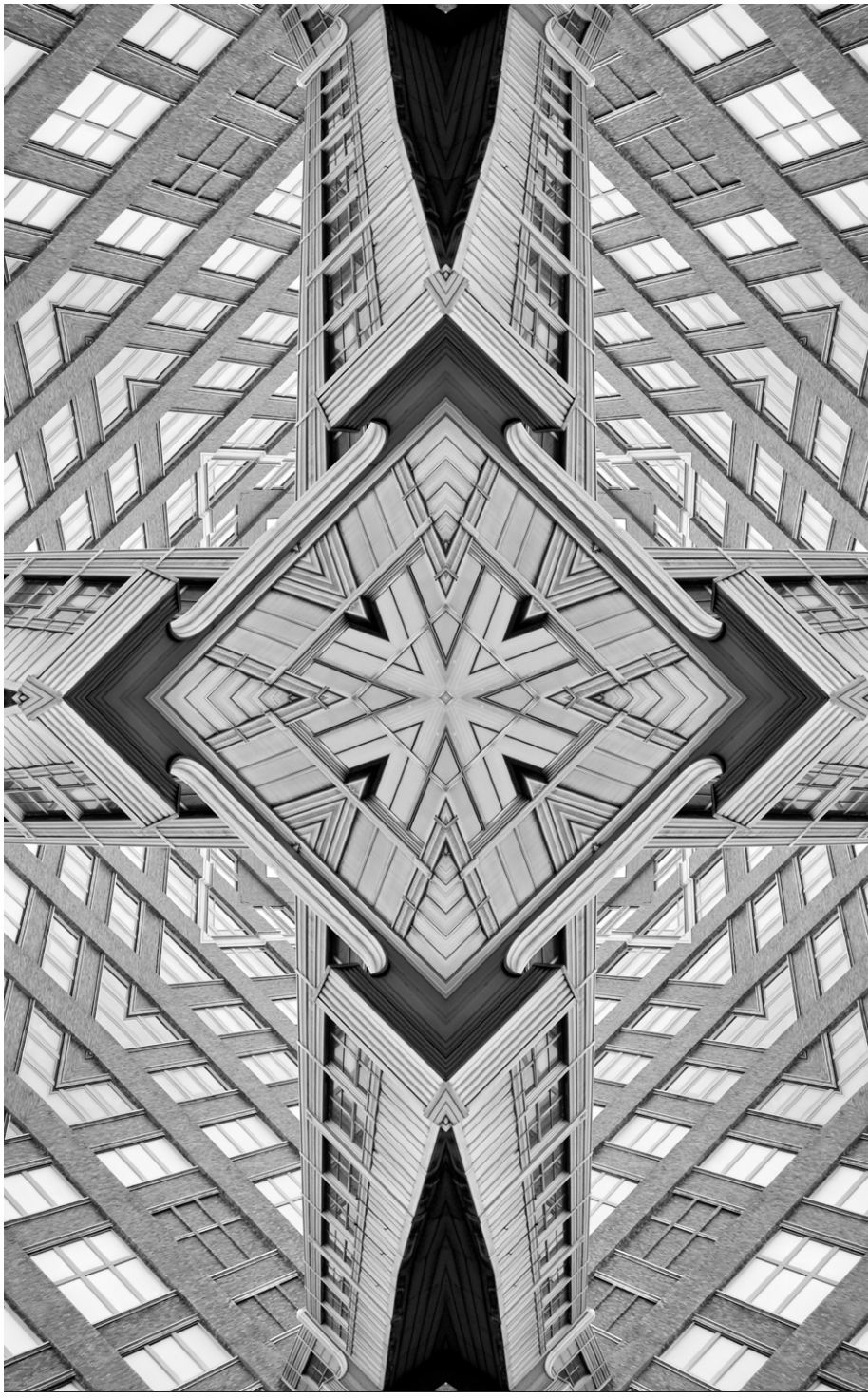
Issue Brief

ISSUE NO. 721
JULY 2024

ORF OBSERVER RESEARCH FOUNDATION



Operational and Training Constraints in China's Air Force

Atul Kumar

Abstract

China's PLA Air Force (PLAAF) has been aiming to acquire strategic and expeditionary capabilities since the Gulf War in 1991, with President Xi Jinping targeting operational proficiency by 2035. The PLAAF has since made strides in hardware, incorporating fourth-generation and stealth fighters into its fleet. It lags in combat experience, however, as well as in operational tactics, military doctrines, and pilot efficiency, particularly when compared to its neighbours allied with forces of the United States (US). To address these deficiencies, China is seeking to covertly hire Western air combat trainers from the US, the United Kingdom, Europe, and Australia to train its fighter pilots. This brief explores recent warnings from the Five Eyes Alliance about China's recruitment efforts and the related developments that highlight the PLAAF's operational and training deficiencies.

Attribution: Atul Kumar, "Operational and Training Constraints in China's Air Force," *ORF Issue Brief No. 721*, July 2024, Observer Research Foundation.

Introduction

On 5 June 2024, the United States (US) Office of the Director of National Intelligence's National Counterintelligence and Security Centre (NCSC), along with its Five Eyes intelligence partners from Australia, Canada, New Zealand, and the United Kingdom, issued a warning about China's attempts to recruit Western military officers to train its People's Liberation Army (PLA) personnel.[1] According to the warning, Chinese authorities are targeting current and former Western military officers, particularly those with expertise in aviation, including military pilots, flight engineers, air operations centre personnel, and technical experts on Western military tactics, training, and procedures. The PLA aims to enhance its air capabilities, improve planning for future operations, and develop countermeasures against Western battle strategies through these training programs.

These efforts are not new;[2] the PLA has been seeking the services of Western trainers for its aviation personnel for several years now. The PLA Air Force (PLAAF) has remained marginalised for a long time, due to the dominant influence of the PLA Army on Chinese military strategy and decision-making. The PLAAF also feels disadvantaged in air warfare because it is excluded from key bilateral and multilateral air exercises organised by Western air forces to enhance combat skills and update doctrine and tactics. Although China has initiated organisational and inventory transformations to improve its combat capability and operational efficiency, its tactics and operational concepts remain untested.[3] To address this shortfall, China has employed various methods—including the recruitment of Western trainers—to enhance the professional skills of its air combatants and update its doctrine and tactics.

PLAAF Evolution Since 1949

China's Air Force is no longer a small, territorial air defence force but has become strategic and operationally proficient. Established in 1949, the PLAAF initially focused on defending China's big cities, which housed its primary airfields, political and economic centres, heavy troop concentrations, and key military installations and transportation networks.[4] Subsequently, the mandate expanded to encompass the protection of China's airspace while maintaining a primary focus on territorial air defence. This limited scope influenced the PLAAF's service doctrine, personnel recruitment, operational experience, and eventual development, keeping it subordinate to the comprehensive control of the PLA Army.[5]

During the period 1949-1954, the PLAAF experienced rapid expansion spurred by the Korean War, during which the Soviet Union supplied a large number of MiG-15 aircraft to bolster China's defences against US intervention.[6] However, from 1955 to 1990, following the conclusion of the war and the subsequent Sino-Soviet split, the PLAAF stagnated, which was exacerbated by the Cultural Revolution. Lin Biao and Wu Faxian's activism and the consequent purge severely affected the Air Force.[a] China's political leadership prioritised ensuring the loyalty of the military and disapproved of efforts towards force integration or cooperation among service branches. Furthermore, it suppressed individual initiatives to modernise the Air Force; instead, the PLAAF was ordered to stand down for three months, and its training schools were destroyed, books burnt, and instructors scattered across the country.[7]

The PLAAF thereafter experienced a period of dormancy, which would last until 1990. During this time, the force accumulated a large inventory of outdated fighters, predominantly replicas of Soviet MiG-17/19 aircraft known as J-5/J-6 fighters, which were manufactured domestically and suitable primarily for territorial air defence.[8] In 1962, when the Soviets supplied a few MiG-21 fighters as a goodwill gesture, China adapted them into the more robust J-7 aircraft, which served as the backbone of China's Air Force throughout the Cold War. The J-7 was extensively produced for domestic roles and also exported to major client countries.[9]

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a Lin Biao, China's Minister of Defence, organised a failed coup against Mao Zedong in 1971. He then attempted to flee the country but perished in a plane crash in September 1971. Wu Faxian, the Commander of the PLAAF and Lin's closest ally, was arrested and sentenced to 17 years in prison a decade later. Suspicious of the PLAAF, Mao ordered it to stand down for three months and did not appoint a service chief for the next two years. (Kenneth W Allen, Jonathan D. Pollack and Glenn Krumel, 1995, pp. 72-73.)

PLAAF Evolution Since 1949

During the Gulf War in 1991 and the Kosovo Conflict in 1993, the US Air Force's utilisation of long-range bombing, precision weaponry, information dominance, airborne early warning capabilities, and close-air support roles were cause for concern in China, whose majority air force inventory consisted of similar fighters that performed poorly in these conflicts.[10] Consequently, China initiated the modernisation of its air force by revisiting the Air Force's combat doctrines, training protocols, and performance benchmarks; in 1999, it revised its campaign doctrines to shape future operational strategies.[11] Subsequently, between 2001 and 2002, the PLA overhauled its Outline of Military Training and Evaluation (OMTE-*Dagang*) guidelines to steer the Air Force's combat training toward modern standards.[12]

The first two Sukhoi-27 regiments, introduced in 1992 and 1996, respectively, required highly skilled technical and maintenance crews. PLA recruiting agencies, therefore, began targeting college students to build a Non-Commissioned Officer (NCO) Corps to form the backbone of the Air Force.[13] In 2003, graduates from the PLAAF Academy with four-year degrees started getting inducted as part of officer recruitment. These reforms ushered in an academic and technical enhancement of the PLAAF.

> "The PLAAF has transformed into a strategic and operationally proficient force."

The PLAAF's Inventory Transformation

The PLAAF's personnel reforms coincided with changes in its aircraft inventory. Following the collapse of the Soviet Union, China acquired the Soviet Sukhoi-27 aircraft in 1992. Initially imported, China obtained a production licence for the fighter aircraft in 1995 and within a decade manufactured 100 fighters.[14] Concurrently, Chinese manufacturers acquired design and manufacturing technology from Russia and began producing the J-11 fighter, a replicated version of the Soviet aircraft, without prior notification to the original equipment manufacturers in Russia.[15] This unilateral action strained bilateral defence technology relations, and would improve only after China committed to halting the production of the J-11.

However, China continued to enhance the Sukhoi-27/30 aircraft by developing the indigenous J-16 aircraft,[16] which is equipped with Active Electronically Scanned Array (AESA) radar, domestic aero-engines, and an upgraded mission computer, bringing its performance closer to that of the Indian Air Force's Sukhoi-30MKI. Approximately 280 fighters of this series were manufactured and inducted into the PLAAF, with an annual production rate of 100 J-16 airframes. These supplement the existing inventory of nearly 500 aircraft from the Sukhoi-27 and J-11 series.

Additionally, China acquired the design and technology of Israel's Lavi Fighter to further advance its indigenous J-10, a single-engine fighter aircraft.[17] Comparable to the US F-16 fighter, the J-10 entered service with PLAAF regiments in 2006; as of 2024, China's inventory includes approximately 600 fighters across multiple variants, with 40 aircraft of the J-10C variant being inducted annually.

The Chinese defence industry has also developed the fifth-generation stealth fighter J-20, leveraging advanced technologies acquired surreptitiously from the West. Refined variants of the J-20, such as the J-20A and the two-seater J-20S, are now entering service in PLAAF squadrons.[18] China has introduced nearly 200 stealth fighters into its Air Force, with its defence industries currently producing some 100 stealth fighters annually.[19]

The J-20A, J-16, and J-10C are the three main fighters of the PLAAF and possess enhanced capabilities for the long-range detection and efficient deployment of the PL-15 missile. The PLA considers the J-20 as its cornerstone aircraft, with the J-10, J-11, and J-16 series serving as its mainstay fighters. The three fighters are supported by variants of the Sukhoi-27/30/35 and J-11 aircraft.

Legacy aircraft, including the JH-7A, J-8, and remaining J-7 models, fulfil secondary roles. According to 2024 estimates by the International Institute for Strategic Studies (IISS), the PLAAF maintains approximately 1,600 modern fighters, comprising 200 J-20 fifth-generation stealth fighters and around 1,400 fourth-generation fighters such as the J-10, J-11, J-15, J-16, Su-27, Su-30, and Su-35,[20] making it the world's second largest air force.

Enabling Technologies for Inventory Transformation and Trends

At the turn of the millennium, China's aviation technologies had crucial deficiencies, hindering the growth of its Air Force inventory and its evolution into a strategic and expeditionary force. Key limitations existed in aviation engines capable of super-cruise, composite materials for stealth applications, and AESA radar systems. For years, China relied on Russian supplies for aviation engines, which constrained its aircraft production.

The development and maturation of indigenous WS-10 and WS-15 aero-engines marked a pivotal shift.[21] The WS-10 series, which included variants like the low-bypass WS-10C and high-bypass WS-20 engines, enabled China to manufacture hundreds of fourth- and fifth-generation fighter aircraft annually. Despite these engines initially facing challenges such as shorter Mean Time Between Failure (MTBF), their continuous production facilitated advancements in critical engine technologies like single crystal blades, hot-core configurations, and super-cruise capabilities.[22]

Currently, Shenyang's WS-10C engines power aircraft such as the J-20A and J-10C, while the WS-20 engines are integrated into China's Y-20 strategic airlift aircraft.[23] These developments have significantly enhanced China's air combat capabilities, marking a comprehensive transformation and augmentation of its aerial forces.

In the last few years, the PLA has halted the production of Y-20 airlifters, with no indication of expanding beyond the existing 50 airframes, thus signalling a shift towards specialised variants of the Y-20 aircraft.[24] These variants may include YY-20 air refuelers, Y-20-based airborne early warning and control (AEW&C) aircraft, and potentially airborne command post aircraft designed for overseeing and directing battles.

The increasing number of fourth- and fifth-generation aircraft in the PLAAF, complemented by indigenous air refuellers and supported by domestic AEW&C aircraft, is aimed at transforming China's air combat capabilities.

President Xi Jinping has set a target for the PLAAF to achieve modernisation as a strategic force by 2035.[25] Indeed, the transformation of China's inventory and its annual production of nearly 250 aircraft have bolstered the PLAAF's hardware capabilities. Several areas need further development, however, particularly pilot proficiency, combat tactics, and operational capabilities.

The latest Chinese fighter aircraft are equipped with technologies such as state-of-the-art radars, Infrared Search and Track (IRST) cameras, long-range missiles, high-capacity engines, and advanced protection systems. This has led to an increasing need for enhanced proficiency among PLAAF personnel and improved human-machine interaction.

Lack of Combat/Training Experience

China has not engaged in warfare for several decades, with its knowledge of combat being solely theoretical or derived from training exercises. Even in these exercises, however, the PLAAF has encountered challenges. China is prohibited from participating in Western air exercises, whether bilateral or multilateral. These exercises enable participants to acquire new combat and aviation skills, thereby updating their military doctrines and tactical strategies.

The inability to participate in these exercises, combined with a lack of actual combat experience, has driven China to seek real-world combat knowledge wherever feasible. The closest China has come to assimilating Western air combat methodologies has been through joint air exercises with Turkey, Pakistan, and Thailand.[26] Both Turkey and Pakistan, however, operate older, third-generation fighter aircraft and require US approval to involve American fighters in joint exercises with Chinese forces. Moreover, neither country has aircraft carrier aviation experience or fifth-generation stealth fighters in their inventory, limiting the practical benefits that China could derive from these engagements.

In contrast, China's potential adversaries regularly and increasingly engage in exercises with Western nations. Countries such as Taiwan, Japan, South Korea, the Philippines, Australia, and India have access to Western and American training institutions, specialised courses in various domains, and higher command training.[27]

Lack of Joint Warfighting

The PLAAF has historically avoided close collaboration with other military branches at the highest levels, reflecting China's concerns about military-led coups. However, the demonstrated effectiveness of joint operations and interoperability in US forces during conflicts in the Middle East and Afghanistan compelled Chinese leaders to introduce the Joint War Doctrine within the PLA.[28] The process progressed slowly, with the uniformed services cautious in their support of the concept while safeguarding their respective domains against inter-service encroachment.

The momentum towards joint operations accelerated following a restructuring of higher command in 2016, bolstered by consistent endorsements from China's top leadership.[29] Xi has personally championed the integration of combat capabilities, including within the Air Force. Air units have transitioned from divisions to brigades, and air bases have gained greater operational autonomy.

The joint combat doctrine aims for air bases to integrate and support air assets across all services, including the Army and Navy. Consequently, the PLAAF is enhancing its joint-basing capabilities, although these efforts remain in their early stages.[30] While basic support for refuelling and resupply is currently feasible, achieving deeper integration for effective joint-basing operations is still a work in progress.

> "China has bolstered the PLAAF's hardware capabilities, with 250 aircraft produced annually."

Lack of Independent Initiative

The PLAAF enforces stringent regulations, with fighter pilots exercising limited autonomy during both flights and combat operations. Pilots and formations often lack the freedom to independently conduct aerial battles, with their navigation profiles and combat tactics strictly controlled by commanders stationed in control towers or airborne command posts.[31] This approach, known as "command control", is in stark contrast to the "mission command" principles that guide Western pilots. Under mission command, Western pilots are granted a degree of autonomy and individual responsibility to complete mission tasks.

Younger Chinese pilots have shown willingness to adopt mission command practices,[32] although older pilots find it more challenging to transition away from command control.[33] China actively pursues Western trainers to work with Chinese pilots to improve these practices.

Lack of Confidence in Chinese Trainers

The covert recruitment of Western air combat trainers indicates a lack of confidence in mainland-based Chinese trainers. This underscores shortcomings in China's current air combat training capabilities and casts doubt on the PLA's assertions about the development of Agile Combat Employment.

> "PLAAF seeks to enhance its joint-basing capabilities."

Opaque Scouting and Recruitment

The PLAAF's recruitment of pilots and other technical personnel from the West first came to the attention of the British government in 2019, when a Royal Air Force pilot inquired whether he could retain his security clearance if he accepted an offer from China to train PLA pilots.[34] The British government tried but failed to dissuade the pilot. It was then discovered that five former pilots had accepted offers from the Test Flying Academy of South Africa (TFASA) to train China's budding fighter pilots. The primary motive was financial: pay packages were around US$305,000 per annum, with additional benefits such as free air tickets home and free schooling for children.[b,35]

Despite the recruitment slowing due to the COVID-19 pandemic and global travel bans, the lifting of restrictions in 2022 led to a spike in recruitment. Recruitment offers even reached the desks of active Royal Air Force (RAF) personnel, which resulted in the British government issuing its first warning against the practice in 2022.[36] Allied nations later discovered that the issue was widespread within the veterans community of Western air forces.

This recruiting method aligns with China's "grey beard strategy", which attempts to extract military value from former foreign decision-makers with privileged knowledge.[37] Through entities such as TFASA, Beijing China Aviation Technology Co. (BCAT), and Frontier Services Group Limited (linked to Blackwater's Erik Prince), China has actively sought to recruit trainers via virtual, in-person, and word-of-mouth channels.[38] They often approached veterans directly through online recruiting agencies like Stratos, LinkedIn, and Indeed, or indirectly through veteran networks or agencies in China and third countries.[39] Potential recruits are offered lucrative contracts and the opportunity to fly interesting aircraft in countries such as South Africa, Singapore, Laos, Kenya, Malaysia, and Thailand.

In 2022, Australian agencies arrested Daniel Duggan, a former US Marine pilot and highly trained weapons and tactics officer,[40] who had spent six years training Chinese naval trainee pilots in aircraft carrier operations. Duggan evaluated Chinese naval pilot trainees, tested naval aviation equipment, and gave lessons such as how to land on an aircraft carrier.[41] He also assisted a Chinese spy, Su Bin, in purchasing a T-2 Buckeye trainer aircraft from a US dealer to further train Chinese pilots. Duggan's arrest and trial led to allied

b Keith Hartley, Chief Operating Officer of TFASA and former British test pilot who had managed the Tornado fighter-testing program, played a crucial role in recruiting aviation professionals to train the Chinese. See: https://www.dailymail.co.uk/news/article-11341957/Ex-RAF-gun-killing-training-Chinas-fighter-pilots-recruiting-British-airmen.html

Opaque Scouting and Recruitment

states, including Australia and New Zealand, issuing advisories against the practice in 2022, warning their pilots and officials to avoid involvement with these agencies.[42] Subsequent news reports revealed that 30 British pilots,[43] three Canadian pilots,[44] four pilots from New Zealand,[45] and a large number of German pilots[46] had been training Chinese trainee pilots in NATO tactics, naval aviation, and related areas.

These Western trainers have taught trainee Chinese pilots a wide range of aviation skills. Stephen Crockatt, a former RAF pilot and the UK Team Lead on F-35B Lightning aircraft from 2017 to 2019, provided lessons on setting up a flight test school, hiring potential test pilots, and developing test regimes and safety parameters.[47] Alexander H., a former Eurofighter flight instructor for the German Air Force, trained Chinese pilots in Qiqihar, Heilongjiang Province, to conduct composite air operations with their J-11 and J-16 fighters.[48] Other German pilots are suspected of having taught suppression and destruction of enemy air defence (SEAD/DEAD) operations, which would be crucial in a Taiwan conflict scenario.[49]

The trainers provided instructions to Chinese pilots in large-scale and complex air operations, operational flight training to NATO standards, helicopter operations focused on anti-submarine warfare, aircraft carrier-based aviation proficiency, reconnaissance, and other essential mission capabilities critical for a potential conflict between China and the West. Therefore, these trainers are not only imparting classified skills to their Chinese counterparts but also jeopardising their own national security.[50]

> “China extracts military value from former foreign decision-makers with privileged knowledge.”

Implications and Lessons for the Indian Air Force

The transformation of China's air combat capabilities will impact the Indian Air Force (IAF). Despite the substantial number of fighters and other aircraft in the PLAAF, India has historically maintained a favourable potential combat situation for two reasons. First, many Chinese air bases near India are situated in high-altitude regions in Tibet or nearby areas. Aircraft operating from these bases often face constraints in carrying full fuel or ammunition loads and must contend with unpredictable weather conditions. Their capacity to inflict damage on India thus remains limited. Second, before the induction of the Sukhoi-27 series into the PLAAF, China's combat aircraft lacked sufficient capability to effectively counter the Indian Air Force. The Indian Sukhoi-30MKI remained a formidable aircraft in Asia, surpassing the capabilities of many Chinese imports from Russia. Furthermore, China's strategic posture, with multiple potential theatres of conflict, did not prioritise the deployment of the latest fighter aircraft on its southwestern border. In contrast, India has historically concentrated its heaviest air deployments along the Line of Actual Control with China, creating a capability mismatch that deterred China from escalating conflicts.

However, China's acquisition of Sukhoi-35 aircraft and the development and deployment of J-16 and J-20A fighters could be of concern to the IAF. The PLAAF now has a nearly 5:1 advantage over the IAF in terms of fourth- and fifth-generation stealth fighters that continue to grow by around 250 aircraft each year. As a result, the IAF's use of up-to-date Western combat tactics and operational principles may not be sufficient to compensate for its hardware deficiencies. India must augment its inventory with fourth-generation and stealth fighters to restore its regional deterrent capability.

Finally, India must monitor China's advancing capabilities in training and the calibre of its air combatants in conducting complex and integrated air operations. The PLAAF has long faced criticism for overstating its capabilities, conducting scripted exercises, and officials engaging in moonlighting. Moreover, a culture of promoting princelings within the military hierarchy fosters corruption and internal rivalries. Despite Xi's consistent efforts to mitigate these challenges, the ongoing prosecution of two defence ministers in 2024, following a decade-long anti-corruption campaign within the PLA, highlights persistent systemic issues.

If China, however, expands its aircraft production capabilities across a broad spectrum and demonstrates the ability to sustain and potentially ramp up output during conflicts, it could raise immediate concerns for India. Enhanced hardware inventory, manufacturing capabilities, and training and combat experience improvements will require vigilant monitoring.

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