted the Taiwan MND to begin disclosing incursions of PLA aircraft into the Taiwan ADIZ on the Internet.

⁹ “我军在台岛周边海空域成功举行实战化总合演训 [Our military succeeds in conducting realistic combat joint exercises in the sea and airspace around Taiwan Island],” 解放军报 [*PLA Daily*], August 5, 2022.

¹⁰ “China warns UK as carrier strike group approaches,” *BBC*, July 30, 2021, <https://www.bbc.com/news/world-asia-58015367>, accessed on September 12, 2022.

intelligence aircraft), 33 Y-9EWs (electronic warfare aircraft) and more.¹¹ Generally speaking, the Y-8ASW accounts for the majority of the “patrol aircraft and AEW&C aircraft,” indicating China is concerned about the movements of adversarial submarines. After the Y-8ASW crashed in waters near Vietnam in March 2022, the Y-8EW flew frequently as if to fill the two-month void until Y-8ASW flights were resumed. This is of interest for assessing the capabilities of the Y-8Elint.

Figure 3 Types of aircraft intruding into the Taiwan ADIZ



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>)

(2) “Fighters and bombers,” shaded in pink, consisted of the following fighters. The J-16 made up the largest share with 787 aircraft, followed by 253 Su-30s, 222 J-11s, 176 J-10s, 56 JH-7s, 4 J-7s, and 2 Su-35s. In addition, as many as 113 H-6 strategic bombers intruded into the Taiwan ADIZ. Interestingly, the timing of the H-6’s entry seems to coincide roughly with the timing of U.S. Navy vessels sailing around Taiwan.

A key point is that more than half of the fighters intruding into the Taiwan ADIZ were J-16s. The question as to why J-16s comprise the majority of the fighters requires further careful analysis. It must also take into account the J-16D, which is an electronic warfare variant of the J-16, in order to assess if operational tests for electronic warfare are on track.¹²

¹¹ While a Y-8C and a Y-9CC have entered the ADIZ, they were recorded in Y-8EW and Y-9EW, respectively, for tabulation purposes.

¹² “歼-16罕见携两种吊舱出击：低空导航+电子对抗 极具实战意味 [Rare J-16 with two types of jamming pods: Low-altitude navigation and electronic countermeasures extremely practical in combat],” 东方网 [Eastday.com], May

Despite first being unveiled at the Zhuhai Airshow at the end of September 2021,¹³ the Taiwan MND has announced incursions into its ADIZ by no more than four J-16Ds—two on January 24, one on January 31, and one on April 10, 2022. However, it is highly likely that the J-16Ds intruded into the Taiwan ADIZ even earlier.

The Taiwan Armed Forces first spotted J-16s on June 17, 2021 when one Y-8EW, two J-16 fighters, and four J-7 fighters entered the Taiwan ADIZ in coordination with each other through formation flying. At that time there were speculations about first-time intrusions by J-16s and the old J-7 fighter being turned into a drone.¹⁴ Meanwhile, Zhang Yanting, professor emeritus at National Tsing Hua University in Taiwan and former deputy commander of the Taiwan Air Force, presented the following view: that China sending a third-generation aircraft like the J-7 to enter the Taiwan ADIZ shows the PRC is not afraid of Taiwan's fourth-generation fighters and has confidence in electronic warfare capabilities.¹⁵ In other words, from the viewpoint of an air operations expert, coordination procedures by the PLA aircraft formation that intruded into the ADIZ on June 17 provide insight on the PLA's consideration of electronic warfare.

The above is just one example. Many more J-16s have flown alongside electronic warfare aircraft, such as the Y-8EW and Y-9EW. Therefore, it can be assumed that the J-16D accounted for a certain number of the 787 J-16s which intruded into the ADIZ over the two years. This offers hints on the pattern of combat that could unfold in future Taiwan contingencies.¹⁶

As for the factors that led to the surge in J-16 incursions into the Taiwan ADIZ, let us also look at them from a different perspective. Western discourse often criticizes Chinese jet engines as having a short life span and poor performance. These arguments, however, seem to be somewhat based on discussions from nearly a decade ago. In reality, PLA jet engines appear to have gradually improved over the past few years. If the report on China's Eastday.com is correct, the Chinese-made Taihang engine (turbofan/WS-10) with improved reliability has replaced the Russian-made AL-31 jet engine from around 2020 for fighters such as the J-11BS, J-16, and J-11B (歼-11BS、歼-16 以及部分歼-11B 开始都使用国产太行发动机).¹⁷

Of note is that the J-10 single-engine fighter has also begun to be replaced with the new Taihang engine since May 2021.¹⁸ For more than a year since September 2020, few J-10s were used for intrusions into the Taiwan ADIZ. Since November 2021, however, a certain number of J-10s have been used for incursions every month. The underlying

16, 2021, https://www.sohu.com/a/466752005_120823584?scm=1004.783297762342141952.0.0.1, accessed on May 17, 2021.

¹³ “军事飞行训练国际交流会议2021举行 [International Military Flight Training Conference 2021 Held],” 解放军报 [PLA Daily], September 28, 2021.

¹⁴ “歼-7为何伴随歼-16巡逻？是无人机还是新型战机？答案在这里了 [Why is the J-7 patrolling with the J-16? Is it a drone or a new fighter? Here's the answer],” 胜讯网 [qq.com], June 18, 2020, <https://new.qq.com/omn/20210618/20210618A01NLK00.html>, accessed on July 21, 2021.

¹⁵ “台湾防务部门：今天7架次解放军军机进入台湾西南空域，包含歼-7战机 [Taiwanese Defense Department: Seven PLA aircraft including J-7 fighters enter Taiwan's southwest airspace today],” 环球网 [Huanqiu.com], June 17, 2021, <https://taiwan.huanqiu.com/article/43ZsHJx4qxq>, accessed on October 7, 2022.

¹⁶ CCTV, “国产新型电子战飞机歼-16D 已投入实战化训练 进一步提高空军电子进攻能力 [Domestically-produced new electronic warfare aircraft, the J-16D, put into actual combat training, further enhancing the Air Force's electronic attack capabilities],” 国防军事频道 [National Defense and Military Channel], November 7, 2021, <https://tv.cctv.com/2021/11/07/VIDEzcnf3rePEFpRiFikeQMv211107.shtml>, accessed on May 17, 2022.

¹⁷ 夏阳 [Xia Yang], “太行版歼-10C列装解放军 国产三代半战机实现100%中国制造 [China realizes 100% domestic production of the PLA's J-10C 3.5 generation fighter equipped with the Taihang engine],” 东方网

[Eastday.com], May 12, 2021, <https://n.eastday.com/pnews/162081638877015007>, accessed on May 14, 2021. As of November 12, 2022, the advances made in the Taihang engine over the last few years are believed to have led to the jet engine with a thrust vectoring control nozzle (WS-10TVC) displayed at the Zhuhai Airshow. Liu Xuanzun and Cao Siqi, “China exhibits fighter jet engine with 2D thrust vectoring control nozzle,” *Global Times*, November 10, 2022, <https://www.globaltimes.cn/page/202211/1279221.shtml>, accessed on November 12, 2022.

¹⁸ *Ibid.*

circumstance may be the J-10s being fitted with more reliable jet engines. It is unlikely that these events coincided by mere chance. The improved reliability of China's indigenous jet engines has enabled more PLA aircraft to fly over the sea, leading to more incursions by not only the J-16 but also single-engine fighters.

Lastly, the detailed breakdown of (3) "helicopter, transport aircraft, and UAV"-class aircraft intruding into the Taiwan ADIZ, shaded in green, was as follows: a total of 28 helicopters, including the Z-9ASW, Z-8, WZ-10, and KA-28ASW; a total of 6 transport aircraft, including the Mi-17 and Y-20AR; and a total of 11 UAVs, including the BZK-005, BZK-007, KVD-001, WZ-7, CH-4, and TB-001.

Noteworthy is the trend of Chinese UAVs intruding into the Taiwan ADIZ since September 5, 2022. While this noticeable change can be considered an outcome of some Chinese decision, particular attention should be paid to the increase in UAV activities, as China's concept of local warfare shifts to "intelligentized warfare" in which artificial intelligence (AI) will be integrated and UAVs will wage autonomous attacks.¹⁹

Conclusion

This article provided an overview of the types of PLA aircraft which intruded into the Taiwan ADIZ over the last two years. Inferences can be drawn from tallying and analyzing monthly data, as in this article. Namely, incursions of PLA aircraft into the Taiwan ADIZ are increasing. Furthermore, fighters are used for the incursions, especially when China is politically sensitive to U.S. and Taiwanese moves. Moreover, China may be beginning to make political use of air power (as the U.S. government began to do after the Gulf War).

The use of many J-16s, including the J-16D with greater electronic warfare capabilities,²⁰ should be understood as the PLA having electronic warfare in mind as a legitimate form of offense in the event of a future Taiwan contingency.

The trend toward the use of UAVs and the surge in PLA aircraft crossing the median line may serve as important indicators in discussing China's military actions, and therefore, will be analyzed in more detail in future NIDS commentaries.

(Submitted October 26, 2022)

プロフィール

profile

AITA Moriki

Lieutenant Colonel

America, Europe, and Russia Division

Regional Studies Department

Area of Expertise: Chinese Security

The views expressed in this paper do not represent the official views of the National Institute for Defense Studies.

Please contact us at the following regarding any views or questions you may have regarding the NIDS Commentary.

We do not permit any unauthorized reproduction or unauthorized copying.

Planning and Coordination Office

National Institute for Defense Studies

Telephone (direct): 03-3260-3011

Telephone (general): 03-3268-3111 (ext. 29177)

FAX: 03-3260-3034

* National Institute for Defense Studies website:

<http://www.nids.mod.go.jp/>

¹⁹ Aita Moriki, "Chinese drone TB-001 may have been involved in Ballistic Missile Impact," *NIDS Commentary*, No. 239, October 4, 2022, NIDS, p. 12.

²⁰ "Aircraft: China," *Jane's All the World's Aircraft: Development & Production 2022-2023* (Coulson: Janes, 2022), pp. 157-158.