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CHINA AEROSPACE STUDIES INSTITUTE

PLA Aerospace Power

A Primer on Trends in China's Military Air, Space, and Missile Forces

5th Edition

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PLA Aerospace Power

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Acronyms

Acronym	*Breakout*	*Usage*
3PLA	3rd Department, General Staff Department	PRC
4PLA	4th Department, General Staff Department	PRC
AAA	Anti–aircraft artillery	
AAM	Air–to–air missile	
ADIZ	Air defense identification zone	
AECC	Aero Engine Corporation of China	PRC
AESA	Active electronically scanned array	
AEW	Airborne early warning	
AEW&C	Airborne early warning & command	PRC
AI	Artificial intelligence	
ALCM	Air-launched cruise missile	
AOR	Area of responsibility	
AR	Active radar (missile)	
ASAT	Anti–satellite (missile)	
ASF	Aerospace Force	PRC
ASW	Anti–submarine warfare	
AWACS	Airborne warning and control system	U.S.
AVIC	Aviation Industry Corporation of China	PRC
BACC	Beijing Aerospace Flight Control Center	PRC
BINGO	Baryon Acoustic Oscillations from Integrated Neutral Gas Observations (telescope)	
BIT	Beijing Institute of Technology	PRC
BITTT	Beijing Institute of Tracking and Telecommunications Technology	PRC
C2	Command and control	
C4ISR	Command, control, communications, computers, intelligence, surveillance, and reconnaissance	
C4ISRK	Command, control, communications, computers, intelligence, surveillance, reconnaissance, and knowledge	
CAC	Cyberspace Administration of China	PRC
CAIG	Chengdu Aircraft Industrial Group	PRC
CASC	China Aerospace Science and Technology Corporation	PRC
CASI	China Aerospace Studies Institute	U.S
CASIC	China Aerospace Science and Industry Corporation	PRC
CAST	China Academy of Space Technology	PRC
CCDI	Central Commission for Discipline and Inspection (CMC)	PRC
CCP	Chinese Communist Party	PRC
CEC	China Electronics Corporation	PRC
CEME	Complex electromagnetic environments	
CETC	China Electronics Technology Group Corporation	PRC
CG	Guided–missile cruiser	
CGST	Chang Guang Satellite Technology Co., Ltd.	PRC
CIOMP	Changchun Institute of Optics, Fine Mechanics and Physics	PRC
CIWS	Close–in weapons system	
CMC	Central Military Commission	PRC
CMI	Civil-military integration	U.S.
CNNC	China National Nuclear Corporation	PRC
COMAC	Commercial Aircraft Corporation of China	PRC
CPPCC	Chinese People's Political Consultative Conference	PRC
C–RAM	Counter–rocket, artillery, and mortar	
CSF	Cyberspace Force	PRC
CSGC	China South Industries Group Corporation	PRC
CSOB	Cyberspace Operations Base	PRC
CSSC	China State Shipbuilding Corporation	PRC
CTC	Central Theater Command	PRC
CUC–T	Crewed–uncrewed teaming	
DARPA	Defense Advanced Research Project Agency	U.S.
DCA	Defensive counter air	
DEAD	Destruction of enemy air defenses	
DEP	Dual–enrollment program	
DIB	Defense industrial base	
DIC	Discipline Inspection Commission (CMC)	
DoD	Department of Defense	U.S.
DPRK	Democratic People's Republic of Korea	
DSTKL	Defense State Key Laboratories	PRC
ECM	Electronic countermeasures	
ECS	East China Sea	
EDD	Equipment Development Department (CMC)	PRC
ELINT	Electronic intelligence	
EM	Electromagnetic	
ETC	Eastern Theater Command	PRC

ETCN	Eastern Theater Command Navy	PRC
EW	Electronic warfare	
FAA	Federal Aviation Administration	U.S.
FOBS	Fractional Orbital Bombardment System	
FTU	Formal training unit	
GDP	Gross domestic product	
GLCM	Ground–launched cruise missile	
GNSS	Global navigation satellite system	
GPS	Global Positioning System	U.S.
GSD	General Staff Department (PLA / CMC)	PRC
HGV	Hypersonic glide vehicle	
HIT	Harbin Institute of Technology	PRC
HQ	Headquarters	
IADS	Integrated air defense system	
ICBM	Intercontinental ballistic missile	
IEU	Information Engineering University	PRC
IIR	Imaging infrared	
IR	Infrared	
IRBM	Intermediate–range ballistic missile	
IRSS	Institute of Remote Sensing Satellite	PRC
ISF	Information Support Force	PRC
ISR	Intelligence, surveillance, and reconnaissance	
JLSF	Joint Logistics Support Force	PRC
JPME	Joint professional military education	
JSD	Joint Staff Department (CMC)	PRC
LHA	Landing helicopter assault	
LPD	Landing platform dock	
MAD	Magnetic anomaly detector	
MANPADS	Man–portable air defense systems	
MARPAT	Maritime patrol	
MCF	Military–civil fusion	PRC
MIIT	Ministry of Industry and Information Technology	PRC
MIRV	Multiple independently targetable reentry vehicle	
MND	Ministry of National Defense	PRC
MOE	Mixed-ownership enterprises	PRC
MOST	Ministry of Science & Technology	PRC
MR	Military region	PRC
MRAF	Military Region Air Force	PRC
MRBM	Medium–range ballistic missile	
NATO	North Atlantic Treaty Organization	
NAU	Naval Aviation University	PRC
NCO	Non–commissioned officer	
NDU	National Defense University	PRC
NJUST	Nanjing University of Science & Technology	PRC
NORINCO	China North Industries Group Corporation	PRC
NPC	National People's Congress	PRC
NTAS	Naval Teenagers Aviation School	PRC
NTC	Northern Theater Command	PRC
NTCN	Northern Theater Command Navy	PRC
NUAA	Nanjing University of Aeronautics & Astronautics	PRC
NWPU	Northwestern Polytechnical University	PRC
OCA	Offensive counter air	
OPFOR	Opposing force	
PC	Political Commissar	PRC
PGM	Precision guided munition	
PLA	People's Liberation Army	PRC
PLAA	PLA Army	PRC
PLAAF	PLA Air Force	PRC
PLAN	PLA Navy	PRC
PLANMC	PLA Navy Marine Corps	PRC
PLASAF	PLA Second Artillery Force	PRC
PLASSF	PLA Strategic Support Force	PRC
PLARF	PLA Rocket Force	PRC
PME	Professional military education	
PNT	Positioning, navigation, and timing	
POTUS	President of the United States	U.S.
PRC	People's Republic of China	PRC
PSC	Politburo Standing Committee	PRC
PSYOPS	Psychological operations	
PWD	Political Work Department	PRC

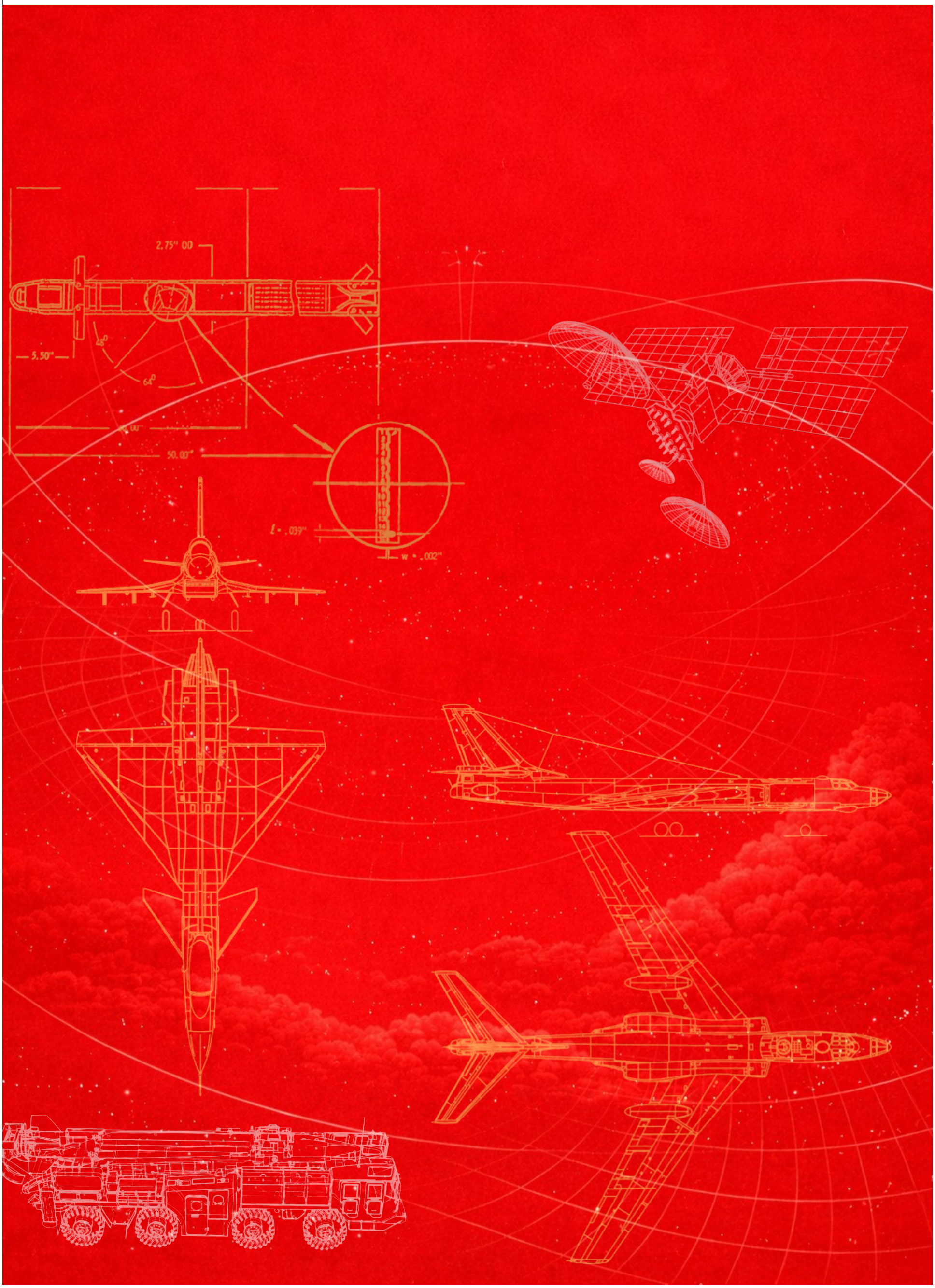
R&D	Research and development	
ROC	Republic of China (Taiwan)	
SAM	Surface–to–air missile	
SAR	Search and rescue	
SAR	Semi–active radar (missile)	
SASAC	State-owned Assets Supervision and Administration Commission of the State Council	PRC
SASTIND	State Administration of Science, Technology, and National Defense	PRC
SCS	South China Sea	
SEAD	Suppression of enemy air defenses	
SECDEF	Secretary of Defense	U.S.
SEU	Space Engineering University	PRC
SHORAD	Short range air defense	
SIPRI	Stockholm International Peace Research Institute	
SLOC	Sea lines of communication	
SMA	Special mission aircraft	
SOE	State–owned enterprise	
SRBM	Short–range ballistic missile	
SSD	Space Systems Department	PRC
STC	Southern Theater Command	PRC
STCN	Southern Theater Command Navy	PRC
STEM	Science, technology, engineering, and mathematics	
TC	Theater Command	PRC
TCAF	Theater Command Air Force	PRC
TCN	Theater Command Navy	PRC
TEL	Transporter erector launcher	
TMD	Training and Management Department (CMC)	PRC
TPDF	Tanzania People's Defence Force	
TRB	Technical Reconnaissance Base	PRC
TT&C	Telemetry, tracking and control	
TTP	Tactics, techniques, and procedures	
UAS	Uncrewed aircraft systems	
UAV	Uncrewed aerial vehicle	
UCAV	Uncrewed combat aerial vehicle	
UGF	Underground facility	
USAF	U.S. Air Force	U.S.
USSR	Union of Soviet Socialist Republics	
VP	Vice President	U.S.
VTOL	Vertical takeoff and landing	
WTC	Western Theater Command	PRC
ZEMIC	Zhonghang Electronic Measuring Instruments Corporation, Ltd.	PRC

List of Chinese Terms

English Term	***Chinese (Simplified 简体)***	***Pinyin***
Aerospace Force	军事航天部队	*jūnshì hángtiān bùduì*
Air and missile defense	防空反导	*fángkōng fǎndǎo*
Air defense	防空	*fángkōng*
Air superiority	制空权	*zhìkōngquán*
Arm	兵种	*bīngzhǒng*
Base	基地	*jīdì*
Brigade	旅	*lǚ*
Central Military Commission	中央军事委员会	*zhōngyāng jūnshì wěiyuánhuì*
Combat power / military effectiveness	作战能力	*zuòzhàn nénglì*
Command and control	指挥控制	*zhǐhuī kòngzhì*
Combat readiness	战备	*zhànbèi*
Cruise missile	巡航导弹	*xúnháng dǎodàn*
Cyberspace Force	网络空间部队	*wǎngluò kōngjiān bùduì*
Cyberspace operations	网络空间作战	*wǎngluò kōngjiān zuòzhàn*
Datalink	数据链	*shùjù liàn*
Electronic warfare	电子战	*diànzǐ zhàn*
Firepower strike	火力打击	*huǒlì dǎjī*
Group Army	集团军	*jítuán jūn*
Information dominance	信息优势	*xìnxī yōushì*
Information Support Force	信息支援部队	*xìnxī zhīyuán bùduì*
Information support	信息支援	*xìnxī zhīyuán*
Informationized warfare	信息化战争	*xìnxīhuà zhànzhēng*
Intelligentized warfare	智能化战争	*zhìnénghuà zhànzhēng*
Integrated command system	指挥信息系统	*zhǐhuī xìnxī xìtǒng*
Joint Logistics Support Force	联勤保障部队	*liánqín bǎozhàng bùduì*
Joint operations	联合作战	*liánhé zuòzhàn*
Military–civil fusion	军民融合	*jūn mín rónghé*
Network information system	网络信息体系	*wǎngluò xìnxī tǐxì*
Non–commissioned officer	军士 / 士官	*jūnshì / shìguān*
Nuclear deterrence	核威慑	*hé wēishè*
Officer	军官	*jūnguān*
People's Liberation Army	人民解放军	*rénmín jiěfàngjūn*
PLA Army	人民解放军陆军	*rénmín jiěfàngjūn lùjūn*
PLA Air Force	人民解放军空军	*rénmín jiěfàngjūn kōngjūn*
PLA Navy	人民解放军海军	*rénmín jiěfàngjūn hǎijūn*
PLA Rocket Force	人民解放军火箭军	*rénmín jiěfàngjūn huǒjiànjūn*
PLA Strategic Support Force	战略支援部队	*zhànlüè zhīyuán bùduì*
Political work	政治工作	*zhèngzhì gōngzuò*
Regiment	团	*tuán*
Service	军种	*jūnzhǒng*
Space operations	太空作战	*tàikōng zuòzhàn*
Strategic Air Force	战略空军	*zhànlüè kōngjūn*
System (of systems)	体系	*tǐxì*
Theater Command	战区	*zhànqū*

Figures and Tables

Introduction



Introduction

Developments in PLA and PRC Air and Space Power 2024–2025

Introduction and Strategic Context

Over the past twelve months, the People's Republic of China (PRC) People's Liberation Army (PLA) has deepened a force structure built around four services, the Army (PLAA), Navy (PLAN), Air Force (PLAAF), and Rocket Force (PLARF); and four strategic arms, the Joint Logistics Support Force (JLSF), Information Support Force (ISF), Cyberspace Force (CSF), and including the newly established Aerospace Force (ASF) responsible for military space operations.[1] This restructuring is explicitly intended to improve the PLA's ability to conduct joint, all-domain operations and informationized warfare in contingencies ranging from Taiwan to the western Pacific and Indian Oceans.[2] Additionally, the PRC continues to refine the military reforms that established the Eastern Theater Command (ETC), Southern Theater Command (STC), Western Theater Command (WTC), Northern Theater Command (NTC), and Central Theater Command (CTC), collectively referred to as Theater Commands (TCs).

Beijing's 2024 reform dissolved the former PLA Strategic Support Force (PLASSF) and reassigned its space units to the ASF, which was formally established on April 19, 2024, and presented in Chinese and foreign reporting as one of the world's few dedicated military space services.[3] In parallel, Chinese doctrinal publications and official commentary continue to describe air, missile, naval aviation, and space capabilities as mutually reinforcing tools for deterrence, coercion, and, if necessary, high-intensity regional conflict.[4]

PLA Air Force: Strategic Reach and Signaling

The PLAAF has used the past year to underscore its role in long-range deterrence and strategic signaling, particularly through bomber patrols and joint flights with Russia near Japan and the Korean Peninsula.[5] These activities are framed in Chinese and Russian statements as routine elements of an annual cooperation plan, but regional governments interpret them as demonstrations of growing Sino-Russian defense coordination.[6] On December 9, 2025, China's Ministry of National Defense (MND) announced Chinese and Russian aircraft had conducted their tenth joint strategic air patrol over the East China Sea (ECS) and western Pacific, prompting South Korea to scramble fighters as Chinese and Russian aircraft entered and exited its air-defense identification zone (ADIZ).[7] The following day, Japan's Ministry of Defense reported a related long-range patrol in which Russian Tu-95 bombers and Chinese H-6 bombers, escorted by J-16 fighters, flew a circuit between Okinawa and Miyako, further highlighting the air component of the Sino-Russian strategic partnership.[8]

Closer to Taiwan, the Republic of China (ROC) Ministry of National Defense recorded repeated PLA sorties into Taiwan's southwestern ADIZ in 2025, including a June 8 incident with eleven PLA aircraft and seven PLAN vessels operating around the island.[9] These flights, often involving H-6 bombers, fighter aircraft, and intelligence, surveillance, and reconnaissance (ISR) platforms, serve both training and coercive signaling roles by normalizing PLA presence near Taiwan.[10] PLA joint "combat readiness patrols" around Taiwan, involving multiple aircraft types and naval vessels, have become routine and are explicitly framed by Chinese sources as warnings against "Taiwan independence" and external interference.[11] In early April 2025, the PLA ETC organized joint exercises around Taiwan involving PLAA, PLAN, PLAAF, and PLARF elements, with missions including combat–readiness patrols, strikes on sea and land targets, and blockade–style "key area and key strait" control.[12]

PLAAF has also expanded its expeditionary profile through joint exercises with partners beyond East Asia, most notably the first-ever "Eagles of Civilization-2025" bilateral air exercise with Egypt.[13] Held from mid-April to early May 2025 at an Egyptian air base, the drill involved Chinese J-10 fighters, Y–20, and YY–20 deploying thousands of kilometers from home bases to fly mixed formations and conduct air-to-air and air-to-ground training with Egyptian aircraft, signaling both PLAAF's growing reach and Beijing's interest in defense ties with Arab partners.[14]

PLA Naval Aviation and Carrier-Based Air Power

Over the past year, the PLA naval aviation arm has marked major milestones in the development of carrier-based air power, centered on the new electromagnetic-catapult carrier Fujian (CV-18).[15] Chinese and foreign defense observers view Fujian as a key platform for extending China's naval aviation reach beyond the first island chain and narrowing qualitative gaps with U.S. carrier strike groups.[16] In May 2024, Fujian returned from an initial sea trial that tested propulsion and power systems, and by mid-2025 Chinese state media reported that the ship was accelerating follow-on trials, including catapult tests essential for fixed-wing carrier aviation.[17] By September 2025, video released by the PLAN and state media showed J-15T and J-35 carrier fighters and the KJ-600 airborne early-warning aircraft conducting electromagnetic catapult launches and arrested landings from Fujian, confirming that China has entered an advanced phase of integrated carrier-air-wing trials.[18]

These developments in naval aviation, combined with routine PLA air and naval activity around Taiwan and growing far-seas deployments in the western Pacific and Indian Ocean, indicate that China is on the cusp of fielding a more capable carrier aviation force capable of supporting sustained blue-water operations.[19]

PLA Rocket Force: Capability Growth and Political Headwinds

Open-source assessments continue to portray the PLARF as central to China's anti-access and area-denial posture, with large inventories of conventionally armed short- and medium-range ballistic missiles and land-attack cruise missiles designed to threaten bases, ports, and naval forces across the western Pacific.[20] U.S. and allied reporting emphasize that PLARF complements PLAAF and PLA naval aviation by providing rapid, long-range precision–strike options against regional targets, complicating U.S. and partner operational planning in a crisis.[21] PLARF units also played a prominent role in the April 2025 "Strait Thunder-2025A" exercise around Taiwan. Chinese official commentary on the April 2025 ETC drills around Taiwan notes participation by rocket units in joint fire-strike missions, including simulated strikes on key targets and blockade operations.[22]

At the same time, China's missile and aerospace industrial base has come under strain from an expanded anti-corruption campaign that has swept through the PLARF and related defense enterprises led by the Central Military Commission (CMC)'s Discipline Inspection Commission (DIC) and the Central Commission for Discipline Inspection (CCDI).[23] A November 2025 study by the Stockholm International Peace Research Institute (SIPRI), cited by Reuters, found that revenues at China's major military firms declined in 2024 as corruption probes and leadership purges disrupted arms contracts and procurement, raising questions about timelines for some advanced missile and space programs.[24]

We nonetheless judge that despite short-term disruptions, sustained growth in China's defense budget and political commitment to modernization mean that PLARF's long-term trajectory remains upward, albeit with greater central oversight and potential delays in selected high-end systems.

PLA Aerospace Force and Space Operations

The establishment of the ASF in April 2024 created a dedicated organizational home for China's military space missions, including launch operations, on-orbit support, and space-based intelligence, surveillance, and reconnaissance and communications.[25] Chinese defense commentary describes the ASF as a key enabler of joint operations, providing a space-based information backbone for precision strike, maritime domain awareness, and strategic early warning.[26] In the last 12 months, China has continued intensive crewed and uncrewed space activity supporting both national prestige and military-relevant capabilities.[27] The Shenzhou-18 mission, launched on April 25, 2024 aboard a Long March-2F from Jiuquan, delivered three taikonauts to the Tiangong space station for a six-month stay that included multiple spacewalks and numerous scientific and technological experiments.[28]

In October 2025 China launched the Shenzhou-21 mission, sending a three-member crew, including the country's youngest astronaut to date, on the seventh crewed mission to Tiangong since its completion in 2022 and achieving a national record by docking with the station in roughly three and a half hours after launch.[29] The mission also carried small mammals to orbit for life-science experiments and was accompanied by official statements that China plans to land astronauts on the moon by 2030, underscoring the dual civilian and strategic importance of its human-spaceflight program.[30] These crewed missions occur alongside continuing satellite launches that expand China's constellations for communications, navigation, and remote sensing, which in turn provide critical support to PLA joint operations and the ASF's future role in space control and space-support missions.[31]

China's Aerospace Industrial Base: Strengths and Stresses

China's aerospace industrial base is anchored by large state-owned conglomerates such as the China Aerospace Science and Technology Corporation (CASC), the China Aerospace Science and Industry Corporation (CASIC), and the Aviation Industry Corporation of China (AVIC), which together develop and produce ballistic and cruise missiles, launch vehicles, aircraft, and space systems for both civilian and military users.[32]

Over the last year, this sector has faced both steady demand from PLA modernization and headwinds from anti-corruption investigations, tightening export controls, and growing scrutiny from foreign governments concerned about technology transfer and military-civil fusion.[33]

The SIPRI-linked study reported by Reuters in late 2025 highlighted that revenues at major Chinese defense firms, including AVIC, CASC, and China North Industries Group Corporation (NORINCO), declined in 2024 even as global arms revenues rose, in part because corruption probes slowed contract approvals and forced leadership changes.[34] Nonetheless, the same analysis concluded that Beijing's long-term commitment to advanced naval fleets, hypersonic missiles, drones, and space systems means that aerospace and missile manufacturers are likely to recover, albeit under stricter political oversight and financial discipline.[35]

China's broader space-industry strategy, articulated in state policy documents and white papers,[i] identifies the space sector as "new infrastructure" and a pillar of national rejuvenation, linking investments in launch capability, satellite constellations, and deep-space exploration to wider industrial and technological goals.[36]

China's Commercial Space Sector: Launch, Constellations, and Services

Alongside its state-owned aerospace conglomerates, China has cultivated a rapidly growing commercial space sector that includes private or quasi-private launch companies, satellite manufacturers, and data-service providers.[37] Since 2014, Beijing has encouraged private investment in launch and satellite services through policy initiatives that frame commercial space as a strategic emerging industry.[38]

In May 2025, the private firm Landspace successfully launched six satellites into orbit on the fifth flight of its methane-fueled Zhuque-2 series, demonstrating the maturation of reusable and clean-propellant technologies within China's commercial launch sector.[39] Other firms, such as Galactic Energy, have continued to fly the solid-fuel Ceres-1 rocket family, which by early 2025 had completed more than a dozen successful missions placing dozens of small satellites into orbit from both land and sea launch sites.[40]

Commercial satellite operators have likewise expanded, with Chang Guang Satellite Technology's Jilin-1 remote-sensing constellation surpassing 100 satellites by mid-2025, making it one of the world's largest commercial Earth-observation systems.[41] Chinese media report that Jilin-1 can revisit many locations on Earth dozens of times per day, providing high-resolution imagery for clients that may include both civilian customers and government agencies.[42]

China Great Wall Industry Corporation and other companies have increased exports of satellites and space services, including the delivery in early 2025 of a remote-sensing satellite from the Institute of Remote Sensing Satellites (IRSS) of the China Academy of Space Technology (CAST), IRSS-1, to an Omani customer, illustrating how commercial space ties contribute to Beijing's broader diplomatic and economic relationships.[43] More broadly, the commercial space industry has been explicitly identified in recent economic-work conferences and government reports as a strategic growth sector, and Chinese officials have signaled plans to map civil-space infrastructure development out to 2035.[44]

International Cooperation, Military Sales, and Joint Exercises

China's expanding air, naval, and space capabilities are increasingly embedded in a network of international exercises and defense relationships, particularly with Russia, Iran, Pakistan, Egypt, Saudi Arabia, and selected European and Latin American partners.[45] These activities provide operational experience, signal political alignment, and create new markets for Chinese arms and space services.[46]

In March 2025, China, Russia, and Iran conducted the Maritime Security Belt-2025 trilateral naval exercise near Chabahar in the Gulf of Oman and northern Indian Ocean, practicing anti-piracy drills, search and rescue (SAR), and naval combat maneuvers aimed at protecting sea lines of communication.[47] Russian and Iranian reporting framed the exercise as part of a broader effort to counter Western pressure and deepen defense cooperation among the three states, even as analysts cautioned that the partnership remains one of convenience rather than a formal alliance.[48]

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[i] For a collection of Chinese white papers, the CASI series *"In Their Own Words: China's Military Strategy White Papers"* functions as a streamlined primary–source repository that presents a curated, chronological collection of official PRC defense white papers from 2004 through 2015, with minimal framing text and an emphasis on direct access to the documents themselves. To view CASI's growing library of China's military strategy white papers with translation, visit the CASI page: https://airuniversity.af.edu/CASI/Display/Article/1353697/

China's cooperation with Saudi Arabia expanded with the third iteration of the Blue Sword naval drills in Saudi waters in late 2025, where Chinese and Saudi forces conducted joint training over several weeks at King Abdulaziz Naval Base in Jubail.[49] Saudi and Chinese statements highlighted the exercise as evidence of deepening strategic ties and growing interoperability between their navies' special operations and boarding units.[50]

Beyond the Middle East, China has pursued security engagement with European partners such as Serbia, including joint exercises and arms sales that signal Beijing's willingness to cooperate militarily with states outside the North Atlantic Treaty Organization (NATO) framework. At the same time, Chinese and Brazilian institutions have launched new joint space projects, such as a radio-astronomy laboratory linked to the Baryon Acoustic Oscillations from Integrated Neutral Gas Observations (BINGO) telescope, that showcase how space cooperation complements China's broader diplomatic outreach.

Challenges and Strategic Implications

Taken together, developments in the PLAAF, PLARF, Navy aviation, and ASF over the past year confirm that China is steadily improving its capacity to project power and impose costs on adversaries across multiple domains. At the same time, the anti-corruption campaign in the defense sector, the technical complexity of advanced carrier aviation and space systems, and the possibility of miscalculation during increasingly frequent joint drills and close air and maritime encounters all underscore that China's rise as an air- and space-power is neither linear nor without risk.

For external observers, the key analytical challenge is to distinguish between demonstrative activities intended primarily for signaling, such as high-profile joint air patrols and trilateral naval drills, and quieter structural changes in force organization, industrial capacity, and space infrastructure that may have more lasting strategic effects. As China's aerospace and commercial space sectors continue to mature, the boundary between civilian and military capabilities will become even more porous, complicating efforts by other states to assess Chinese intentions and design effective responses.

Figure 1: China–Egypt "Eagles of Civilization–2025" joint air force exercise began at an Egyptian Air Force base. The photo shows some of the participating officers and soldiers from both countries posing for a group photo, with a Chinese J–10C fighter jet (center) and an Egyptian MiG–29 fighter jet visible behind them. (Website of the Chinese Embassy in Egypt)51

Theater Commands

Under the direction of the CMC, each TC exercises operational authority over assigned conventional forces within its respective area of responsibility (AOR). The TCs are responsible for planning and executing all conventional military operations—both combat and non–combat—within their designated regions. In this capacity, TCs develop theater–specific strategies to prepare for and prevail in conflict, formulate joint operational plans, oversee the development of relevant military capabilities, respond to contingencies and crises, and safeguard the sovereignty, security, and territorial claims of the PRC.

Figure 2: Map of PLA Theater Commands and Theater Command Service Headquarters[52]

Theater Command	Strategic Direction
ETC	Taiwan, East China Sea
STC	South China Sea; Southeast Asia border security; territorial and maritime disputes
WTC	India, Central Asia, "counterterrorism" in Xinjiang and Tibet
NTC	Korean Peninsula, Russia border security
CTC	Capital defense; surge support to other theaters

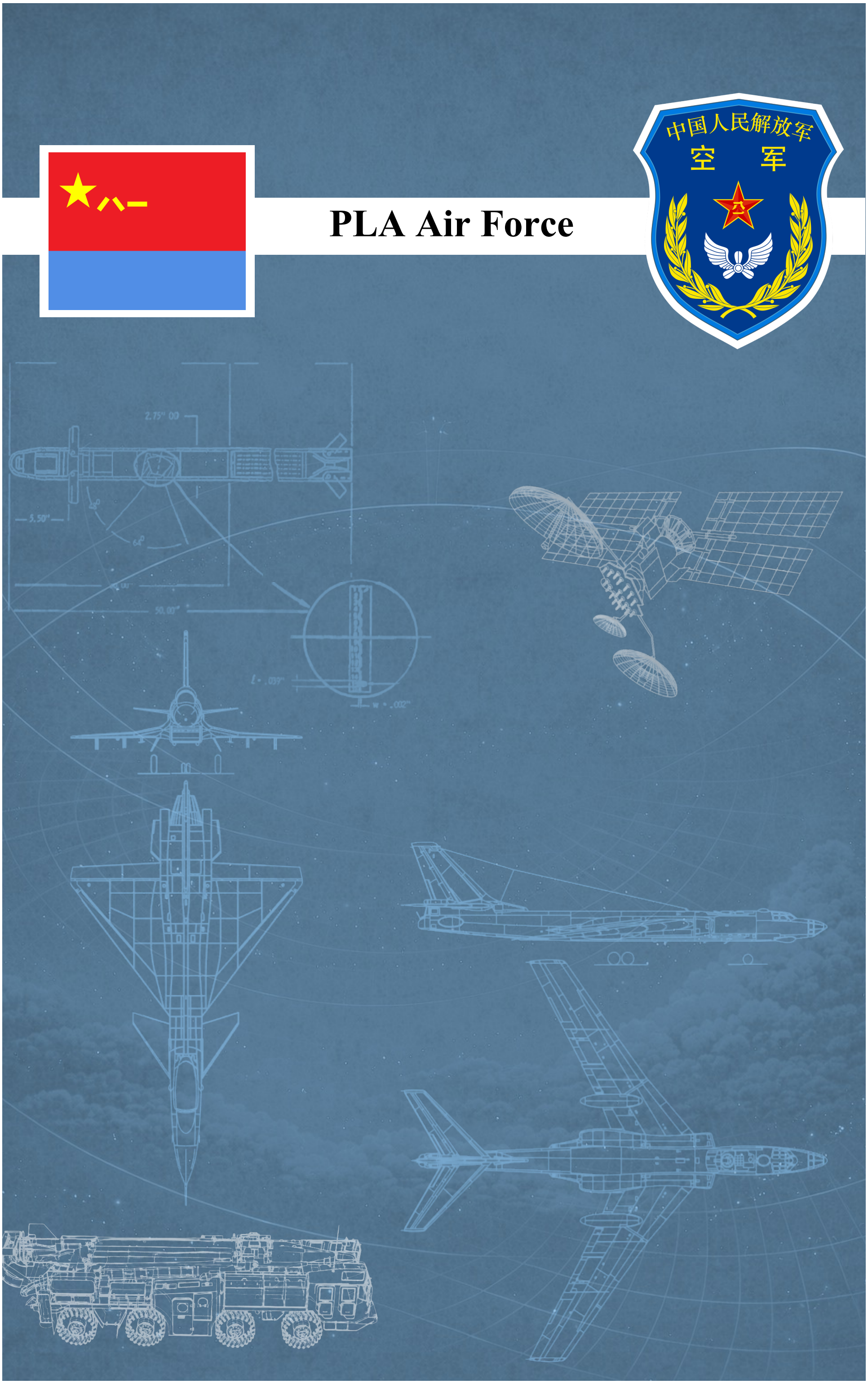
Table 1: PLA Theater Commands and strategic directions[53]

Chinese Designator Taxonomy

Platform	Designator	Chinese	Pinyin	Functional / "Symbolic" meaning	Notes	Representative examples
Air						
Fighter	**J–**	歼击机	**Jiān**jījī	Fighter aircraft	Core functional prefix; suffix letters usually indicate major variant, seat count, or mission package	J–10, J–11, J–16, J–20
Fighter–bomber/Strike	**JH–**	歼轰机	**Jiān–hōng**jī	Fighter–bomber	Hybrid prefix joining 歼 (fighter) + 轰 (bombing)	JH–7, JH–7A
Bomber	**H–**	轰炸机	**Hōng**zhàjī	Bomber aircraft	Core functional prefix; suffix letters often indicate modernization package or mission specialization	H–6, H–6K, H–6N, H–6J
Transport	**Y–**	运输机	**Yùn**shūjī	Transport aircraft	Core functional prefix; variants usually shown by number and later suffix letters	Y–8, Y–9, Y–20
Helicopters	**Z–**	直升机	**Zhí**shēngjī	Helicopter	Core functional prefix	Z–8, Z–10, Z–19, Z–20
Recon UAV	**WZ–**	无人 侦查	**Wú**rén **Zhēn**chá	Uncrewed reconnaissance	W is not used as a standalone designator for UAV	WZ–7, WZ–8, WZ–10
UCAV	**GJ–**	攻击	**Gōngjī**	Attack / strike	Function–led attack designation	GJ–1, GJ–2, GJ–11
AEW&C	**KJ–**	空中 预警机	**Kōng**zhōng Yù**jing**jī	Airborne warning and C2	Function–led, set two–letter designation	KJ–200, KJ–500, KJ–600
Tanker	**YY–**	加油 运输机	Jiā**yóu yùn**shūjī	Aerial refueling transport	(加)油 refuel + 运(输机) transport aircraft	YY–20
Trainer	**?L– or ?J–**	教练 or 教练	Jiào**liàn or Jiào**liàn	Trainer	Core functional <u>second letter</u> prefix for trainers; generally, the L denotes a primary trainer, not a variant;whereas, the J denotes a two–seater trainer variant of an operational platform	JL–10, JJ–11
Recon	**?Z**	侦查	**Zhēn**chá	Reconnaissance	When the <u>second letter</u>, denotes a reconnaissance variant	JZ–8,
AAM	**PL–**	霹雳	Pīlì	"Thunderbolt"	Symbolic AAM family	PL–8, PL–10, PL–12, PL–17
SAM	**HQ–**	红旗	Hóngqí	"Red Banner"	Symbolic SAM family	HQ–9, HQ–16, HQ–22
Terminal defense	**LD–**	陆盾	Lùdùn	"Land Shield"	Ground–based or shipborne terminal / air defense; antimissile SHORAM / C-RAM / CIWS type	LD–2000, LD–3000
	Note for all airborne platforms: • The first letter at the end of the full designation generally represents the upgrade / "block" series (e.g. J–10A, DF–15B, etc.) • The second letter at the end of the full designation may designate feature or function (e.g. J–11BS, where "S" is shuāng [双] meaning "twin" for 2–seat platforms)					
Maritime						
SLBM	**JL–**	巨浪	Jùlàng	"Giant Wave"	Symbolic strategic family for submarine–launched ballistic missiles	JL–2, JL–3
ASM	**YJ–**	鹰击	Yīngjī	"Eagle Strike"	Symbolic anti–ship / maritime strike family	YJ–12, YJ–18, YJ–21
Naval SAM	**HHQ–**	海红旗	Hǎi hóngqí	"Sea Red Banner"	Navalized derivative of HQ naming logic	HHQ–9, HHQ–16
Ground						
SPAAG	**PGZ–**	炮高射自行	Pào gāoshè zìxíng	Self–propelled AAA	Functional anti–aircraft artillery prefix	PGZ–09
MANPAD	**QW–**	前卫	Qiánwèi	"Vanguard"	Symbolic short–range air–defense family	QW–1, QW–2, QW–18
Strategic Missile						
Ballistic missile/HGV	**DF–**	东风	Dōngfēng	"East Wind"	Symbolic strategic family name for ballistic and hypersonic glide vehicles	DF–15, DF–17, DF–26, DF–41
LACM	**CJ–**	长剑	Chángjiàn	"Long Sword"	Symbolic family name for cruise missiles	CJ–10, CJ–100
Space / Launch						
Launch vehicle	**CZ–**	长征	Chángzhēng	"Long March"	National launch–vehicle family	CZ–2, CZ–5, CZ–7
(Multiple)	**Type _ _**	型 / 型号	Xíng / Xínghào	Type / model	Bureaucratic designation, not domain–specific	

Table 2: Explainer of PLA designator taxonomy for select platforms; based on analysis of PLA military publications, not on official PLA guidance; this list is not exhaustive

PLA Air Force



PLA Air Force (PLAAF)

Over its 75–year history, the PLAAF has evolved from a limited force focused on homeland air defense to a "strategic air force" fielding advanced aircraft and missile systems. The PLAAF is rapidly modernizing and indigenizing its aircraft and uncrewed aerial systems, matching U.S. standards. The PLAAF is now capable of conducting limited operations beyond the first island chain and deterring, coercing, delaying, or defeating most adversaries within it. The PRC's 2019 defense white paper described the PLAAF's missions and tasks as transitioning from territorial air defense to "offensive and defensive operations." This chapter will provide an overview of the history of the PLAAF, the PLAAF's current mission set, PLAAF modernization priorities, an outline of PLAAF forces and equipment, PLAAF force employment, PLAAF command and control (C2) and organizational structure,[ii] and trends in PLAAF leadership and personnel development.

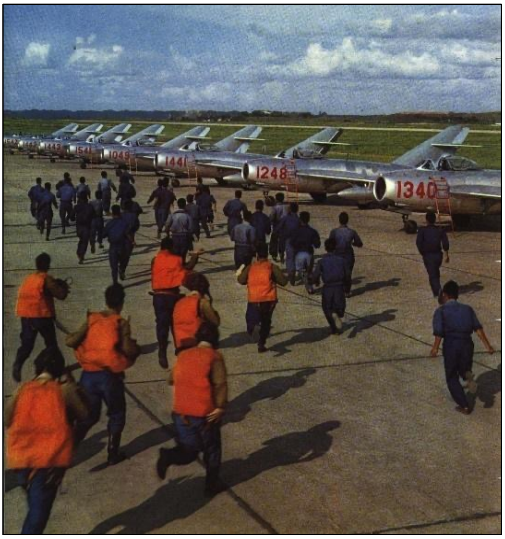


Figure 3: PLAAF airfield circa 1965

Figure 4: 2010 recruitment poster

History

Starting Period 1949–1955

At the time of the founding of the PRC, the PLAAF was established and placed under the command of PLAA officers. During this period, the PLAAF established its own command structure, numerous flight schools, and purchased a large number of modern Soviet aircraft. At the time of the founding of the PLAAF, it had less than 3,000 trained aviation personnel, including pilots, mechanics, and navigators, around 150 foreign–made aircraft, and 542 airfields. During this period, the PLAAF participated in the PRC's military intervention in support of the Democratic People's Republic of Korea (DPRK) during the Korean War, as well as the First Taiwan Strait crisis. It performed poorly in both.

Homeland Defense 1956–1980s

The second phase of PLAAF history was dominated by the PLAAF's inability to counter the USAF in Vietnam and the U.S.–supplied ROC Air Force. During this time, the Nationalists and the USAF would continually probe and intrude into PRC airspace, demonstrating the inability of the PLAAF to prevent these intrusions. These intrusions served as an impetus for the PLAAF to invest further in supersonic aircraft and increasingly capable surface–to–air missile (SAM) systems. With the launch of the Great Leap Forward, an industrialization campaign that occurred between 1958 and 1962 that led to famine and the deaths of up to 45 million people, and the eventual cessation of Soviet aid after the Sino–Soviet split, PLAAF modernization was placed on shaky ground. Despite the fraying of PRC–USSR relations, the PLAAF set up increasing numbers of anti–aircraft artillery (AAA), SAM, and radar units across the PRC to further develop its ability to defend homeland airspace. Beginning in 1965, the PLAAF began deploying ground–based anti–air units to North Vietnam.

[ii] Of note, the PLAAF, like the rest of the PLA, uses army–based terms like Division, Brigade, and Regiment to describe its units, these are loosely analogous to the USAF Wing, Group, and Squadron

The Cultural Revolution, a political movement conducted between 1966 and 1976 that led to widespread instability and death within the PRC, was disastrous for the PRC and the PLAAF in particular. At the beginning of the Cultural Revolution, PLAAF commander Wu Faxian's close ties to Lin Biao, the sole vice chairman of the CCP during the Cultural Revolution and alleged leader of a conspiracy to assassinate Mao Zedong, resulted in Wu's arrest and imprisonment in 1971. Towards the end of this period, the PLAAF was attempting to overcome serious organizational and supply issues that had prevented it from conducting air operations during the 1979 PRC–Vietnam war. Through the eighties, the PLAAF continued to be severely fuel restricted and was unable to field a 4th–generation aircraft like the USSR or United States. During the period between normalization of relations with the United States in 1979 and the Tiananmen crackdown and cessation of military cooperation in 1989, the U.S. developed substantial military relations with the PRC, but these were eventually curtailed as a result of the crackdown.

Border Defense 1990s–2003

The 1990s marked the beginning of a long period of modernization and reorganization for the PLAAF that enabled the PLAAF to broaden its mission set to prevent intrusions into PRC airspace. During this time, the PLAAF imported Russian aircraft and began procuring 4th–generation aircraft from its nascent domestic aircraft industry. However, it was largely reliant on imported designs and components. It was during this time that the PLAAF began its initial efforts towards becoming a cross–domain "Strategic Air Force" capable of operating across the air, space, and cyber domains. During this time, the PLAAF began expanding its sensor network to include airborne early warning and command (AEW&C) platforms, airborne command posts, large phased–array radars, and aircraft–mounted synthetic aperture radar. During this period, the PLAAF also finally became capable of preventing intrusions into its airspace through a burgeoning integrated air defense system (IADS) network and air defense fighter fleet. The PLAAF's increase in flight activity around Taiwan also began in this era. The PLA closely monitored USAF activities over Iraq and Kosovo, recognizing an air force's capability to independently achieve strategic objectives as a vital component of a joint force.

Integrated Aerospace 2004–Present

This last period sees the PLAAF further develop its ground–based SAM and radar networks, AEW&C aircraft, bombers, ground attack aircraft, and multirole fighter capabilities, while later facing a sort of identity crisis by having large portions of its multidomain capabilities and responsibilities stripped away. In 2004, the PLAAF adopted a strategy of "Integrated Air and Space and Simultaneously Prepare for Offensive and Defensive Operations," which would later evolve into the "Strategic Air Force" concept. The component of this strategy referred to as "integrated air and space capability" (空天一体) was the product of earlier PLA observations of USAF combat operations as well as the acknowledgment of the increasing importance of multidomain operations to modern air force capabilities. The importance of this integration was outlined in the 2013 edition of the *Science of Military Strategy*:

> "In line with the strategic requirement of building air–space capabilities and conducting offensive and defensive operations, the PLAAF will endeavor to shift its focus from territorial air defense to both defense and offense, and build an air–space defense force structure that can meet the requirements of informatized operations. The PLAAF will boost its capabilities for strategic early warning, air strike, air and missile defense, information countermeasures, airborne operations, strategic projection, and comprehensive support."[54]

When the now–defunct PLASSF was established in 2016, it stripped the PLAAF of these space and information domain responsibilities, restricting it to conducting air operations, related electronic warfare (EW), early warning tasks, and surface strike operations.

Missions

PLAAF missions align with national–level requirements and the strategic direction of the Theater Command (TC) to which PLAAF organs are assigned. The 2016 military reforms established five TCs: Eastern (ETC), Southern (STC), Western (WTC), Northern (NTC), and Central (CTC). The following four missions are the primary tasks of the PLAAF: Taiwan, air defense, counter–intervention, and nuclear deterrence. They are presented in order of importance, although they are closely related. It is important to reiterate that the role of the PLAAF in the PRC's nuclear triad is nascent at best due to technical limitations and the relatively small size of its nuclear–capable bomber fleet.

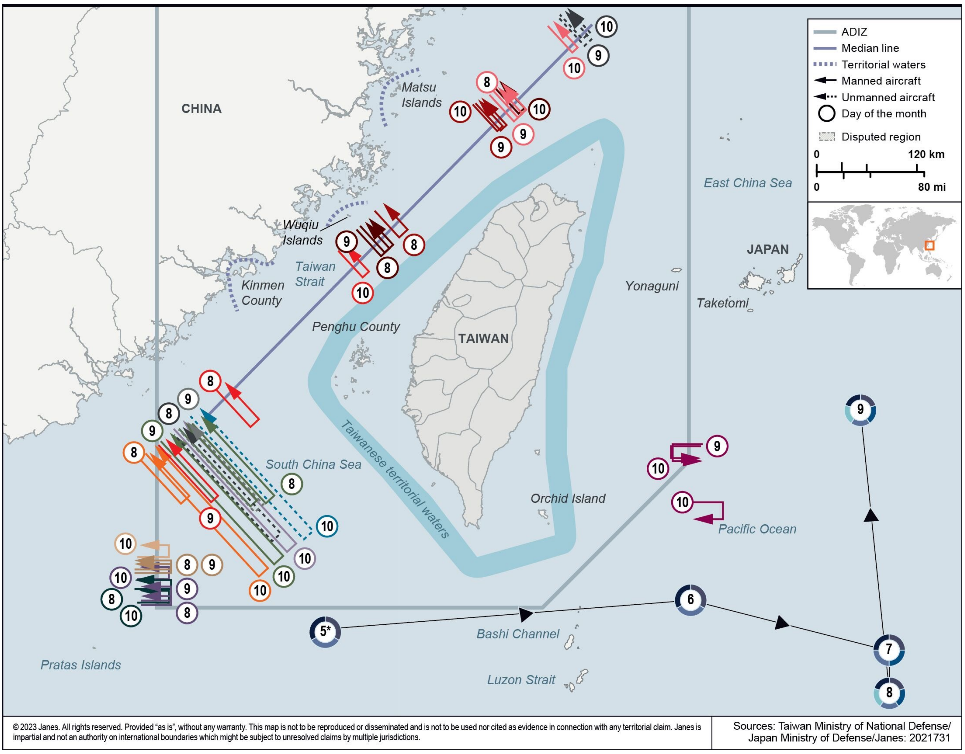


Figure 5: PLA incursions across Taiwan Strait median line and Taiwan ADIZ during "Joint Sword" wargames, April 2023[55]

Taiwan

The PLAAF's primary mission is a Taiwan contingency. The PLAAF trains to conduct offensive counter air (OCA) and defensive counter air (DCA) operations to maintain air superiority over and around Taiwan, augment joint firepower strikes with air–launched cruise missiles and gravity bombs, conduct suppression of enemy air defenses (SEAD) and destruction of enemy air defenses (DEAD), support joint operations with aerial reconnaissance, and conduct airborne landings to seize key points. During peacetime, the PLAAF's flight activity around Taiwan's ADIZ has the function of familiarizing PLAAF EW operators with the signatures and signals of Taiwanese air and missile defense systems as well as interceptor aircraft. These flights also serve the PRC's goals in cross–strait relations by demonstrating the superiority of modern PLAAF capabilities compared to those fielded by Taiwan's air force.

Air Defense

As outlined previously, the PLAAF is largely responsible for maintaining IADS tasked with defending the PRC. With the transfer of the PLAN's air defense units to the PLAAF, the PLAAF has become responsible for managing the comprehensive network of radar and SAM systems that constitute the cornerstone of PRC air defense across the entirety of the PRC. In addition to traditional air defense, the PLAAF is also introducing more advanced systems with nascent ballistic missile defense capabilities, such as the HQ–19, HQ–29, and S–400 as well as counter–precision guided munition (PGM) and cruise missile systems like the HQ–11. It is important to note that the PLAAF will continue to train to coordinate with the PLAA on joint air defense missions.

Counter–intervention

Figure 6: H–6N, 2019 PRC 70th Year Parade

The PLAAF's counter–intervention mission is married to the modernization of its longer–range strike capabilities, prioritization of developing capabilities to conduct operations beyond the first island chain, and the Taiwan invasion mission set. The PLAAF is expected to be a key component of joint counter–intervention strikes with PLARF conventional missile units and PLAN surface and subsurface combatants, creating a robust and effective capability to sink U.S. Navy surface assets and to strike U.S. bases in the region. The PLAAF will also perform a counter–intervention function targeted at preventing the USAF from conducting operations in the region by striking the USAF tanker fleet and airborne warning and control systems (AWACS), as well as conducting OCA as far out as can be sustained by the PLAAF tanker fleet, which, while limited today, will be more sizable in the future.

Nuclear Deterrence

When the PRC first developed deliverable nuclear weapons, they were initially air–dropped bombs delivered by PLAAF bombers. With the development of the then Second Artillery Force's longer–range ballistic missiles, the PLAAF's nuclear bomber capability slowly eroded. More recently, the PLAAF has created a brigade of midair–refuellable H–6 variants, the H–6N, to serve as a platform for an air–launched, nuclear–armed ballistic missile. While this platform's limited range restricts its utility to nuclear deterrence messaging, theater nuclear missions, and potentially long–range conventional strike. The unit equipped with these bombers is thought to be crucial for developing tactics, techniques, and procedures (TTP) for future, more capable and survivable platforms that will become a more credible airborne component of a true nuclear triad.

The PLAAF has been conducting "combined strategic aerial patrols" with the Russian Aerospace Forces since 2019. In July 2024, two PLAAF H–6K bombers flew a sortie near Alaska for the first time as part of these patrols. In November 2024, the PLAAF flew the first complete strike package of two H–6Ns, a Y–20 tanker, several escort fighters, a Y–9 standoff jammer, and a Y–9 EW aircraft.[56] This evolution of the combined patrols represents an important evolution in the PLAAF's ability to execute its nuclear signaling mission.[57]

Modernization Priorities and Current Forces

Modernization Priorities

As the PLAAF's mission set and strategic concepts developed through the late 1990s and early 2000s, its modernization efforts evolved from relatively uncoordinated purchases of foreign capabilities to a more concerted effort designed to supplement a developing domestic industry with foreign purchases. The PLAAF has been prioritizing the development and acquisition of long–range offensive strike capabilities, be that continued modernization of H–6 platforms to fly further and deliver longer–range cruise missiles, or fielding more multirole, cruise missile capable 4.5–generation aircraft like the J–16. The PLAAF is in the process of procuring 6th–generation platforms focused on long–range strike, coordinating the employment of un–crewed systems, and capable of employing very long–range air–to–air missiles (AAM).

In an effort to push more commanders into the air, the PLAAF has put commanders in both combat aircraft and AWE&C aircraft. The PLAAF has traditionally relied on ground–based radar for both early warning and directing aircraft to targets but has been undergoing a campaign intended to increase the number and further develop the capabilities of its airborne command platforms, most notably the KJ–500 and successor variants.[58] The PLAAF is also expected to adopt the KJ–3000, a Y–20–based platform equipped with digital radar systems capable of passive detection, target identification, and anti–jamming.[59]

Figure 7: J–15T, J–16 led by KJ–500 2025 military parade

The PLAAF is continually seeking to procure more capable, longer–range SAM systems to both provide a robust IADS network for homeland air defense, as well as establish a further bubble of shore–based air defense coverage, enabling fighters capable of operating at longer ranges to push farther out from the Chinese coastline. Beyond increasing the range of these systems, the PLA is seeking to procure more advanced radar systems to better find, fix, track, and target adversary air threats. The PLAAF will likely seek to deploy SAM systems with a similar 1,500–2,000 km (800–1080 NM) range to the DF–17 anti–air systems that are reliant on space–based ISR for inflight updates.[60] Beyond increasing the range of these systems, the PLA is seeking to procure more advanced radar systems to better find, fix, track, and target adversary air threats. Similarly, the PLAAF is also pursuing air defense systems that can employ missiles capable of intercepting incoming ballistic and cruise missiles. The PLAAF is likely involved in multiple mid–course interception tests that the PLA has conducted over the past several years.

Lastly, the PLAAF is procuring increasing numbers of its new, large transport aircraft, the Y–20 and multirole tanker variant, the YY–20. The PLAAF transport fleet is currently capable of transporting two light airborne brigades or one light mechanized airborne brigade if it uses its entire inventory of transport aircraft, leaving limited extra capacity for emergency transport of materiel or other tasks. Given this relative weakness, the PLAAF is seeking to expand this fleet to provide it with more options for rapid logistics support for aviation units or to provide other cargo transportation services without putting the lift it needs for a Taiwan invasion scenario at risk.

In 2023, a shift in the PLA's priorities for PLA naval aviation caused the transfer of significant portions of PLAN shore–based fixed–wing combat aviation units and facilities, air defense units, and radar units to the PLAAF.[61] This shift has allowed for more unified command and control over the IADS network and the network of terrestrial air domain awareness radar that enables that system to function effectively.

Current Forces

Manned Fixed–wing

The PLAAF is currently fielding a combat aircraft fleet composed of more modern aircraft as well as broadening its ground attack and bomber inventories. As of early 2026, the PLAAF fighter fleet is thought to have 15 aviation brigades equipped with 5th–generation aircraft,[iii] 22 aviation brigades equipped with 4.5–generation aircraft, 10 aviation brigades equipped with 4th–generation aircraft, and four aviation brigades equipped with legacy 3rd–generation aircraft. In terms of dedicated strike aircraft, the PLAAF maintains five aviation brigades of JH–7/JH–7A fighter–bombers, two that operate both the JH–7A and J–16, and nine conventional bomber regiments equipped with a mix of H–6 variants.

[iii] The PLA usually uses different designations for aircraft generations. In this publication we use U.S. numbering conventions.

Figure 8: J-10A and J-11A

PLAAF lift capability is composed of six aviation regiments equipped with heavy and medium lift platforms. The PLAAF currently maintains nine special mission aircraft (SMA) regiments and two VIP transportation units. Regiments and aviation brigades are typically composed of between 20 and 40 aircraft. The PLAAF is now the largest aviation force in the region and the third largest in the world, with over 3,150 aircraft,[iv] of which approximately 2,400 are combat aircraft (including fighters, strategic bombers, tactical bombers, multi–mission tactical, and attack aircraft). Aviation brigades equipped with fighter aircraft are typically composed of one type of aircraft. The PLAAF is continuing to phase out its legacy 3rd–generation aircraft, while also beginning to gradually replace its 4th–generation fighters, namely J–11 and J–10A, with 4.5–generation aircraft. All TCAFs operate multiple units of 5th– and 4.5–generation aircraft.

Fighters

3rd–Generation Fighters

Currently, the PLAAF inventory of 3rd–generation aircraft is largely composed of newer J–7 and J–8 variants. The J–7 FISHBED is a modernized PRC–produced MiG–21. Due to radar limitations, the J–7 is only capable of rear–hemisphere infrared (IR) AAM employment. The J–8 FINBACK interceptor and its variants are also indigenously produced and based on the MiG–21 and MiG–23. Unlike the J–7, the J–8 has a solid nosecone and ventral air intakes, leaving room for a more capable mechanically scanned radar. These aircraft primarily employ older AAMs, namely the PL–5 and PL–8 IR AAMs. Upgraded variants of the J–8 also employ the PL–11 semi–active radar (SAR) AAM, and are potentially capable of employing the relatively modern PL–12 active radar (AR) AAM.

4th–Generation Fighters

PLAAF 4th–generation aircraft include the J–10A, J–10B, J–11A, J–11B, J–11BG, and J–11BS. These aircraft consist primarily of domestically produced subsystems and are powered by a mix of Russian– and PRC–produced engines. These aircraft are primarily equipped with the PL–9 IR AAM and PL–12. Additionally, the PRC imported several Su–30MKKs from Russia that are equipped with a mix of Russian engines and munitions.

4.5–Generation Fighters

PLAAF 4.5–generation aircraft include the domestically produced and powered J–10C and J–16, and the several imported Su–35 with Russian munitions. The J–10C and J–16 employ PRC–manufactured weapons such as the PL–10 imaging IR (IIR) and PL–15 active electronically scanned array (AESA) AR AAMs, which outrange their American counterparts—the AIM–9X and the AIM–120 AAMRAM, respectively—and powered by a mix of indigenous and imported Russian AL–31F series turbofan engines. In addition to the PL–15, the J–16 can employ the PL–17—an even longer range AAM (approximately 400 km (216 NM)), with a dual active AESA radar and passive anti–radiation seeker intended to target tankers, AWACS, and other high–value airborne assets (HVAA) to limit the USAF's power projection capability. Though it relies on the AL–31F powerplant and can only deploy the less capable PL–9 and PL–12 AAM, the J–10B may also be considered a 4.5–generation aircraft.

[iv] Not including trainer variants or uncrewed platforms.

5th–Generation Fighters

The PLAAF currently fields three versions of its J–20 5th–generation stealth fighter, the J–20, J–20S, and the J–20A. The J–20 is equipped with imported Russian engines while the J–20A is equipped with PRC–manufactured engines. Both are equipped with PL–10 and PL–15 AAMs. The J–20S is a two–seat variant of the J–20 that allows its weapons system officer to coordinate the employment of uncrewed aerial vehicles (UAV).[v] The PLAAF currently has at least 15 combat aviation brigades operating J–20 variants with a small number of those still in varying stages of transition and two training and testing units operating the aircraft. The PLAAF is likely in the early stages of fielding the J–35 with operational units.

Figure 9: PLAAF 3rd–generation aircraft J–8 (left) and J–7 (right)[62]

Figure 10: 4th–generation aircraft J–10A (left) and J–11A (right)[63]

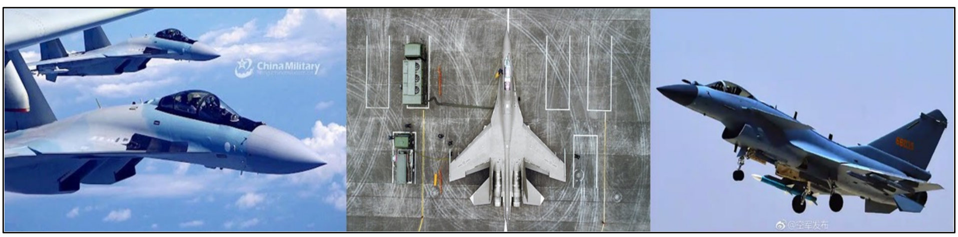


Figure 11: 4.5–generation aircraft (Left to right) Su–35, J–16, and J–10C[64]

Figure 12: J–20 5th–generation aircraft[65]

[v] UAV refers to the aircraft itself; the UAV is part of a UAS (uncrewed aircraft system) which also includes the control stations/nodes, communication links and datalinks.

Missile	Type / Guidance	Range km (NM)	Key Characteristics	Common Platforms	Target Optimization
PL–5 / PL–5EII	IR (dual band)	1.3–16	Derived from AA–2 Atoll; later variants have all–aspect capability and better seeker performance	J–7, JH–7 (preferred due to size/weight)	Short–WVR
PL–8	IR	~20	Derived from Python–3; larger missile requiring modified pylons	3rd–gen (J–8 more likely), 4th–gen, J–15 (modified pylons)	WVR; improved short–range engagements
PL–9	IR (multi–element)	22–35	Improved seeker; high off–boresight (~±40°); high hit probability	4th–gen	Low–altitude, maneuvering aircraft
PL–10	IIR + HMD cueing	~60	Very high off–boresight (±90°); thrust vectoring; "look–and–shoot" capability	4.5–gen, 5th–gen	Highly maneuverable close combat; off–axis; WVR dominance
PL–11	SAR	40–75	Derived from HQ–61 SAM; inertial + radar guidance	J–8, 4th–gen	Medium–range targets
PL–12	AR	~100	AMRAAM comparable; baseline modern BVR missile	4th–gen, 4.5–gen, 5th–gen	BVR; general–purpose air superiority
PL–15	AR (AESA)	Long (~300)	Dual–pulse motor; strong ECCM; increased detection range; carried internally on stealth fighters	Upgraded J–11B, 4.5–gen (J–10C, J–16), 5th–gen (J–20)	HVAA
PL–16	AR (AESA)	Long (~300)	Compressed carriage design; folded fins; dual–pulse motor; same performance as PL–15; optimized for loadout density and stealth carriage	J–20 (6 internal vs 4 PL–15)	HVAA
PL–17	AR (AESA) + passive anti–radiation seeker	Very long range (~400)	Dual–pulse solid rocket motor combined with lofted trajectory		HVAA; high EM emitters

Table 3: Characteristics of AAM in PLAAF inventory (not exhaustive)

Platform	Short–Range IR (WVR)	Extended WVR / HOBS	Medium / BVR	Long / Very Long Range	Specialized / Emergent Systems
J–7	PL–5 (preferred due to size/weight)				
JH–7	PL–5 (preferred due to size/weight)				
J–10C	PL–10	PL–10 (HOBS + HMD)	PL–12; PL–15	PL–15	Twin–rack PL–15 (PAF); increased loadout
J–11B (AESA)			PL–15	PL–15	
J–16	PL–10 (implied)	PL–10	PL–15	PL–15; PL–17	PL–17 observed in captive-carriage
J–20	PL–10 (internal)	PL–10	PL–15 (4 internal baseline)	PL–15	PL–16 (6 internal vs 4 PL–15)

Table 4: Cross matrix of PLAAF platforms, AAM, and capability[vi]

[vi] Data for *Table 3* and *Table 4* derived from U.S. Army Training and Doctrine Command, G-2 (T2COM), *Worldwide Equipment Guide* (Information cutoff April 01, 2026) and International Institute for Strategic Studies *Military Balance* reports 2024 and 2025.

Figure 13: JH–7A attack aircraft[66]

Strike

JH–7 Fighter–Bomber

The JH–7 and JH–7A are PRC–produced dedicated attack aircraft, powered by licensed produced Rolls Royce Spey Mk 202 engines. JH–7 has a maximum speed of approximately Mach 1.75 and can carry up to 20,000 pounds of ordnance and can employ anti–ship cruise missiles, land attack cruise missiles, anti–radiation missiles, as well as laser–guided bombs, and other PGMs. Both the baseline JH–7 and the upgraded JH–7A variants have been observed equipped with external jamming pods featuring multiple transmitters, indicating a capacity for stand–off electronic attack. However, the platform lacks fully integrated, airframe–embedded EW systems, which constrains its effectiveness relative to purpose–built electronic warfare aircraft. With the adoption of 4.5–generation aircraft that are strike–capable, the PLAAF now has additional multirole aircraft that are capable of supplementing its aging attack aircraft's strike function.

Figure 14: JH–7A with EW pods

Figure 15: H–6K bomber

H–6 Bomber

The PLAAF fields a variety of H–6 variants, ranging from UAV–carrying H–6M, anti–ship–focused H–6L obtained during the Naval Aviation re–organization, and heavily upgraded H–6J and H–6K intended to employ more modern munitions. The H–6K and H–6J carry six supersonic long–range YJ–12 ASCM capable of ranging warships out to the Second Island Chain. Older H–6 bombers more closely resemble its base design, the Tu–16, while newer variants display redesigned wing roots, modern sensors and avionics, removed bomb bays, and an expanded weapons loadout, capable of carrying six missiles versus the four missile capacity of legacy platforms. [67]

Figure 16: (Top left then clockwise) KJ–2000, KJ–200, KJ–500 AEW&C aircraft, Y–20 transport aircraft[68]

Special Mission Aircraft (SMA)

PLAAF SMA are primarily airborne early warning and control platforms, tanker aircraft, and electronic intelligence (ELINT) gathering aircraft. AEW&C aircraft include the KJ–2000, KJ–200, and the KJ–500. Additionally, the PLAAF fields ELINT variants such as the Y–8CB. The PLAAF also fields dedicated standoff jammer aircraft, the older GX–3 and the newer GX–11, which are based on the Y–8 and Y–9 airframes. In addition to these larger platforms, the PLAAF has begun procurement of the J–16D, a dedicated escort jammer. As of early 2024, the PLAAF has fielded over 35 tankers composed of a mix of primarily YY–20Us and a small number of Y–6DUs and a couple IL–78s.

Uncrewed Aircraft Systems

The PLAAF maintains several units that operate an array of uncrewed aircraft systems (UAS) that vary in size, range, and mission type. PLAAF–operated systems include high–altitude long–endurance systems like the WZ–8, WZ–9, WZ–7, and WZ–10, medium–altitude long–endurance systems like the BZK–005, GJ–1, and GJ–2; and some longer–range systems. UAS are used for surveillance and reconnaissance, testing and training, targeting and battle damage assessment, logistics, data relay and communications support, and information operations, including SEAD. UAS have become an important component of the PLA's command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) architecture. The PLAAF has also begun fielding more systems capable of conducting what PLA academics refer to as "integrated reconnaissance and strike" and has begun experimenting with crewed–uncrewed teaming (CUC–T) to include the GJ–11, other models displayed at the 2025 PLA military parade, and other systems undergoing testing in western China.

SAM Systems

Having transitioned its legacy AAA to the reserves, the PLAAF ground air defense branch is composed of a variety of modern SAM systems. On the indigenous side, the Chinese HQ–9B features mid– to long–range missiles with active radar–homing capability with ranges of around 250 km (135 NM).[69] The PLAAF has deployed HQ–19 ballistic missile defense systems across the TCs. The PLAAF is in the process of adopting the HQ–29 anti–ballistic missile system. China maintains a smaller inventory of imported Russian systems, including a mix of S–300 variants and the S–400. It is believed that these Russian systems are primarily operated by units based in the ETC, NTC, and CTC, with a focus on the areas around and approaches to Beijing. The Beijing area has the highest concentration of fixed SAM sites.

Figure 17: HQ–9 Mobile SAM System

Force Employment

Layered air defense and offense

PLA military thought increasingly emphasizes proactive air defense. Offensive counter-air (OCA) and defense counter-air (DCA) occurs in tandem with air-to-ground attacks against terrestrial enemy assets, aircraft on runways and in shelters, and facilities and infrastructure needed to conduct air operations. PLAAF planning appears to prioritize regional protection for Beijing and adjoining coast from enemy air attacks. As currently conceived, air defense campaigns are typically organized geographically and employ layered defense in–depth using fighter aircraft and long–range and shorter–range SAM systems. Alternatively known as the “air strike” or “air raid” campaign, the PLAAF’s concept of an air offensive campaign mainly entails air–to–ground attacks against military formations, supply and transportation lines, and political, economic, or other military targets. Such a campaign can occur either independently or jointly as part of a larger military operation.

Combined offensive strike

PLAAF standoff strike capabilities have evolved into an integral part of a joint firepower strike against enemy surface and ground targets. Joint firepower strike combines air–launched cruise missiles (ALCM) with PLARF ballistic missiles, reducing an enemy missile defenses’ ability to counter and defeat the attack. Following the transfer of PLAN shore-based fixed-wing strike and bomber aircraft to the PLAAF, the air force now controls most of the PLA’s aircraft capable of airborne anti-ship strikes, as well as all long-range bombers. These forces would provide the primary kinetic air component of a multi-domain joint fire strike against surface combatants, thereby increasing the burden on shipborne missile defense systems.

Airborne Campaign

PLAAF airborne campaigns seek to parachute troops behind enemy lines, either in support of joint operations or on independent missions. The PLAAF is the force provider for both the airborne troops and the aviation assets for these missions. Once inserted, airborne forces could be directed to sabotage key enemy military and economic infrastructure, cut off enemy front lines from support or reserve forces, or seize other key infrastructure such as airfields. PLA doctrine seems to recognize that these campaigns can be extremely difficult to carry out successfully. Airborne campaigns would require the PLAAF to carry out SEAD before bringing in large, low–flying transport aircraft. Once on the ground, airborne forces would likely need air cover, tactical mobility, supplies, and perhaps aerial firepower support to accomplish their mission.

Examples of Force Employment

A notional example of a PLAAF assault on targets on Taiwan would involve a mix of supporting ISR and standoff jammers, air cover formations, and an assault force. Prior to this notional operation, PLARF fires would likely be used to degrade enemy IADS and C4ISR capabilities to prepare the battlespace for a PLAAF follow–on operation. The first line of an assault formation would be assault and cover formations of multirole aircraft covering the northern, central, and southern portions of the assault formation. Standoff jammers and potentially uncrewed ISR platforms would be meshed into this frontline cover formation to provide ISR and EW support to the formation. Behind this cover force are airborne ISR and EW platforms that are more critical to managing awareness of the battle space and coordinating operations within the area of operation, such as AEW&C platforms. In the rear of the formation will be separate bomber assault groups that will launch standoff munitions, or if enemy air defense has been sufficiently destroyed, drop gravity bombs. Prior to this notional assault, the PLAAF will seek to secure information superiority by coordinating its own efforts with the ISF, and perhaps the CSF. Additionally, the PLAAF may choose to operate after preparatory fires are complete.

Training priorities

Overall Priorities

PLAAF training has increased in tempo and adjusted to incorporate more training to employ the capabilities it has been seeking to acquire through its modernization campaign. The PLAAF has begun to prioritize training for long–range offensive strike, maritime strike, joint air defense, EW, and the sustainment of combat operations. Joint air defense training typically consists of SAM units from different services working with radar units from different services to pass target information or track targets between different areas covered by the PLAAF, PLAA, and the PLAN. These changes to PLAAF training are focused on what the PLA refers to as "actual combat conditions," which include training and exercise scenarios meant to mimic real–world battle conditions. Such an emphasis reflects an acknowledgment by senior leaders that the PLA must reorient itself to be able to fight and win wars against highly capable military competitors. Elements of this training include pilots creating their own flight plans and conducting aerial intercepts that are not completely pre–scripted. The PLAAF has increased its use of confrontation training.

Since 2015, the PLAAF has been undertaking longer–range bomber flights and maritime strike training into the Western Pacific and has begun conducting this training with fighter and EW aircraft escorts. Given the PLAAF's counter–intervention mission, this training is becoming more frequent. Similar to its efforts at improving maritime strike, PLAAF units have also been increasingly training to conduct long–range strikes. This can take the form of H–6 formations practicing simulated strikes on Guam or strike capable multi–role fighters or fighter bombers flying trans–regional flights within the PRC to conduct simulated or live munitions strikes on training ranges. The PLAAF has also begun training more frequently to employ EW assets in escort jamming and SEAD/DEAD capacities as well as training under contested electromagnetic conditions, especially during national training exercises. However, the ease with which the PLA can close off airspace and the electromagnetic spectrum for routine training allows the PLAAF to more frequently train to operate in a contested electromagnetic environment.[vii]

While the PLAAF has long been training for out–of–garrison operations, it has more recently begun experimenting with various methods of sustaining operations out of garrison for longer periods of time. This has taken the form of testing the mobility and performance of smaller emergency support detachments from aviation brigade maintenance squadrons or slightly larger support units composed of both maintenance squadron and airfield station personnel. These groups have conducted limited training in attempts to generate estimates of minimum sustainment needs of distributed operations and maximize the speed at which aviation support can be provided to disbursed units. The PLAAF has progressively conducted more joint training at lower echelons. The PLAAF has begun training with PLAA logistics units to be able to use PLAA supplied petroleum, oil, and lubricants and other common use supplies. The PLAAF has claimed to have regularized joint training with the PLA naval aviation and PLAN surface combatants. These efforts involve employing joint air formations of special mission aircraft and fighters, ground–based radars, SAM systems, against opposition forces of surface combatants and fighter aircraft. The PLAAF has also provided opposition force advisors to PLAA air defense units for brigade–level exercises.

[vii] In China, the PLA controls all of the airspace and grants it back to commercial airlines, in the U.S. the civil Federal Aviation Administration (FAA) controls the airspace and grants portions back to the military.

National Training Exercises

The PLAAF has continually improved its training exercises to better integrate its modern capabilities into its capacity to conduct operations. The PLAAF has five major annual training events and competitions that best represent what the PLAAF's contemporary training focuses upon. These exercises are Red Sword [红剑], Blue Shield [蓝盾], Golden Helmet [金盔], Golden Dart [金箭], and "Qingdian" [擎电].[viii]

Red Sword is the PLAAF's largest exercise in terms of participating units and is a force–wide exercise roughly similar to the U.S. Air Force's Red Flag. Blue Shield is an exercise designed to test the capabilities of the PLAAF's ground–based air defense forces, specifically SAM systems and supporting radar and information systems. The PLAAF also appears to have introduced a Golden Shield air defense competition. The Golden Helmet competition is an air–to–air combat competition designed to improve and assess pilots' skills and capabilities in combat conditions. The Golden Dart competition focuses on air–to–ground attack by attack and bomber aircraft. The newest annual exercise, Qingdian, focuses on EW.

These exercises and competitions have grown increasingly complex and now integrate a wide range of PLAAF assets. For example, Red Sword has begun integrating airborne forces, along with 5th–generation aircraft, standoff and escort jamming, and airborne early warning capabilities. Additionally, joint and integrated air defense exercises are becoming more prevalent. This is exemplified by air defense units and radar units from different services exchanging target data.

Organization and C2

Evolving Command Architecture

The PLAAF is organized into five Theater Command Air Forces (TCAF)s. Within each TCAF, Air Defense Bases[ix] serve as the intermediate echelon, exercising command over subordinate radar, SAM, and fighter aviation brigades. Other aircraft and units—such as transport, bomber, and special mission aviation forces—are not assigned to these bases and instead report directly to the TCAF level due to their operational roles and limited numbers. While air defense Bases are primarily responsible for air defense in their AOR, major offensive strike and joint fires capabilities are subordinate to TCAFs. From a command perspective, the PLAAF—historically centered on ground-based control—is shifting primary command authority to airborne platforms, including AEW&C aircraft and, in some cases, flight leads in combat aircraft. Ground-based command posts remain in place, but increasingly serve as secondary or backup nodes.

Air Defense Bases

In late 2011, the PLAAF abolished at least four air–division headquarters (HQ) and created four Bases: the Dalian, Nanning, Shanghai, and Urumqi Bases. These Bases became Air Defense Bases in 2017. The PLAAF upgraded about 15 regiments to brigades and subordinated them under the four Bases. Each Base is responsible for C2 of the aviation brigades, SAM, and radar units in their area of operations. They also coordinate with PLAA and PLAN units in their area of operations for joint training. This situation did not change until early 2017, when the PLAAF migrated the rest of its tactical air fleet into a brigade structure by converting its remaining fighter and fighter–bomber units into brigades.

The PLAAF also abolished the relevant air division HQs, and created at least seven Bases from existing command posts and two former military region air force (MRAF) HQs. Specifically, the former Lanzhou and Jinan MRAF HQ were downgraded and renamed Bases, and the former Wuhan, Lhasa, Kunming, Datong, and Fuzhou command posts were renamed Bases. Each Base is now subordinate to their respective TCAF HQ. Beginning in late 2017, at least two of the bases, Lhasa and Fuzhou, were renamed Air Defense Bases. The new Air Defense Bases have also been given responsibility for conducting C2 for each subordinate unit, which implies that previously the C2 went directly from the TCAF/MRAF HQ to the relevant units.

[viii] Qingdian has no official English translation.
[ix] In the PLA, a Base (with a capital B) is a standing organizational structure, which may include one or more physical locations, also known as a base (with a small b). This publication uses "Base" to denote the organizational structures, and "base" or "garrison" to denote a specific military geographic location.

Aviation Unit Organization

The nomenclature for PLAAF aviation can be confusing, as it differs from U.S. Air Force terminology. As mentioned earlier, the largest fighter unit formation in the PLAAF is called a “brigade.” This formation has a similar number of aircraft as a U.S. Air Force fighter squadron, 24 to 36, but it also owns its own support units that in the USAF would be subordinate to a U.S. Air Force aircraft group. A PLAAF aviation brigade consists of three USAF flight–equivalents, a maintenance flight equivalent, a repair shop, and a unit that manages the physical airfield infrastructure called an “airfield station.” The previously mentioned “flight equivalents” are battalion–level organizations and are called “flight groups” in the PLAAF. Each group has roughly eight to ten airframes divided into two company–level “flight detachments,” which they call “squadrons.” A similar structure exists for transport and special mission aircraft, however, the largest formation for these units is a division. PLAAF divisions are slightly larger than a PLAAF brigade in terms of both personnel and aircraft and maintain a similar structure of subordinate units. PLAAF divisions have subordinate flight regiments, maintenance elements, and airfield stations. PLAAF divisions are analogous to USAF groups. On average, each aviation unit, be that an aviation brigade or regiment, maintains a pilot–to–aircraft seat ratio of somewhere between 1.2 for fighter units and 1.5 for bomber and special mission aircraft units.

Airborne Branch[x]

Unlike in the U.S. military, the PLAAF is responsible not only for “delivering” troops from its subordinate Airborne Branch to their landing zones, but also for the creation and training of the airborne units themselves. Doctrinally, China has emphasized the use of the airborne branch to deploy troops behind enemy lines to seize airfields and conduct sabotage operations alongside PLA special operations forces units. The Airborne Corps is a Corps Leader grade command (Loosely analogous to a two–star command in the U.S. system) and it oversees a force of six combined arms airborne brigades, an airborne special operations brigade, and a fixed–wing transport brigade. This one transport brigade is predominantly to provide an organic lift capability for training purposes and some limited operations, with other PLAAF transport divisions provide the bulk of airlift for the Airborne Corps.

Figure 18: PLAAF Paratroopers[70]

[x] In the PLA, the Airborne forces/troops are in the PLAAF, unlike in the U.S. military where the troops are in the army with the USAF providing air lift only

Figure 19: PLAAF fixed radar station, Western TC Air Force[71]

Radar Branch

When first integrated into the PLAAF in 1950, radar troops were charged with providing early warning for air defense. Today, the PLAAF has three basic types of radar sites. The first type is located at airfields and is used primarily for air traffic control and for senior officers in the control tower to vector pilots towards their targets. The second type consists of radars located in key areas for long– and medium–range detection along China's borders. Most of these radars are located on mountaintops. The third type consists of over–the–horizon radars near China's coastline that are used for early warning. Besides over–the–horizon, the PLAAF's aviation and SAM units have radars that are indigenous to those units and are considered specialized units.

Surface to Air Missile (SAM) Branch

The PLAAF maintains a SAM Branch that operates SAM brigades throughout the PRC. SAM brigades maintain subordinate battalions. SAM units have radar and technical support units. SAM units train to operate from both fixed sites and from dispersed locations. A battalion of HQ–9s typically consists of eight launchers and associated support vehicles, but the size of the unit largely depends on the type of system it employs. SAM brigades are garrisoned mainly in urban areas, with fixed sites near key installations such as airfields.

Specialized Units

In addition to the five combat branches described above, the PLAAF also maintains specialized units for communications and chemical defense. Communications troops perform functions related to communications, navigation, and automated command support to the PLAAF. Chemical defense troops, which include nuclear, biological, and chemical defense, are charged with decontaminating PLAAF locations or assets affected by not only chemical but also radiological weapons. The PLAAF also has its own subordinate engineering units that are responsible for constructing and repairing airfields.

Figure 20: Chang Dingqiu circa 2019[72]

Leadership and Personnel

Leadership

The PLAAF leadership structure is dominated by fighter pilots, particularly at the TCAF Deputy Commander level and above. Other pilots, such as transport and bomber pilots, traditionally top out as division leader grade officers, while other officers, such as radar branch officers, can only top out as brigade leader grade officers.

The current commander of the PLAAF, General Chang Dingqiu, is the youngest general to assume command of the PLAAF, and his career experience heralds a change in the force. Not only is Chang the first 4th–generation aircraft pilot to command the PLAAF, but he also has the most joint command experience. This joint experience includes serving on the CMC Joint Staff Department (JSD) and serving as a deputy commander of the STC. In addition to his more modern career experience, Chang is also a proponent of modernizing the PLAAF's pilot training regime as well as providing more comprehensive care to pilots, such as mental health services, to improve pilot performance. Chang's predecessor, General Ding Laihang, was placed under investigation in 2023 and removed from the National People's Congress.

NCO Corps and Education

The PLAAF recruits non–commissioned officers (NCO) either from candidate pools of highly skilled civilians or promoted out of the ranks of two–year conscripts.[xi] While it has always been reliant on a core of NCOs, the NCO corps began to expand in 2009 as part of a program to shift the enlisted force to be predominantly composed of NCOs instead of conscripts. Depending on their specialty, NCOs can receive formal training at one of the PLAAF's universities or academies that have a specific NCO program. For example, the PLAAF Engineering University has an NCO program. However, there is only one PLAAF institution dedicated to educating NCOs—the PLAAF Communications NCO Academy. Ultimately, many of these NCOs will already have or will earn a college–level degree, although frequently this degree will be equivalent to a three–year degree, similar to an associate's degree in the United States.

[xi] In the PLA, all junior enlisted members are referred to as "conscripts" even if they join voluntarily, which many do.

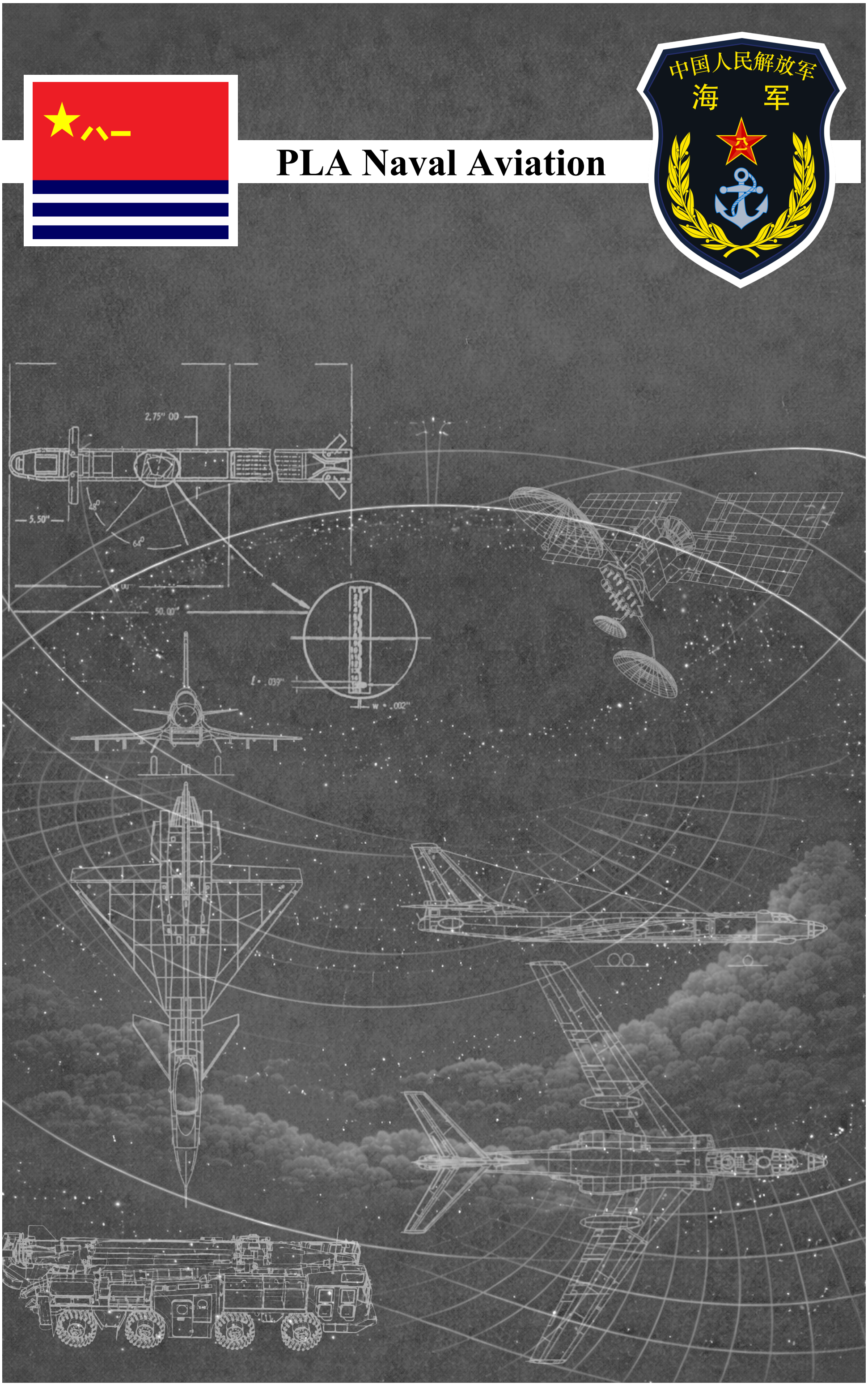
Officer Education

Officer education is primarily conducted by the five undergraduate academic institutions that provide the bulk of the PLAAF's officers. Those institutions are the PLAAF Engineering University, Aviation University, Early Warning Academy, Medical University, and Service College. Most of these officers will receive degrees in a STEM–related field, with a growing emphasis in fields relevant to information technologies.

Pilot training in the PLAAF has undergone substantial reform in recent years. The previous four–year pipeline consisted of one year each of basic, intermediate, advanced, and on–unit platform training. The introduction of the JL–10 advanced jet trainer, the centralization of training brigades by aircraft type, and the shift of intermediate training to PLAAF Aviation University have shortened the timeline to three years for most new pilots.[73] This training program centralization takes more of the transition training burden off combat units and allows pilots to show up combat ready and platform qualified, like a Formal Training Unit (FTU) in the U.S. Air Force.

Once an officer commissions into the PLAAF, they will periodically return to one of these institutions to receive a graduate degree in their specialty. However, if they are what is called a "commanding officer," which means anyone who has any leadership position, they return to the PLAAF's Command College in Beijing for mid–level professional military education (PME) and receive only a certificate. At the more senior levels, PLAAF officers will attend the PLA's National Defense University (NDU) for additional joint PME (JPME), where they also receive only a certificate.

PLA Naval Aviation



PLA Naval Aviation

Overview

The PLAN has used a variety of aircraft and other aviation–related forces to support coastal defense and gradually venture further from shore to pursue strategies of "Near Seas Defense"[xii] and "Far Seas Protection" of China's interests. As PLAN vessels have traveled further from China's shore–based defenses, they have become increasingly reliant on aviation forces for situational awareness and defense.[xiii] This chapter will focus on PLA naval aviation forces, such as fixed and rotary wing aircraft, aircraft carriers, and air defenses. These PLAN forces fall under one of the three TC Navies (TCN) in the PLA's ETC, STC, and NTC. There are no PLA naval aviation units in the WTC or CTC.

History

From the PRC's founding in 1949 until the mid–1980s, China's strategic concept for PLAN operations was limited to coastal defense, which emphasized defending China's coast from amphibious invasion, presumably by Taiwan and U.S. forces.[74] The PLAN created a Naval Aviation Branch in 1952 to incorporate aviation forces into this strategy.[75] During the Vietnam War, PLA naval aviation forces were tasked with defending PRC airspace and engaged U.S. aircraft when they intruded into that airspace.[76] PLAN bombers and fighters also reportedly participated in air assault and escort missions during the 1955 Battle of Yijiangshan Islands in the first Taiwan Strait Crisis. PLAN officers consider these successful island seizures an early example of joint operations.[77]

Figure 21: February 1953, Mao inspects the PLAN warship Luoyang.

Beginning in the late–1980s, the PLAN established a strategy of "Near Seas defense," that focused on regional goals and deterring a modern adversary from intervening in a regional conflict.[78] Near Seas Defense is often associated with operations in the Yellow Sea, ECS, and South China Sea (SCS). As this strategy developed, PLA naval aviation forces gradually improved their ability to operate over water in some of these areas to offer limited support to

Figure 22: 1991 propaganda poster titled "Naval Exercise"

[xii] The term "Near Seas Defense" is also translated as "Offshore Defense",
[xiii] For more information on the roles of aviation forces in PLAN power projection, see Asia Maritime Transparency Initiative's interactive report "*BY AIR, LAND, AND SEA: CHINA'S MARITIME POWER PROJECTION NETWORK*" at https://amti.csis.org/power–projection–network/.

surface vessels. By the late 1990s, PLAN aircraft began to fly sorties over the Taiwan Strait. PLA naval aviation forces, along with the PLAAF, began flying frequent sorties across the Taiwan centerline and into Taiwan's ADIZ between Taiwan and Pratas (Dongsha) Islands in the SCS in February 2020.[79]

In the 2010s, the PLAN expanded its naval strategy to "Near Seas Defense and Far Seas Protection" to reflect its increasing reach. As its surface vessels reached further from China's shores, so did its aviation forces. In 2013 and 2014, PLAN bombers and anti–submarine warfare (ASW) aircraft conducted their first flights into the Western Pacific through the Miyako Strait and Bashi Channel. China's first aircraft carrier, commissioned in 2012, signaled a new age for PLA naval aviation, heralding the transition from an almost exclusively land–based force to one with a sea–based component.[80] The PLAN has actively expanded this component with a second carrier commissioned in 2019 and a third launched in 2022, rapidly expanding its ability to project air power into the far seas.[81] Indeed, the PLAN's transfer of most shore–based aircraft to the PLAAF in 2023 may allow it to focus on developing shipborne aviation, particularly on its carrier–borne fleet.[82]

Missions

The PLA has broadly described PLA naval aviation missions as maritime airspace protection and support of surface ship operations in coastal and maritime areas.[83] However, PLA naval aviation would likely be expected to play a role in several of the strategic missions associated with the PLAN as a whole, such as various Taiwan–related scenarios, coastal defense, and protecting maritime sovereignty, including in disputed areas in the ECS and SCS.[84]

The PLAN is expected to be prepared for a variety of Taiwan–related scenarios, from simply deterring Taiwanese moves toward independence to large–scale invasion. In an invasion and occupation contingency, carrier–based PLA naval aviation forces could be involved in firepower strikes, blockade establishment and enforcement, and countering intervention from third parties such as the U.S. The PLAN has continued to develop its maritime strike and ASW) capabilities, which would be expected to play a role in the coastal defense and potentially the maritime sovereignty mission. As the PLAN pushes its aircraft carriers further from shore and becomes increasingly comfortable operating from its airfields in the SCS, PLA naval aviation could conceivably expand involvement in other PLAN missions, such as protecting sea lanes of communication (SLOC)s and perhaps even the PRC's overseas interests.

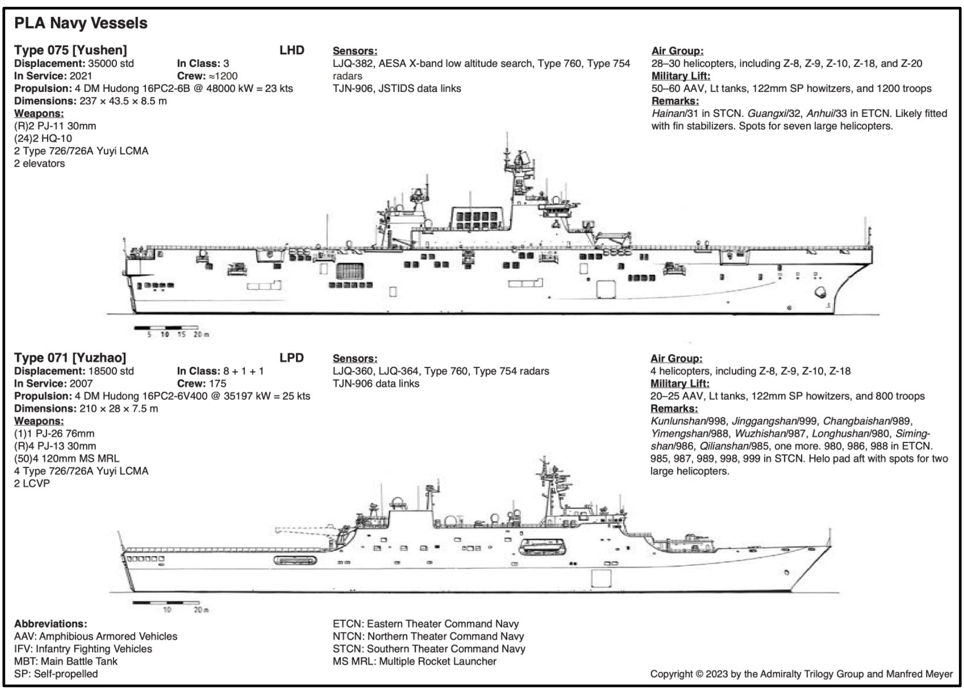


Figure 23: Line drawings and systems overview of Type 075 LHA and Type 071 LPD[85]

Modernization Priorities

As part of recent initiatives for broader PLAN modernization,[86] PLA naval aviation has benefited from many developments, with priority given to carriers, carrier–based aircraft, and air defense. China launched its third aircraft carrier, the *Fujian*, in 2022 and has begun operating as a multi aircraft carrier force in 2024.[87] This prolonged trial period is driven in part by the integration of several new technologies and aircraft types.

Figure 24: Nose–on image of PLAN aircraft carrier Shandong (CV–18) with J–15 fighters, and rotary wing on deck

The *Fujian's* flat–deck configuration and catapult system represent a transition toward a more self–contained and expeditionary carrier aviation capability able to operate beyond the range of land–based support.[88] Because China's two other "ski–jump" based carriers rely on short takeoff profiles and fighters with limited fuel and endurance, they have remained dependent on shore–based command–and–control and ISR aircraft to provide wide–area battlespace awareness. While this model has been sufficient for operations within the First Island Chain or for short–duration surges beyond it, it has not been sufficient for sustained power projection that requires carrier air wings capable of generating organic airborne early warning, command, and EW functions. The coupling of the flat deck with an electromagnetic catapult launch system will also allow the Fujian to operate with various types of fixed–wing aircraft for missions such as airborne early warning (AEW) and EW, providing the enabling capabilities for better power projection.[89] China's two ski jump based carriers, on the other hand, are limited to operating only J–15 fighters.[90]

Figure 25: "The Fujian aircraft carrier is commissioned! Heading towards the deep blue sea!"

In addition to the development of aircraft carriers, the PLAN has begun experimenting with ways to extend fixed–wing aviation capabilities across a broader range of hull types. Launched in 2024, the Type 076 (Yulan–class) amphibious assault ship, officially named *Sichuan*, represents a pivotal expansion of PLA naval aviation by integrating a catapult into an amphibious platform. As of 2026, the *Sichuan* was undergoing sea trials and was staged as a "drone carrier," as evidenced by deck mock–ups of the GJ–21 stealth

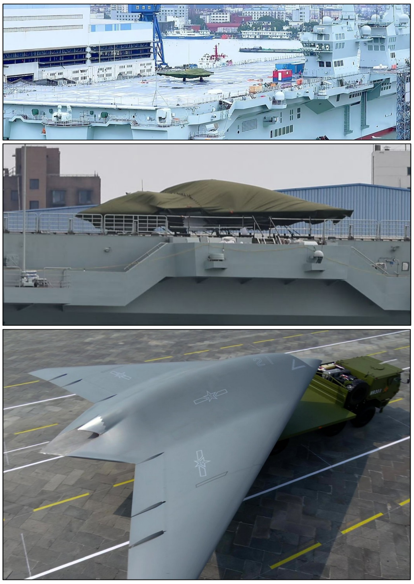


Figure 26: GJ–21 on LHA (source: Vietnam state media)

uncrewed combat aerial vehicle (UCAV).[91] While it is not yet certain that the J–35 stealth fighter will operate from this class, the inclusion of a catapult could enable such deployments, effectively transforming landing helicopter assault (LHA) vessels into "light aircraft carriers" capable of generating significantly more firepower than previous amphibious hulls, which were limited to rotary–wing aviation. In the context of a Taiwan–related invasion scenario, this development would provide a critical increase in vertical lift and organic air support, allowing the PLAN to project persistent strike and ISR capabilities into an adversary's depth without the fuel and ordnance penalties inherent to short takeoff or rotary–wing–only operation. The PLAN has also focused in recent years on improving air defense for its surface fleet. Newer ships, such as the LUYANG–III class destroyer and RENHAI class cruiser "feature modern combat management systems and air surveillance systems such as the Sea Eagle and Dragon Eye phased–array radars."[92] These systems allow one or two vessels to provide air defense for an entire task group, allowing surface forces to more safely operate outside of shore–based air defenses. These vessels also feature vertical launch cells that increase the number and variety of missiles available for air defense and other PLAN missions.

Forces

2023 PLA Naval Aviation Reorganization[93]

In 2023, the PLA transferred a majority of PLA naval aviation units to the PLAAF, including most of its land–based fighter, bomber, radar, and air defense units as well as some airfield units. This wholesale transfer of units, personnel, equipment, and facilities marked a major shift in the PLAN's aviation force makeup, paring its fixed–wing component to mainly carrier–based fighters, special mission aircraft, and UAS. It also maintains its helicopter units, several aviation training units, HQs aviation elements, and select airfield stations. Neither the PLA nor PLAN have explicitly explained this major reorganization, but a major factor may have been allowing (or forcing) the PLAN to focus more on building a mature carrier–based aviation force.

This reorganization has significant implications for PLA operations. The PLAN's loss of significant maritime strike platforms will require it to leverage joint partners for those capabilities. This may put more stress on the theater joint command system, but also likely indicates the PLA's growing trust in that system. The transfer of H–6 bomber variants and JH–7 fighter–bombers aircraft also stripped the PLAN of most of its aerial minelaying capability, although it retains a growing fleet of KQ–200 ASW aircraft that train in minelaying. It is not yet clear whether the PLAAF will integrate minelaying into its H–6 or JH–7 training.

The PLA's transfer of all PLAN ground–based air defense and radar units to the PLAAF also unified regional air defense under TCAFs. Most regional air defense was already handled by PLAAF units prior to 2023, but PLAN units appeared to be responsible for limited areas in the Eastern and Southern TCs. By aligning those capabilities under TCAFs, the PLA simplified air defense responsibility and may have minimized the potential for problems handing targets off between service components.

Figure 27: Cadets from the Naval University of Engineering and the Naval Aviation University formed the phrases "calm and composed (从从容容)" and "effortless mastery (游刃有余)" on the flight deck of the amphibious assault ship Changbai Shan

Unit / Organization	Primary Base(s)	Aircraft / Role	Notes
Carrier–Based Aviation & Carrier Air Wings			
1st Aircraft Carrier Regt (Liaoning CV–16 air wing)	Huangdicun NAB (Xingcheng, NTC)	J–15, J–15T, J–15D; Z–9S, Z–18F/JA (helos)	*Ski–jump carrier; J–15T confirmed aboard Nov 2024***
2nd Aircraft Carrier Regt (Shandong CV–17 air wing)	Lingshui AB (STC)	J–15, J–15T, J–15D; Z–9S, Z–18F/JA (helos)	*Ski–jump carrier; J–15T confirmed aboard Nov 2024***
10th Carrier–based Avn Bde (Fujian CV–18 air wing)	Qingdao Dachang AB (NTC); base under const.	J–15T, J–35, KJ–600, J–15DH/DT; (helos)	*EMALS catapult carrier; commissioned Nov 2025; unit confirmed 2022*
7th Shipborne Avn Bde	Xingcheng AB (NTC)	Z–9CJ (helicopters)	*Formed 2024; shipborne helo unit*
Special Mission Aircraft (AEW, ASW, ISR) — one division per theater			
1st Naval Aviation Division	Shanghai–Dachang AB	KJ–500H (AEW&C), KQ–200 (ASW), Y–9H	*ETC*
2nd Naval Aviation Division	Laiyang AB; Tuchengzi AB	KJ–500H, KJ–200H, KJ–700H, KQ–200	*NTC; KJ–700 new in 2024*
3rd Naval Aviation Division	Lingshui AB; Qionghai Bo'ao AP	KJ–500H (AEW&C), KQ–200/A (ASW), Y–9H	*STC*
Helicopter Units			
ETC Naval Helicopter Regt	Ningbo Zhuangqiao AB	Ka–28/31, Z–9D/DF	*Shipborne ASW, AEW*
NTC Naval Helicopter Regt	Qingdao Cangkou AB	Z–8JH, Z–9C/D, SA.312	*Shipborne ASW, utility*
21st Shipborne Helo Regt	Huangdicun NAB (NTC)	Z–9D, Z–18, Z–18F	*Carrier air wing helos*
STC Naval Helicopter Regt	Sanya AB (Yaxian)	Z–8J/S, Z–9C/D	*Shipborne ASW, utility*
UAV Units			
ETC Naval UAV Regt (1st)	Huangyan AP (Luqiao)	BZK–005H, BZK–006, BZK–007H	*Maritime ISR*
ETC Naval UAV Regt (2nd)	Daishan Island AB	BZK–005H, BZK–006, BZK–007H; TB–001***	*Maritime ISR; former 4th NAD sub–unit*
STC Naval UAV Regt	Jialaishi / Lingshui AB; det. at Fiery Cross Reef	BZK–005H, BZK–007H; TB–001***	*Maritime ISR; SCS fwd presence*
Other Retained Forces			
8th Naval Avn Brigade*	Jialaishi AB (Lingao); det. Woody Island	J–11BH/BGH/BSH	*STC; SCS ground–based fighters; status disputed*
PLANMC Aviation Brigade	Feidong AB (ETC)	Z–8C, Z–9DF, Z–20J	*Marine air assault & LHD ops*
Naval Aviation University & Training Base	Changzhi (Wangcun); Shanhaiguan; Xingcheng; Dalian; Jining; + others	CJ–6A, JL–8H, JL–9H, JL–10H, J–15/S, Z–8CJ, Z–9CJ; JH–7A, J–11BSH (training regts)	*6+ training regts under NAU; 3 under NATB; pilot training, carrier quals, helo shipborne ops*
PLAN HQ Air Regiment	Liangxiangzhen AB	Y–7, Y–8C, Y–9H, CRJ–200/702	*VIP transport, liaison*

* *8th NAB status disputed: Rupprecht (2025) assesses it most likely remains PLAN and may become the first J-35 shore–based unit; some reports suggest transfer to PLAAF.*

** *J–15T (upgraded multirole variant, formerly J–15B) was photographed operating from both ski–jump carriers during the Nov 2024 dual carrier operation.*

*** *TB–001 "Twin–Tailed Scorpion" ASW variant with MAD observed at PLAN airfields (Jul 2022, May 2024); operational status unconfirmed.*

Table 5: PLAN Aviation Forces Retained After 2023 Reorganization[94]

Figure 28: KJ–500 AEW&C Aircraft

Special Mission Aircraft and Uncrewed Aerial Vehicles

The PLAN retained its ground–based special mission aircraft and UAS units after the 2023 reorganization. The PLAN continues to operate a variety of special mission aircraft for activities such as maritime patrol (MARPAT), AEW&C, surveillance, and ASW. Many of these have been modifications of the Y–8, a Chinese license–produced version of the ex–Soviet An–12 Cub.[95] In recent years, they have been joined by various modifications to the newer Y–9. Notable examples of these special mission aircraft are the KQ–200 and the KJ–500.

The KQ–200, also known as the Y–8Q, Y–9Q, or GX–6, is a MARPAT/ASW variant that has been consistently observed monitoring maritime chokepoints in the SCS.[96] The PLAN received its first KQ–200 as early as 2015,[97] but by 2023 there appeared to be over 20 fielded across all three TC naval components.[98] The KQ–200 provides the PLAN with higher speeds, longer ranges/endurance, and greater capacity for ASW equipment and crew compared to rotary–wing ASW platforms. It can reportedly reach speeds of up to 600 km/h (324 NM/h), operate for 8+ hours, and has a range of about 5,000 km (2,700 NM).[99] The KQ–200's key ASW components include a surface search radar, a large magnetic anomaly detector (MAD) in the tail, sonobuoy system, and an electro–optical turret.[100]

The KJ–500 is based on the Y–9 airframe and is the PRC's most advanced AEW&C aircraft. It features a stationary dorsal radome that provides 360 degrees of coverage[101] and a variety of antennae to enable its airborne control mission, likely via voice and datalink.[102] At least one prototype seen at a PLAN operational unit has been fitted with an aerial refueling probe, which would allow it to provide more persistent coverage.[103] These and other special mission variants provide PLAN combatants an increasingly clear and persistent picture of the surface and air environment at progressively greater ranges.

To supplement these manned aircraft, the PLAN has developed, tested, and operated a variety of UAVs for ISR missions. The PLAN has tested various smaller vertical take–off and landing (VTOL) UAVs such as the SD–40, CSC–005, S–100 CAMCOPTER, and AV–500 from various surface combatants.[104] The PRC also operates fixed–wing medium to large size UAVs from land bases, including the high altitude long endurance XIANGLONG and medium altitude long endurance BZK–005.[105] These fixed–wing platforms have deployed to a variety of locations, including PLAN–operated facilities in the SCS.[106]

Carrier Aviation

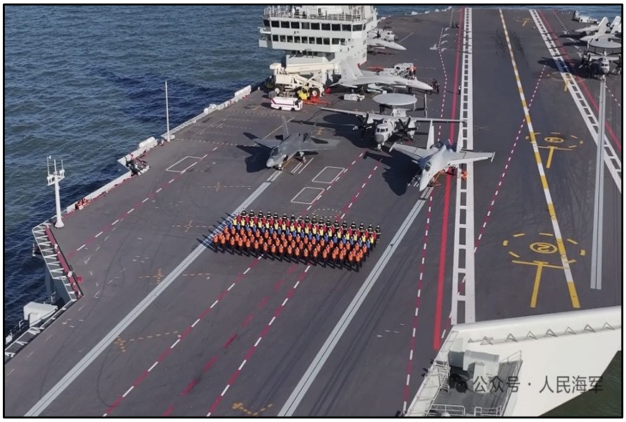


Figure 29: J–15T, J–35 & KJ–600 during sea trials on the Fujian


Figure 30: J–15 with drogues

The PLAN is committed to developing a multi–carrier force, and as of 2025 it has three commissioned carriers. The first carrier is a Soviet Kuznetzov class purchased from Ukraine and then rebuilt and commissioned into the PLAN as the *Liaoning* (CV–16) in 2012. A second carrier, the *Shandong* (CV–17), is a domestically produced variant similar to the *Liaoning* that was commissioned in 2019. These carriers utilize a ski–jump configuration for aircraft takeoff, which restricts takeoff weight, limiting ordnance loads and keeping them from operating with larger specialized support aircraft.[107]

The PLAN launched its third aircraft carrier, the *Fujian*, in 2022. This carrier features a catapult launch system that should make it capable of operating with various types of specialized fixed–wing aircraft for missions such as AEW and EW. As of 2025, the *Fujian* has conducted nine sea trials—likely approaching the number completed by China's previous carriers prior to commissioning—but will probably remain in an extended testing phase before achieving full operational capability.[108]

The Shenyang J–15 fighter is currently the only fixed–wing aircraft operationally certified with China's carriers. The J–15 is externally similar to the Russian Su–33 Flanker D but has many of the domestic avionics and armament capabilities of the Chinese J–11B. The J–15 has folding wings, a strengthened landing gear, a tailhook under a shortened tail stinger, a two–piece slotted flaps, canards, and a retractable in–flight refueling probe on the left side of the nose.[109] Ski–jump takeoff likely limits ordnance or fuel loads on these fighters, but the PLAN also appears to be developing a catapult–capable variant known as the J–15T for use on its future carriers.[110] Another variant, the J–15D, is a dedicated EW version equipped with wingtip electronic support measures/ELINT pods and several conformal antennas.[111]

Ultimately, the PLAN is seeking to replace the J–15 with more modernized fighters as well as modified J–15s that overcome ski ramp takeoff weight limitations. During sea trials aboard the Fujian, the PLAN has demonstrated catapult–assisted launch and recovery of multiple aircraft types, including the J–35 stealth fighter, the KJ–600 airborne early warning aircraft, and the catapult–capable J–15T.[112] In parallel, the PLAN has developed the J–15D carrier–borne EW aircraft, providing an organic jamming and electronic attack capability previously absent from its carrier air wings. The KJ–600, reportedly comparable in role to the U.S. E–2 Hawkeye, would represent a significant improvement over the PLAN's current reliance on shorter–range rotary–wing AEW platforms. Taken together, these developments suggest the PLAN intends to operate a mixed carrier force, with ski–jump carriers continuing to provide regional presence and air defense, while flat–top, catapult–equipped carriers such as the Fujian support higher–end fighter operations and sustained power projection enabled by organic command–and–control, early warning, and EW capabilities.

Helicopters[113]

Figure 31: PLAN Z–9C ASW Variant with Dipping Sonar

The PLAN operates three main helicopter variants: the domestically produced Z–9 and Z–8/Z–18 as well as the Russian–built Helix (both Ka–28 and Ka–31). The primary helicopter operated by the PLAN is the Z–9C. In the early 1980s, China obtained a license from France's Aerospatiale (now Airbus Helicopter) to produce the AS 365N Dauphin II helicopter and its engine. The AS 365s produced in China were labeled as the Z–9, with the naval variant designated Z–9C. The Z–9C is capable of operating from any helicopter–capable PLAN combatant.

The Z–8 is also a Chinese–produced helicopter based on a French design. In the late 1970s, the PLAN took delivery of the SA 321 Super Frelon. A reverse–engineered version was designated the Z–8, which reached initial operational capability by 1989. Low–rate production continued through the 1990s and into the early 2000s. The Z–8's size provides a greater cargo capacity compared with other PLAN helicopters but limits its ability to deploy from most PLAN combatants. The Z–18 is similar in dimensions to the Z–8 and comes in three variants: transport, antisubmarine (Z–18F), and AEW (Z–18J). As with the Z–8, the Z–18's size limits its deployment options, although in recent years the PLAN has expanded those options by introducing Yushen LHAs and Renahi CGs (guided–missile cruiser).[114]

Variants of the Helix were the first imported helicopters operated by the PLAN. In 1999, the PLAN took delivery of an initial batch of eight Russian–built Helix helicopters. Five were Ka–28 Helix–As, and three were Ka–27PS Helix–Ds. An additional nine Helix–As have been delivered, and all 17 are operational. As with the Russian Ka–27s, the exported Ka–28s can perform several mission sets but are usually used for ASW, and the Ka–27PSs are optimized for SAR and logistic support missions. The Ka–28 is fitted with search radar, and dipping sonar, and can employ sonobuoys, a towed MAD[115], torpedoes, depth charges, or mines. In 2010, China purchased nine Ka–31 AEW helicopters and its E–801 radar system from Russia. The Z–18J and Ka–31have provided the PLAN a serviceable sea–based AEW capability to help fill that critical gap until newer catapult–equipped aircraft carriers and catapult–capable fixed–wing AEW aircraft like the KJ–600 enter service.

The PLAN is also developing naval variants of the multi–role Harbin Z–20, such as the ASW–focused Z–20F. This variant will provide the PLAN an indigenous helicopter that is small enough to be compatible with most helicopter–capable surface combatants (unlike the Z–18) but large enough to employ more significant ASW capabilities than the Ka–28. The Z–20F will be used on the PLAN's Renhai CG, Luyang–III destroyers, and possibly its growing fleet of Yushen LHA amphibious assault ships.[116] Four of these LHAs have been completed since 2019, each reportedly capable of carrying an aviation component of up to 30 helicopters, 900 troops with heavy equipment, and landing craft.[117]

Surface Air Defenses and Electronic Countermeasures

The PLA divested the PLAN of any regional air defense responsibility in 2023 when it transferred PLAN ground–based radar and air defense units to the PLAAF. However, the PLAN's fleet of large surface combatants will still likely play a significant role in the PLA's larger IADS. Large combatants like Luyang destroyers and Renhai cruisers have multipurpose vertical launch systems (64 and 112 cells respectively) that can launch a variety of missiles, including SAM varieties.[118]

A naval variant of the HQ–9 SAM known as the HHQ–9 is fielded by the PLAN's larger and more advanced surface vessels, likely with similar ranges of about 250 km (135 NM). These combatants feature modern combat management systems and air surveillance systems such as the Sea Eagle and Dragon Eye phased–array radars.[119] These systems allow one or two vessels to provide air defense for an entire task group, allowing surface forces to more safely operate outside of shore–based air defenses.

In addition to airborne and shipborne self–protection jammers, the PLAN also operates electronic countermeasures (ECM) brigades in each of its three TCNs. PLA reporting has highlighted these brigades training with various ground–based mobile equipment to track and jam simulated "enemy" aircraft and counter missiles.[120] Although public information on ECM and EW equipment is limited, these are presumed to be modern EW systems capable of targeting large portions of the electromagnetic spectrum.

Force Employment

General warfighting concepts

PLA naval aviation forces play a role in both aspects of the PLAN's "Near Seas Defense and Far Seas Protection" strategy. PLAN special mission aircraft act as key information enablers integrated into overall efforts for anti–access and area denial in China's near seas. PLAN ASW variants have been consistently observed monitoring key maritime chokepoints as the PLAN pursues undersea superiority within the first island chain.[121] As the PLAN further develops its aircraft carrier force and operating concepts, carrier formations and their aviation forces will be central to the PLAN's ability to project power into far seas. The carrier *Liaoning* has led formations outside the first island chain,[122] and in 2023 the *Shandong* deployed into the Western Pacific at least three times, including a training exercise in the Philippine Sea during which it deployed J–15 fighters into Taiwan's ADIZ.[123] As noted above, future catapult–equipped carriers will provide carrier formations with better options for AEW&C, ASW, and more advanced fighters. During wartime, well–equipped and coordinated carrier formations could help the PLAN counter adversary interdiction of its key sea lines of communication and potentially be a component of strikes on high–value targets inside the adversary's strategic depth.[124]

Training priorities

PLA naval aviation training priorities have generally aligned with the warfighting concepts described above. China now has three aircraft carriers and is focusing on simultaneous carrier operations. Its two ski–jump carriers have demonstrated the ability to conduct dual–carrier operations in the SCS.[125] CV–17 was deployed three times to the Philippine Sea. All of this is occurring while the average time carrier groups spend beyond the first island chain is increasing to an average of 20 days per deployment.[126] Although the PLAN continues to emphasize joint operations and PLA media has highlighted examples of coordinated training between PLAAF and PLAN aircraft, such training still appears to be somewhat rare. However, the 2023 reorganization likely had some impact on this joint training. First, much of it would no longer be considered joint with nearly all land–based fighters and bombers now aligned under the PLAAF exclusively. On the other hand, joint information sharing may have been improved, as PLA naval aviation's land–based component now consists exclusively of information enablers that had previously supported units that are now transferred to the PLAAF. That formerly single–service support would now be joint, and those existing processes and relationships could help institutionalize more joint information sharing.

Figure 32: Dual carrier operations in SCS[127]

Organization and C2

Operational and administrative control of PLA naval aviation forces is given to the three TCNs, Eastern (ETCN), Southern (STCN), and Northern (NTCN), each of which maintains its own corps leader–grade naval aviation HQs. Within each TCN aviation HQs are subordinate aviation divisions, brigades, and regiments.

Most fixed–wing combat aircraft (although greatly reduced in number with the 2023 handover of certain aviation assets to the PLAAF) are assigned to aviation brigades, which in turn have subordinate flight groups. Helicopters and UASs are assigned to independent air regiments that appear to report directly to the TCN aviation HQ. Special mission aircraft are organized into regiments subordinate to naval aviation divisions within each TCN.[128] At each level, support organizations subordinate to the divisions, brigades, and regiments exist to provide aircraft maintenance and support. Within each theater navy, several regiment–grade airfield stations provide basic airfield services to home–based and visiting aircraft.

PLAN aircraft carriers are division leader–grade organizations subordinate to corps–level aircraft carrier task groups, which in turn are directly subordinate to their respective TCN HQs. As of early 2024, the carrier *Liaoning* falls under the Northern TCN and the *Shandong* under the Southern TCN. Shipboard aircraft are assigned to an element subordinate to the task group to which their ship is assigned. For carriers, this is probably a regiment–sized element consisting of both fighters and helicopters subordinate to the carrier task group. For other formations operating with helicopters, the aviation element would be subordinate to the task group command post.

Operational control of PLAN surface forces and associated aviation elements can be adapted as needed. Most large combatants aside from carriers are administratively assigned to division–level Flotillas,[xiv] but the TCN may assign operational control of individual vessels (and their aviation elements) to task groups as required by mission needs.

PLAN Marine Corps Aviation[129]

The PLAN also maintains a subordinate Marine Corps (PLANMC) with an aviation component. While previously the PLANMC had to rely on other parts of the PLAN for the use of helicopter assets, it now boasts its own 7th Aviation Brigade, which the PLAN established in 2017.[130] The PLAN expects these aviation forces to support vertical landing operations into the adversary's depth. Its pilots appear to be a mix of previously PLAA helicopter pilots transferred to shipborne operations and PLANMC cadets who graduated from the Army Aviation College. The PLANMC has been equipped with a limited number of Z–8 and Z–9 helicopters, likely transferred from the PLAN, and has begun training with PLANMC air assault capable units. Other helicopter types could join the force in the future. The brigade contains at least two flight squadrons and an aircraft maintenance group but will gradually grow as more helicopters and pilots are delivered. These may include the Z–20 medium lift helicopter to provide a flexible multi–mission platform and the Z–10 for close air support. PLANMC pilots have been observed training with a PLAN Yuzhao landing platform dock (LPD) amphibious assault ship in day and night operations, including nighttime hot refueling. The PLAN's new Yushen LHAs are also expected to be essential platforms for PLANMC air assault and vertical landing operations.

Initial and Professional Military Training

Initial Training of Naval Aviators

Most PLA naval aviators attend the PLA Naval Aviation University (NAU) for undergraduate education and training, and all receive flight training at the NAU.[xv] The pipeline for naval aviators has changed several times but generally consists of three years of academic theory with the subsequent three years being mostly dedicated to flight training.[131]

[xiv] Like the term "Base" in the PLAAF, the term "Flotilla" in the PLA is a standing organization which may, or may not, have actual ships assigned to it.

[xv] NAU was created in 2017 by combining the former Naval Aviation College (海军航空兵学院) and Naval Aviation Engineering College (海军航空工程学院). NAU HQ is located in Yantai, Shandong province (山东烟台) and it also has a campus and training base in Qingdao, Shandong Province (山东青岛). The university also has a few flight training bases that are located in Hulu Island in Liaoning Province (辽宁葫芦岛), Changzhi, Shanxi Province (山西长治), Qinhuangdao, Hebei Province (河北秦皇岛) and Jiyuan, Henan Province (河南济源).

A major source of NAU cadets is the Naval Teenagers Aviation School (NTAS) program, which provides early aeronautical classes to students in 14 high schools nationwide.[132] In 2021, 38.6 percent of NAU–admitted pilot candidates came from the NTAS program.[133] A select few NAU cadets participate in a dual–enrollment program (DEP) and receive three years of academic training at civilian universities followed by two years of aviation theory and flight training at NAU.[134]

In 2023, the PLAN further broadened its recruitment pool for naval aviation student pilots to include civilian university graduates for the first time and invited applications from both men and women.[135] Upon selection, these student pilots would complete two months of initial entry training and then 3–4 years of aviation theory study and flight training in initial trainer, intermediate/advanced trainers, and combat aircraft transition training. This initiative may indicate that the PLAN was having trouble developing enough qualified pilots with previous pipelines and is especially interesting given its launch precisely as the PLAN was losing many of its aircraft to the PLAN.

Training for Carrier–borne Fighter Pilots

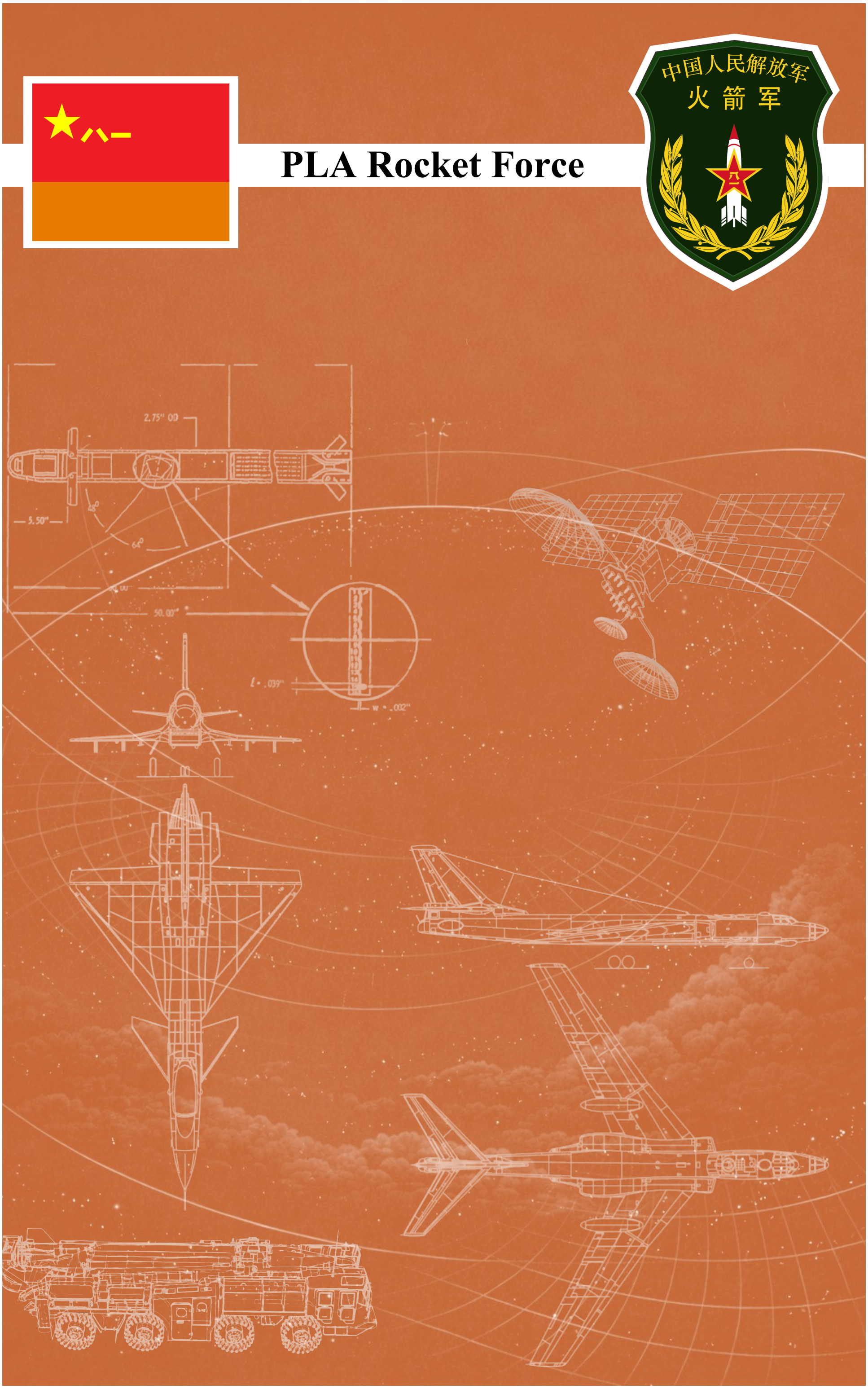
The PLAN especially emphasizes training for its carrier–borne fighter pilots. Carrier–borne fighter pilots were once mainly sourced from seasoned pilots in PLAN units, but in 2020 the PLAN began recruiting high school students as cadets bound for these aircraft.[136] After completing their bachelor's degree, these cadets complete land–based flight instruction and then transition to carrier–based training.[137] During flight instruction, the student to instructor ratio is usually between three and four to one, but may reach as high as six to one.[138] Occasionally, PLAAF pilots will also transfer from PLAAF aviation brigades to one of the PLAN's carrier–based fighter units.

Training for Shipborne Helicopter Pilots

In 2020, the PLAN reported it had begun to include shipborne operations training to its pipeline for helicopter pilots, including ship landings within their first year of flight training.[139] Prior to this, NAU only provided basic skills training for helicopter pilots, and training for shipborne operations was conducted after pilots arrived at operational units. This caused a burden on operational units, impacted combat readiness, and led to different standards of training depending on units. Shifting these items to the curriculum at NAU reportedly alleviated these issues.

Professional Military Education

As with the overall PLAN, aviation officers receive PME at the battalion, regiment, division, and potentially corps levels. PLA naval aviation officers complete tactical–level education below the division level and thereafter attend PME back at the source of their commissioning, which for PLA naval aviators is NAU. At about the corps level, officers may attend PLAN command college or joint PME at the PLA's NDU. In either case, this is likely their first PME experience alongside students from other warfare disciplines as earlier experiences would have kept them within their skill community. In recent years, PLAN PME has begun to focus more on science, technology, engineering, and math (STEM) fields as opposed to a previous system of majoring only in the warfare discipline to which an officer was assigned.



PLA Rocket Force

PLA Rocket Force (PLARF)

Overview

History

Re–designated on December 31, 2015, as the PLARF, the PLA's missile component began as the PLA Second Artillery Force (PLASAF) in 1966.[xvi] At the time, the PLASAF was given command of the country's modest land–based, regional nuclear missile inventory. These 1st–generation missiles were widely regarded as unsophisticated, with limited range and capabilities. Beijing's nuclear strategy evolved from early ideological dismissal of atomic weapons to a cautious quest for an independent (non–Soviet) deterrent. In the late 1940s and early 1950s, Mao treated nuclear weapons as a "paper tiger," but the Korean War and exposure to Soviet military thought forced Beijing to recognize its nuclear vulnerability to the United States. Frustration with Moscow's refusal to transfer nuclear weapons or delegate operational control over Soviet nuclear forces intended to deter attacks on China accelerated Beijing's turn toward an independent nuclear program in the late 1950s. The PRC's first nuclear test in 1964 was a symbolic assertion of great–power autonomy and status, while the PLA's underlying posture remained defensive and conventionally oriented.[140]

Milestone	***Date***
First nuclear test (fission device)	*Oct. 16, 1964*[141]
First missile–delivered nuclear warhead	*Oct. 27, 1966*[142]
First thermonuclear (H–bomb) test	*Dec. 28, 1966*[143]
First air dropped H–bomb test	*Jun. 17, 1967*[144]

Table 6: Key dates in the PRC's early nuclear weapons development

The evolution of the PLARF can be divided into five distinct eras, defined by major shifts in propulsion technology and fuel types, basing modes, mission sets, and overall force structure. The most significant transformation has been the rapid expansion of operational units, with the number of identified launch brigades increasing from 22 in 2005 to 41 since at least 2020, and the development of advanced technologies, such as hypersonic glide vehicles (HGV).[145] This growth is expected to continue as additional brigades are formed to operate the three large intercontinental ballistic missile (ICBM) silo fields under construction since 2021.

PLARF development "Era"	***Years***	***Core characteristics***	
I: Foundational Liquid–Fuel	1960–1990	• Liquid fuel • Fixed silos	• Nuclear–only deterrence focus • Small brigade count
II: Mobile Solid–Fuel Expansion	1990–2000	• Solid fuel adoption • Road mobility	• Introduced conventional missile roles • Gradual brigade expansion
III: Conventionalization & Precision	2000–2010	• Scaling precision strike • Rapid Bde expansion	• Cruise missile integration • Strengthened mobile ICBM capability
IV: Dual–Capable & Counterintervention	2010–2017	• Anti–ship capability • Dual nuclear–conventional	• Extended regional reach (e.g., Guam) • Significant structural growth
V: Hypersonic & Rapid Expansion	2017–present	• HGV development • MIRV–capable ICBMs	• Rapid Bde expansion • Large–scale silo construction.

Table 7: PLARF development by "Era"

[xvi] Depending on the publication, alternatively referred to as simply the Second Artillery Force (SAF), 2nd Artillery Corps, or Second Artillery Corps (SAC) in non–PRC literature.

Era I: Foundational Liquid–Fuel Era (1960–1990)

This period was defined by the transition from China's early nuclear development to a minimally credible strategic deterrent. Systems such as the DF–3 (1971) and DF–5 (1981), China's first true ICBM, represented large, silo–based, liquid–fueled missiles with lengthy preparation times and limited survivability.[146] The force structure remained small, centralized, and primarily nuclear. Operational logic emphasized assured retaliation, organizational growth was slow, and mobility was minimal.[147] For example, the DF–3A (1988), like the DF–3, lacked significant road–mobile capabilities; however, it was deployed using a towed launcher.[148] Technologically, the emphasis was on range extension rather than survivability or precision.

Figure 33: PLASAF DF–3 training late–1960–70s

Figure 34: PLASAF DF–21C TEL, rehearsals for the 60th Anniversary PLA parade, 2009

Era II: Mobile Solid–Fuel Expansion (1990–2000)

The introduction of solid–fuel, road–mobile systems marked a decisive shift in survivability. The DF–21 and its follow–on short–range ballistic missile (SRBM)s, such as the DF–11 and DF–15, reduced launch preparation time and improved dispersal capacity.[149] This era also marked the beginning of large–scale conventional missile fielding, particularly oriented toward Taiwan contingencies.[150] Mobility increased second–strike resilience while solid fuel enhanced responsiveness. Brigade (Bde) growth began to accelerate modestly, adding four new brigades by 2000.

Era III: Conventionalization & Precision Phase (2000–2010)

During this decade, the force diversified beyond ballistic missiles.[151] The deployment of the CJ–10 introduced land–attack cruise capability, while the DF–31 strengthened survivable nuclear deterrence with road–mobile ICBMs.[152] The mission set expanded to include precision conventional strike within regional theaters. This period reflects a shift toward operational warfighting utility rather than mere deterrence. Brigade growth accelerated significantly with the addition of as many as 11 new brigades.

Era IV: Dual–Capable & Counterintervention Phase (2010–2017)

This phase was marked by diversification into counterintervention missions and dual–capable systems. The DF–21D introduced anti–ship ballistic missile capability, while the DF–26 provided intermediate–range, nuclear–conventional flexibility. This era reflects doctrinal integration of deterrence and conventional escalation control. Brigade numbers increased substantially, and the force's geographic reach extended to the Second Island Chain.

Era V: Hypersonic & Rapid Expansion Era (2017–Present)

The most recent period is defined by qualitative and quantitative acceleration. The road– and rail–mobile DF–41 ICBM, with up to 10 nuclear warheads, strengthened multiple independently targetable reentry vehicle (MIRV)–capable strategic deterrence. At the same time, the DF–17 medium–range missile system, equipped with a HGV, signals a shift toward penetration and evasion of missile defenses.[153] Simultaneously, brigade growth surged—particularly between 2017 and 2019, with 33 percent growth in ~3 years—and silo construction expanded dramatically in 2021. The force transitioned from modernization to rapid scaling.

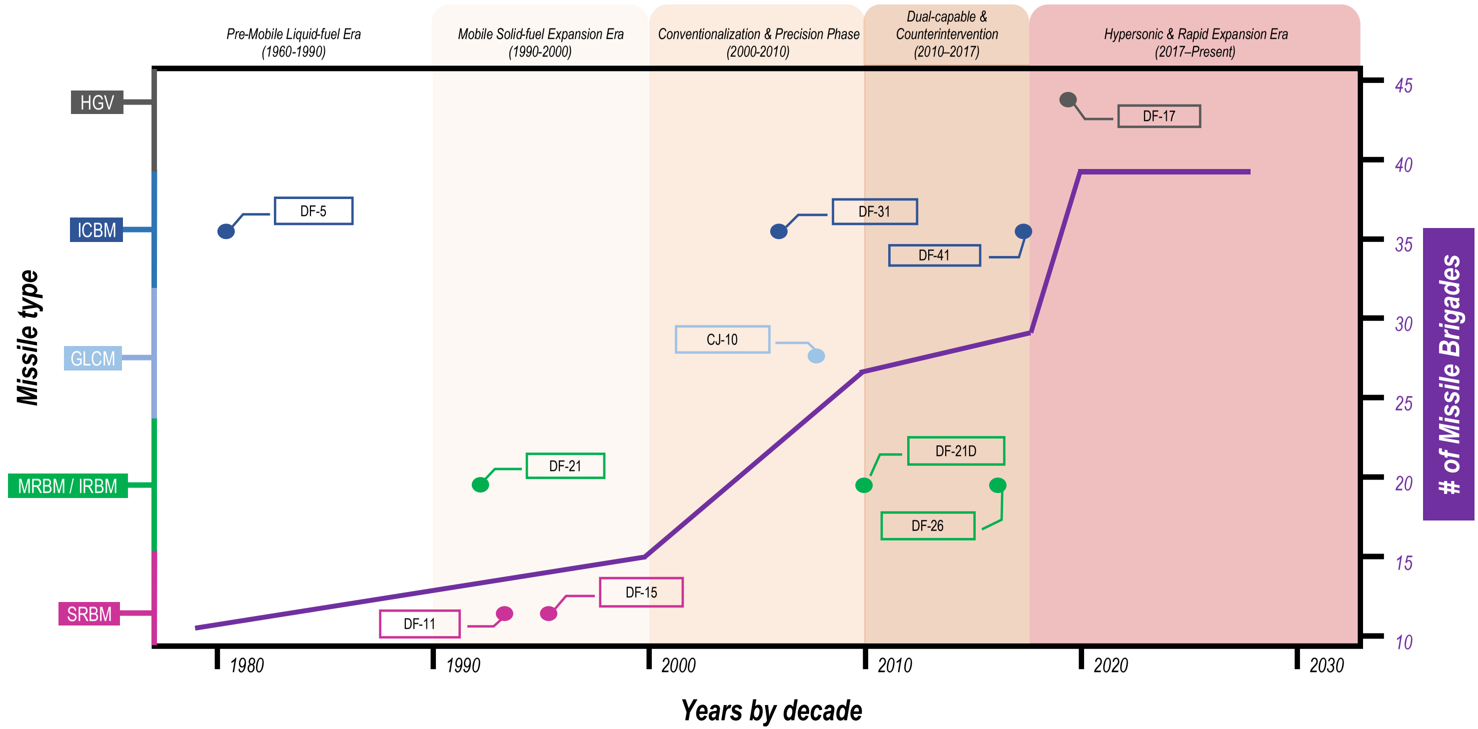


Figure 35: PLA missile force capability development, force expansion, key technologies from 1980-2026[xvii]

[xvii] Data compiled from U.S. DoD annual reports to congress*Military and Security Developments Involving the People's Republic of China*(2020–2024); "Chinese Nuclear Forces" reports in Bulletin of the Atomic Scientists by Hans M. Kristensen, et al. (2020–2025); Center for Strategic and International Studies (CSIS)'s Missile Defense Project*Missile Threat* database; and, U.S. Army Training and Doctrine Command (TRADOC) ODIN: OE Data Integration Network (Worldwide Equipment Guide).

Evolving Nuclear Posture

For decades, China's nuclear posture was widely characterized as minimal deterrence, intended to ensure a survivable retaliatory capability rather than to support rapid or large–scale nuclear operations. Earlier generations of Chinese nuclear forces relied heavily on a limited inventory of silo–based systems and a small number of mobile missiles, with C2 structures to preserve centralized political authority over nuclear use. However, over the past two decades—and particularly since the mid–2010s—the rapid expansion and modernization of the PLARF have enabled China to alter the operational foundations of this approach.

Figure 37: DF-5C on display during 2025 military parade

The PLARF's growing arsenal of more survivable and responsive delivery systems has significantly increased the scale and readiness of China's strategic forces. The rapid increase in ICBM silo construction across multiple missile fields, combined with improvements in missile accuracy, mobility, and C2 systems, provides the infrastructure necessary to support faster launch timelines and greater warhead availability.

System Capability Band	System Role	Launchers	Missiles	Estimated Range
SRBM	Theater	300	900	300–1,000 km
GLCM	Theater	150	400	>1,500 km
MRBM	Theater / Regional	300	1,300	1,000–3,000 km
IRBM	Regional	250	500	3,000–5,500 km
ICBM	Strategic	550	400	>5,500 km
	Totals	1,550	3,500	

Figure 36: PLARF missile inventory adapted from DoD CMSD, 2024, p. 66

At the same time, the development of advanced delivery systems and early–warning capabilities has made it technically feasible for China to consider a launch–on–warning posture, in which nuclear forces could be launched upon detection of an incoming attack rather than only after absorbing a strike. While China has not publicly abandoned its no–first–use policy, these developments suggest that PLARF modernization is expanding the range of operational options available to Chinese leadership, enabling a transition from a strictly minimal deterrent posture toward a more responsive and potentially launch–on–warning nuclear force capability.[154]

In 2024, China likely advanced its early warning counterstrike (EWCS)[xviii] capability, designed to enable nuclear retaliation before an incoming strike detonates. This architecture appears increasingly credible:

[xviii] Generally speaking, LOW is a strategic policy and posture to launch nuclear retaliation immediately after sensors detect incoming missiles but before impact; whereas, EWCS is the operational action within that posture. EWCS refers specifically to using sensors to detect, confirm, and immediately counterattack before the enemy's missiles land, and Relies on a robust, high-fidelity, and fast-acting early warning system to distinguish between real and false alarms. The focus is on using intelligence to launch a strike after confirmation of an attack, often with a goal of preempting full impact. Similar terms include "preemptive retaliation" and "early warning second strike."

space-based Tongxin Jishu Shiyan[xix] (TJS/Huoyan-1)[xx] satellites with IR sensors can reportedly detect ICBM launches within approximately 90 seconds and relay alerts within 3–4 minutes, while ground-based large phased-array radars (LPAR) corroborate and refine targeting data. Together, these systems support a compressed decision cycle that could allow central authorities to authorize a retaliatory launch prior to impact.[155]

Operational activity reinforces this trajectory. In December 2024, the PLARF conducted a salvo launch of multiple ICBMs from a training area into western China, which suggests growing proficiency in rapid, coordinated launches consistent with EWCS requirements. Parallel force developments include the likely loading of over 100 DF-31-class ICBMs into newly constructed silo fields and continued training on high-tempo launch procedures.[156]

The PLARF is also expanding in scale and diversity, with indications of growth by roughly 50 additional ICBM and 50 IRBM launchers, though some systems and platforms may still be under construction. Over the past two decades, both launcher numbers and missile inventories have increased significantly, driven by large-scale silo construction, mobile missile deployments, and modernization of legacy systems.

Finally, China appears to be pursuing low-yield nuclear options (below approximately 10 kilotons) to enable limited, controlled nuclear use in regional contingencies. Systems such as the DF-26 are assessed as suitable delivery platforms for such missions, reflecting a shift toward flexible nuclear employment concepts alongside quantitative force expansion.

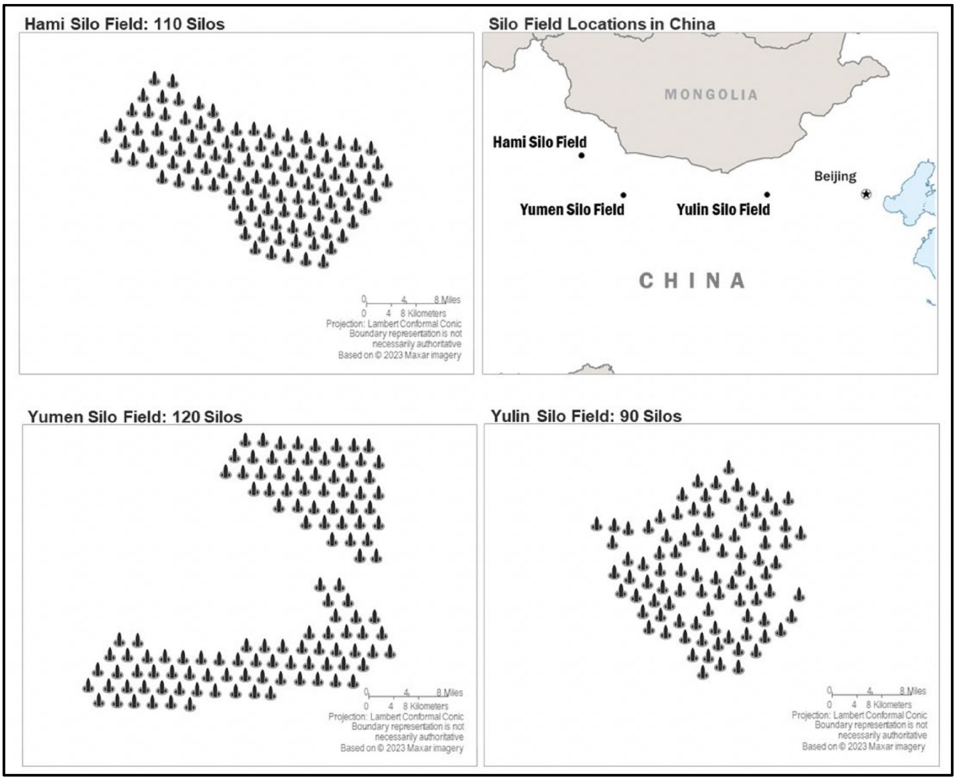


Figure 38: Expanding silo fields, 2025 DoD CMSD pg. 81

[xix] Some Western reporting may use "Tongxun" (通讯) instead of "Tongxin" (通信). Both words mean "communication," however the past decade has seen an institutional push to use "tongxin" when referring to technologies. The *Modern Chinese Dictionary* (6th Ed.) defines "tongxin" as the transmission of text or data via radio waves or light waves, while it defines "tongxun" as a journalistic genre involving vivid reporting. Technically, "tongxin" tends to refer to digital information transmission (e.g., data communication), whereas "tongxun" is often used for traditional manual or telephone-based message delivery. Complicated matters more, official PRC government sites sometimes use "Tongxun" when referencing TJS satellites. However, the correct institutional term should be "Tongxin."
[xx] Huoyan (火眼) translates to "Fire Eyes," reflecting its IR capability and mission.

Missions

The PLARF is responsible for organizing, manning, training, and equipping China's strategic land–based nuclear and conventional missile forces, as well as the supporting infrastructure and missile bases that enable their employment. As a core component of China's deterrence architecture, the PLARF supports both nuclear deterrence and conventional strike missions while contributing to the broader PLA objective of deterring and countering third–party intervention in regional conflicts. Official policy emphasizes enhancing credible nuclear deterrence and counterattack capabilities while strengthening intermediate– and long–range precision strike forces to improve strategic counterbalance and support the development of a modernized rocket force. According to the PRC's 2019 defense white paper, the PLARF is working towards "enhancing its credible and reliable capabilities of nuclear deterrence and counterattack, strengthening intermediate– and long–range precision strike forces, and enhancing strategic counter–balance capability, so as to build a strong and modernized rocket force."[157]

Organizationally, the PLARF is composed of at least 40 brigades distributed across seven combat missile bases and three support bases, with support elements responsible for warhead handling, infrastructure, testing, and personnel training. Brigade launcher counts vary by mission, with mobile and fixed ICBM brigades generally fielding six to twelve launchers and other brigades operating larger launcher inventories. The force maintains separate command arrangements for nuclear and conventional missions consistent with its "dual deterrence, dual operations" requirement. Conventional missile employment likely falls under TC authority, whereas nuclear operations remain under the direct control of the CMC, reinforcing centralized political oversight of nuclear use. The PLARF's mission set combines nuclear deterrence and counterattack with conventional strike and deterrence in support of joint operations. Nuclear deterrence is closely tied to "assured retaliation,"[158] with survivable counterattack capability forming the foundation of deterrent credibility. Although China maintains a declared no–first–use policy, ongoing nuclear expansion, modernization, and diversification suggest efforts to preserve or enhance deterrent credibility as strategic conditions evolve. Concurrently, the conventional missile force—comprising more than 2,200 ballistic and cruise missiles, the largest ground–based missile force in the world—provides a significant theater strike capability designed to deter conflict in peacetime and to conduct precision strikes against key operational targets during wartime across multiple regional contingencies.[159]

Recent developments indicate rapid modernization and expansion across both nuclear and conventional missions, including the replacement of some medium–range systems with intermediate–range ballistic missile (IRBM) systems, the introduction of hypersonic glide vehicle capabilities, and continued improvements in survivability, responsiveness, and basing diversity for intercontinental forces. Organizational reforms, the creation of new brigades and support elements, and leadership emphasis on combat readiness underscore the PLARF's growing role in China's evolving deterrence strategy. The PLARF's elevation to a full service equivalent reflects increased reliance on missile forces for both strategic deterrence and operational warfighting, positioning the PLARF as a central instrument in China's ability to influence local, regional, and potentially global military dynamics. Conventional missile forces would no doubt play a critical role in any potential conflict between China and its neighbors, with capabilities aimed at Taiwan, the SCS, the Korean Peninsula, Japan, India, and the U.S.

Figure 39: 3D model of HQ-9

Modernization Priorities

Rapid Response [xxi]

A core modernization priority for the PLARF is improving responsiveness and launch readiness by fielding solid–fueled, road–mobile systems and training focused on rapid–response strike operations. Conventional missile brigades increasingly conduct exercises designed to enable on–demand fires, supporting the requirement to "fight any time" and "launch on time."[160] The transition from older short–range systems (e.g. DF–11A, DF–15, etc.) to newer platforms, particularly the DF–17, emphasizes quicker deployment and operational flexibility. Nuclear modernizations also focus on rapid response; notably, upgrades from the DF–31A to the DF–31AG configuration and the continued expansion of mobile launcher inventories.[xxii] The DF–26's dual–capable design and rapid warhead swapping further reinforce responsiveness by allowing the same platform to execute both conventional and nuclear missions with minimal preparation time.[161]

System Penetration

Penetrating advanced missile defense architectures is a central driver of PLARF modernization and operates at two levels: kinetic penetration of defensive systems and operational penetration of an adversary's warfighting architecture. HGVs (DF–17 and DF–27) are designed to enhance kinetic penetration by maneuvering along non–ballistic trajectories to complicate radar tracking and interception, while improvements in accuracy, terminal guidance, and MIRV increase the probability of defeating layered missile defenses. At the operational level, systems such as the DF–21D and DF–26 anti–ship ballistic missiles are intended to penetrate adversary power–projection systems by threatening high–value naval platforms, including aircraft carriers, that anchor U.S. maritime operations. Meanwhile, MIRV–capable systems such as the DF–41 improve kinetic penetration by deploying multiple warheads and penetration aids, increasing the likelihood that some reentry vehicles can defeat missile defenses and reach their targets.

Long–Range Strike

Expanding the reach of long–range conventional and nuclear strikes represents another major modernization objective. The DF–26 IRBM, with dual nuclear and conventional capability and ranges extending across the Western Pacific and beyond, is progressively replacing the DF–21[xxiii] variants and expanding the PLARF's ability to conduct precision strikes against land and maritime targets deep within regional theaters.[162] The possible deployment of the DF–27, with an estimated 5,000–8,000 km (2,700–4,300 NM) range class and multiple payload options, further extends regional strike reach and enables attacks against high–value targets such as Guam while potentially reaching Alaska and Hawaii.[163] The PLARF is also exploring conventionally armed intercontinental–range systems capable of threatening targets in the continental United States. Complementing ballistic missile expansion, long–range cruise missiles such as the CJ–10 and CJ–100 enhance mid– to long–range strike flexibility and integration with joint air and maritime precision strike capabilities.

Comprehensive Damage

Modernization efforts increasingly prioritize the ability to inflict coordinated, system–level damage across an adversary's operational architecture. Improvements in missile accuracy and reduced circular error probable[xxiv] enable the PLARF to target critical nodes such as reconnaissance assets, command and control networks, logistics hubs, EW systems, and air defense infrastructure.[164] Hypersonic and precision–strike systems such as the DF–17 are designed to suppress high–value air and missile defense targets early in a conflict, facilitating follow–on strikes by other missile forces with reduced interception risk. The PLARF's large inventory of short–, medium–, and intermediate–range missiles supports saturation strike tactics capable of overwhelming regional air defenses, particularly in Taiwan contingency scenarios. Dual–capable missile systems provide flexibility to deliver either conventional or nuclear payloads, complicating adversary escalation management while enabling coordinated strikes across land and maritime domains.

[xxi] 2017 *PLA Daily*, 1st Missile Brigade Commander Shi stated, "Rapid reaction capability refers to a military unit's ability to swiftly counterattack and neutralize an enemy following an attack, serving as a key indicator of strategic capability. Through sustained efforts, the brigade's rapid reaction time has now been reduced to one–third of its previous duration."

[xxii] DF–31AG's can traverse unpaved terrain enabling dispersion to a wider variety of concealed positions, reducing its vulnerability to counterforce attacks, and requires fewer support vehicles to operate, allowing for increased readiness.

[xxiii] According the 2025 "Chinese Nuclear Weapons" report in the journal *Bulletin of the Atomic Scientists* (Vol. 81, No. 2), the DF–26 appears to have completely replaced the medium–range DF–21 in the nuclear role.

[xxiv] Circular error probable (CEP) is a statistical accuracy measure of a weapon precision; defined as the radius of a circle around the aim point within which 50% of projectiles or measurements are expected to fall.

In parallel, the development of advanced strategic delivery systems, including fractional orbital bombardment system (FOBS)–type capabilities and maneuverable hypersonic payloads, and direct–ascent antisatellite (ASAT) systems, suggests an effort to expand strike pathways and further challenge missile defense architectures. Together, these capabilities support integrated counter–intervention operations by enabling simultaneous attacks against both operational forces and the critical infrastructure that sustains them.

Survivability

Enhancing force survivability remains a central modernization goal, particularly for nuclear deterrence. Mobility upgrades, such as the DF–31A to the more mobile DF–31AG, enhance survivability and responsiveness. Expansion of silo infrastructure for DF–5C, DF–31BJ, and DF–41 missiles and the construction of three large ICBM silo fields—containing hundreds of silos, some of which may remain unfilled—suggest efforts to complicate adversary targeting and ensure second–strike survivability.[165] Development of more survivable ICBMs, expansion of launcher numbers, and exploration of diverse basing modes, including rail–mobile and silo–based options, further reinforce resilience. Broader nuclear modernization, including advanced delivery systems such as strategic HGVs and FOBS concepts help maintain a credible and survivable deterrent posture even under conditions of strategic attack.[166] Extensive use of denial and deception techniques masks the true force disposition while complicating adversary targeting processes.[167] Important components of this strategy are decoy systems and signature management techniques designed to obscure the location and status of operational launchers, or to simulate support equipment to replicate the visual, thermal, or electromagnetic signatures of real missile units. Launch brigades routinely train to disperse from garrison locations to hardened shelters, underground facilities (UGF), or temporary field launch sites during periods of heightened tension. Additionally, strict communications discipline, camouflage, and terrain exploitation are used to reduce the likelihood that operational units will be detected or tracked.[168]

Missile Capabilities

Short–Range Ballistic Missiles (SRBMs)

PLARF SRBM capabilities consist primarily of the DF–11, DF–15, and DF–16, all road–mobile and conventionally armed systems designed for high–volume theater strike operations at ranges under 1,000 km (540 NM). The DF–11 and DF–15 entered service in the early 1990s and have undergone periodic upgrades, while the DF–16, introduced around 2011, represents a more modern and capable SRBM within the force. These missiles support rapid–response strike and saturation attack roles intended to overwhelm regional air defenses and enable early suppression of operational targets such as airfields and command infrastructure. Force structure estimates indicate approximately 200 SRBM launchers and roughly 1,000 missiles deployed across four SRBM brigades, highlighting the continued importance of short–range precision strike capacity even as modernization introduces more advanced systems.

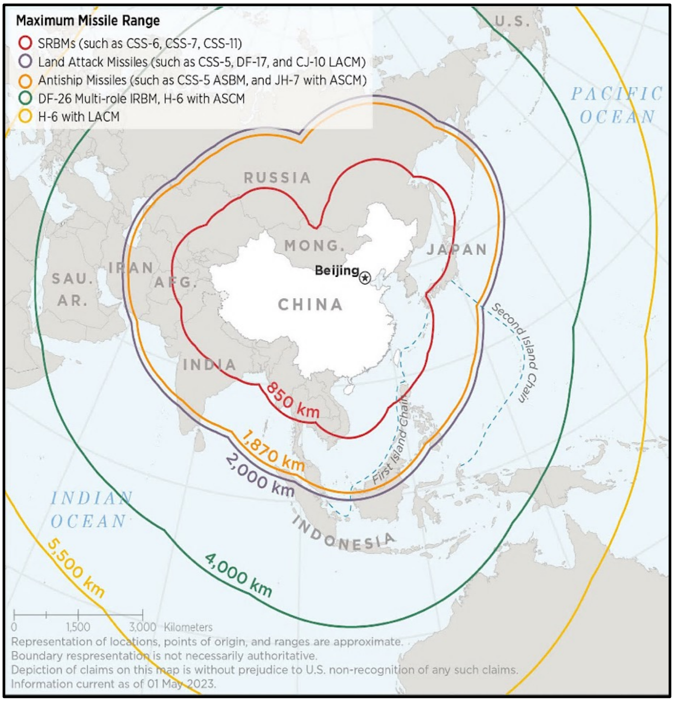


Figure 40: "Fielded Conventional Strike," DoD CMSD, 2024, p. 67.

Medium–Range Ballistic Missiles (MRBMs)

MRBM capabilities are centered on the DF–21 family and the DF–17 hypersonic system, providing strike coverage across the 1,000–3,000 km (540–1,600 NM) range band, and provide a critical capability–bridge between short–range saturation operations and longer–range theater strike missions. The DF–21 supports multiple mission sets, including nuclear strike (DF–21A), conventional precision attack (DF–21C), and anti–ship operations (DF–21D). However, these variants—particularly nuclear and conventional land–attack versions—are gradually being replaced by longer–range systems such as the DF–26. Evidence suggests some DF–21 brigades have already transitioned to newer missiles. The DF–17, equipped with the DF–ZF hypersonic glide vehicle, represents a significant modernization milestone by improving maneuverability and defense penetration while enabling strikes against high–value targets such as air and missile defense nodes early in a conflict.

Intermediate–Range Ballistic Missiles (IRBMs)

Intermediate–range strike modernization is dominated by the DF–26, a road–mobile dual–capable missile with an estimated range of 3,000–4,000 km (1,600–2,200 NM) capable of conventional, nuclear, and anti–ship missions. Entering service around 2015, the DF–26 provides extended reach across the Western Pacific and beyond while introducing flexibility for escalation through rapid warhead interchangeability. U.S. DoD estimates indicate approximately 200 IRBM launchers and 500 missiles in service, with the system increasingly replacing DF–21 roles. The emerging DF–27, reportedly capable of ranges approaching 7,000 km (3,800 NM) and offering conventional, nuclear, anti–ship, and hypersonic payload options, further expands the PLARF's long–range theater strike capability and may support missions against regional high–value targets and potentially more distant objectives. Collectively, the DF–26 and DF–27 reflect a shift toward longer–range, multi–role missiles with improved survivability and defense penetration.

Intercontinental Ballistic Missiles (ICBMs)

Strategic missile forces are composed of the silo–based DF–5, DF–31BJ, and DF–41 silo variant, and the road–/rail–mobile DF–31 and DF–41, all capable of striking the continental United States. The DF–5, first deployed in 1981 and later upgraded to multiple variants, includes an MIRV–capable version capable of carrying up to five warheads. The solid–fueled DF–31 family enhances survivability through mobility, while the DF–41 system's improved MIRV capability and responsiveness is the PLARF's newest operational ICBM. A significant expansion of silo infrastructure—including construction of roughly 320 new silos across multiple locations—indicates continued investment in survivable nuclear forces and expanded launch capacity.[169] Approximately 19 ICBM brigades are assessed to operate within this strategic missile force, reflecting a diversified approach combining mobile and fixed basing to ensure credible retaliatory capability.

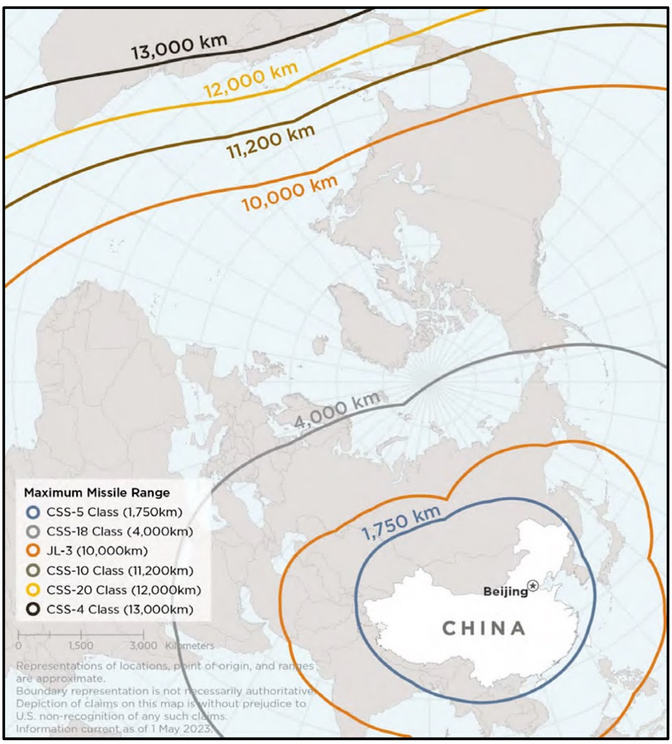


Figure 41: "Fielded Nuclear Ballistic Missiles" DoD CMSD 2024, p. 68.

Cruise Missiles and Supporting Strike Infrastructure

Figure 42: CJ-1000 on display during 2025 military parade

Ground–launched cruise missile (GLCM) capabilities include the CJ–10, deployed since around 2006 with an estimated range of 1,500 km (800 NM) and likely assigned to two brigades, and the newer supersonic CJ–100, first deployed around 2020. While the CJ–100's precise range remains uncertain, its speed and penetration characteristics enhance strike flexibility against defended targets. These cruise missiles complement ballistic missile forces by providing alternative attack profiles and integration with joint precision strike operations.

Modernization also extends beyond missile platforms to include supporting infrastructure, such as over–the–horizon radars, satellite networks, and sensor systems necessary for long–range targeting—particularly for anti–ship ballistic missiles that depend on accurate detection and tracking of distant maritime targets. In the 2025 PLA parade, the PLARF displayed the CJ-1000, a hypersonic scramjet GLCM with a claimed range of 6,000–7,000 km (5,200-6,000 NM). In addition to hypersonic speed, the system may be capable of waverider-like maneuverability,[xxv] greatly increasing its survivability and targeting effectiveness against enemy air defenses and highly maneuverable air targets. In reporting, the CJ-1000 is linked to a counter-THAAD capability.[170]

Nuclear Capability within a Mixed Conventional–Nuclear Force

The PLARF operates a layered missile force combining dedicated nuclear systems with dual–capable platforms, enabling flexible deterrence and escalation management. Strategic ICBMs such as the DF–5, DF–31, and DF–41 form the core of nuclear deterrence through survivable second–strike capability, while intermediate–range systems like the DF–26 and elements of the DF–21 family assume dual nuclear and conventional roles, complicating adversary threat assessments.

Ongoing silo expansion, MIRV deployment, mobility improvements, and the gradual transition toward longer–range dual–capable missiles indicate a broader effort to strengthen deterrent credibility while maintaining robust conventional strike capacity. This integrated force structure allows the PLARF to support regional warfighting requirements, counter–intervention operations, and strategic nuclear retaliation within a unified missile enterprise.

Direct Ascent Anti–Satellite (ASAT) Systems

ASAT weapons are ground–launched counterspace interceptors designed to destroy or disable satellites and degrade adversary space–based C4ISR networks. China first demonstrated this capability in January 2007 when it destroyed one of its own weather satellites in low Earth orbit using a direct–ascent interceptor. Since then, continued testing suggests an expanding counterspace mission set that includes targets in both low Earth orbit and potentially geosynchronous orbit.[171] Such capabilities could be used to disrupt reconnaissance, navigation, and communication systems that underpin modern military operations, thereby degrading an adversary's ability to coordinate joint operations and precision strikes.

[xxv] A waverider-like maneuvering capability means a hypersonic vehicle can ride and control its own shock wave to generate lift efficiently while in flight. By keeping the shock attached to its leading edge, it traps high-pressure air underneath, reducing drag and maintaining energy at high speeds. This allows the vehicle to glide, maneuver, and even skip along the upper atmosphere rather than follow a predictable ballistic path. In effect, it combines high speed with sustained lift and controllability over long distances.

System Capability Band	System Role	Chinese designator (Western designator)	Range (km)^	*	Key Capabilities
SRBM	Theater strike	DF–11 (CSS–7)	~600	▲	*Mobile theater strike*
	Theater strike	DF–15 (CSS–6)	725–850	▲	*Precision mobile theater strike*
	Theater strike	DF–16 (CSS–11)	>700	▲	*Enhanced precision & payload, mobile strike*
MRBM	Land–attack	DF–21 (CSS–5)	~1,500	▲	*Mobile theater strike*
	Anti–ship	DF–21D (CSS–5 Mod 5)	>1,500	▲	*MIRV; anti–carrier strike capability*
	Hypersonic	DF–17 (CSS–22)	MRBM class	▲	*HGV payload; evade missile defenses*
IRBM	Dual–role strike missile	DF–26 (CSS–18)	3,000–4,000	●	*Land–attack and anti–ship*
	Long–range conventional strike	DF–27 (HGV)	5,000–8,000	●	*Land–attack, anti–ship, HGV payloads*
GLCM	Land–attack cruise missile	CJ–10 (DH–10)	~1,500–2,000	▲	*Precision strike cruise missile*
	Long–range cruise missile	CJ–100 (DH–100/DF–100)	~1,500–2,000	▲	*Supersonic long–range precision strike*
ICBM	Silo–based ICBM	DF–5 (CSS–4)	12,000	■	*Heavy liquid–fueled ICBM; some variants carry up to five MIRVs*
	Road–mobile ICBM	DF–31 (CSS–10)	7,200	■	*Solid–fuel road–mobile strategic deterrent*
	Extended–range ICBM	DF–31A (CSS–10 Mod 2)	>11,000	■	*Capable of reaching most targets in CONUS*
	Advanced MIRV ICBM	DF–41 (CSS–20)	12,000	■	*MIRV capable; poss. rail–mobile & silo basing*
Advanced Strategic Systems (Dev)	Strategic hypersonic system	Strategic HGV	–	■	*Advanced nuclear delivery system in R&D*
	Orbital nuclear delivery system	Fractional Orbital Bombardment System	–	■	*Orbital strike concept designed to bypass missile defenses*

* ▲ – *Conventional* ● – *Dual Conventional / Nuclear* ■ – *Nuclear*
^ *divide kilometers (km) by 1.852 to convert to nautical miles (NM)*

Table 8: PLARF systems grouped by capability bands with range and key capabilities summary[172]

Force Employment

General Warfighting Concepts

The PLARF's way of war is rooted in long–range precision strike employed as part of a joint, system–level campaign designed to paralyze an adversary rather than destroy forces through attrition. PLARF missile operations typically integrate into joint firepower strikes in which conventional missile units conduct early attacks against reconnaissance and early warning networks, EW assets, air and missile defense systems, aviation infrastructure, and command–and–control nodes. This approach reflects the PLA's broader concept of systems destruction warfare and the campaign guiding principle of integrated operations and precision strikes to control the enemy, emphasizing the use of precision munitions against vital targets to shape both the course and intensity of conflict.[173] PLARF capabilities are closely integrated with those of other services; for example, long–range PLAAF strike aviation, such as H–6K bombers armed with land–attack cruise missiles, extends its reach into areas like the Philippine Sea and provides complementary strike options against regional targets, including Guam.

The PLARF's ability to strike across land, maritime, air, space, and electromagnetic domains provides leadership with flexible options to hold adversary forces, bases, and critical infrastructure at risk across multiple domains enables the creation of favorable conditions for follow–on operations by other services while supporting anti–access and counter–intervention objectives, particularly in contingencies involving Taiwan and the first island chain. PLARF operations depend heavily on joint enabling capabilities, including over–the–horizon sensors, satellites, and networked targeting architectures—highlighting the PLARF's role as a precision strike arm embedded within a broader multi–domain operational framework. The PLA's concept of active defense reinforces this operational logic by framing strategically defensive objectives alongside operationally offensive actions, enabling early precision strikes when leadership assesses national interests are threatened.

Training

PLARF training emphasizes decentralized specialization, realism, and survivability under combat conditions. Unlike Western forces that rely on centralized basic training institutions, the PLA assigns new enlisted personnel directly to one of the PLARF's bases, where they undergo approximately three months of initial training before transitioning to operational units for further specialty instruction. Over the past decade, the PLARF has shifted away from scripted exercises toward more realistic and adversarial training environments, including force–on–force confrontation drills supported by dedicated opposing force (OPFOR) units and rotation through multiple test and training districts featuring extreme terrain and weather conditions.

Figure 43: "Justice Mission–2025" Ships and aircraft approached Taiwan from multiple directions, and various branches of the armed forces conducted joint strikes. (Image: China Military Flag)

Figure 44: "First Conventional Missile Brigade" conduct missile launch drills (photo 1/3/2018) Xinhua News Agency

Large–scale exercises such as the annual *Tianjian* ("Heavenly Sword") joint drills and the *Jianfeng* ("Sword Edge") command–level exercise test joint integration, operational planning, and decision–making under realistic combat scenarios. These activities complement routine live missile launches and training strikes against mock airfields, bunkers, aircraft, and ships, as demonstrated during events such as the 2023 JOINT SWORD exercise encircling Taiwan, which tested coordinated strike operations alongside naval and air forces.

A defining feature of PLARF training is survivability and operational continuity following enemy attack. Guided by the concept of "survival protection ability," exercises frequently simulate surprise strikes, EW disruption, satellite reconnaissance, special operations raids, and nuclear, biological, and chemical threats. Units practice rapid mobility and "shoot–and–scoot" tactics, establishment of ad hoc launch sites, and extended silo operations, including sealed underground training lasting up to 30 days. Multi–role training for NCOs has become increasingly important, with personnel expected to perform secondary duties—such as drivers capable of launching missiles or measurement specialists able to assume command roles—to maintain operational effectiveness despite attrition. Exercises often deliberately impose severe losses; in one scenario, a launch team reduced by approximately 60 percent successfully completed a strike after personnel assumed alternate roles, while other drills simulate immediate launches following warning of imminent destruction to reinforce counterattack readiness and decision–making under extreme time pressure.

Joint integration and readiness for high–intensity conflict further shape PLARF training priorities. PLARF units now routinely participate in joint exercises with the navy and air force, reflecting the growing importance of joint firepower operations and integrated targeting. Training increasingly occurs in complex EM environments (CEME) against advanced "blue force" adversaries portraying technologically superior opponents, reinforcing information warfare and counter–intervention preparation. Infrastructure development—including specialized launch training complexes, transporter–erector–launcher maneuver areas, and silo training facilities—supports the introduction of new missile systems and advanced operational concepts.

Leadership guidance emphasizing 24–hour readiness, rapid fielding of new capabilities, and a willingness to conduct immediate counterstrikes has reinforced a training culture focused on realism, initiative, and resilience. Collectively, these practices indicate a PLARF training approach designed to prepare units to operate under severe disruption, sustain mission execution after attack, and contribute effectively to joint precision strike campaigns against a capable and technologically advanced adversary.

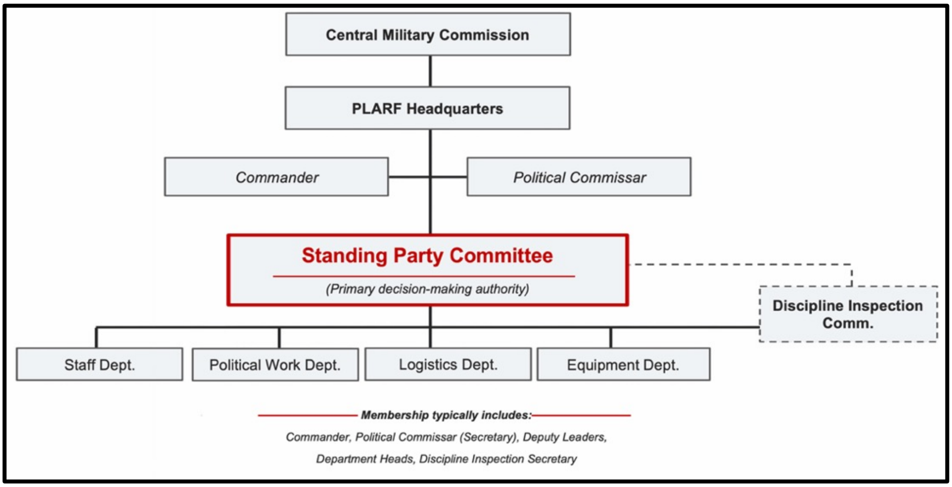


Figure 45: PLARF HQs structure and Party decision–making

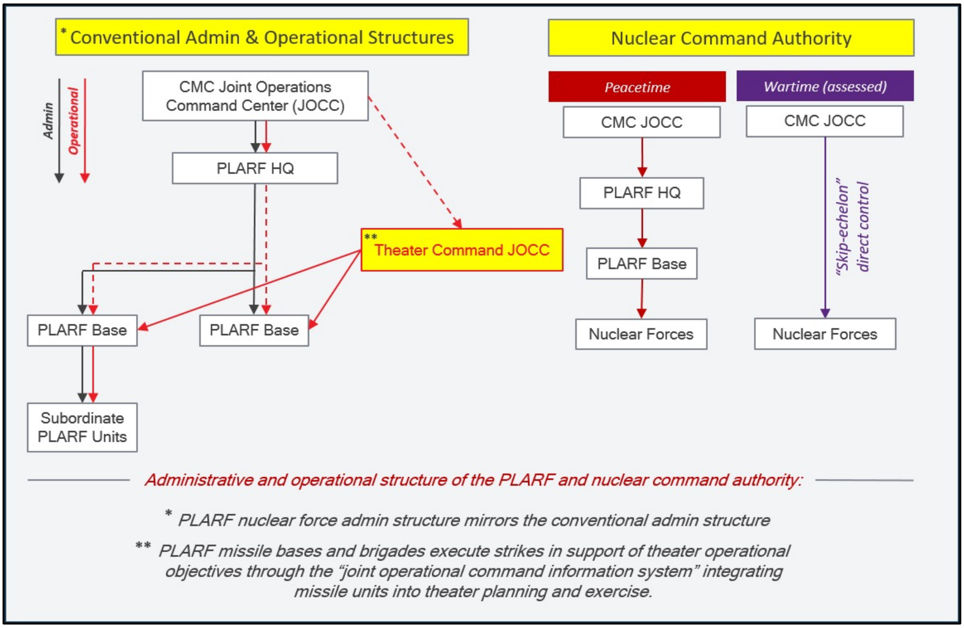


Figure 46: PLARF chains of command and nuclear command authority

Organization and Command & Control

Strategic Authority and Service Leadership

Unlike the PLAA, PLAN, and PLARF—which operate primarily through the TC system—the PLARF reports directly to the CMC, reflecting its strategic mission and the political sensitivity surrounding nuclear weapons. This arrangement preserves centralized party control over China's nuclear deterrent while allowing the PLARF to support joint operations. Within the service, conventional and nuclear missile forces operate under a semi–unified institutional structure, but their command relationships diverge in practice: nuclear forces remain under tight centralized CMC authority, whereas conventional missile units can be integrated into theater–level joint operations during wartime. This dual structure distinguishes the PLARF from other PLA services by combining centralized strategic control with the ability to support regional joint firepower campaigns. PLARF HQ follows the standard PLA service structure composed of four functional departments—

the Staff Department, Political Work Department (PWD), Logistics Department, and Equipment Department—alongside a DIC responsible for Party oversight. Consistent with other branches, the leadership structure is dual–command in which the PLARF commander and Political Commissar (PC) serve as co–equal leaders. The Standing Party Committee collectively manages major decisions, typically chaired by the PC with the commander serving as deputy secretary. This committee includes deputy leaders, department heads, and the discipline inspection secretary, ensuring consensus–driven decision–making and reinforcing political control over force development, personnel, and equipment policies.

Base–Level Organization and Geographic Responsibilities

The PLARF is organized around nine bases—Base 61–60—each roughly equivalent to a Corps–grade or Corps Deputy–grade formation with a highly unified internal command structure. Six operations bases, Base 61–66, control missile brigades across geographically defined regions, while three bases, Base 67–69, provide specialized support functions. These operations bases perform functions analogous to "theater rocket forces" but do not align perfectly with the PLA's five TCs, resulting in overlapping geographic coverage and centralized service–level coordination. Each operational base controls a mix of nuclear and conventional missile forces tailored to regional mission requirements. For example, Base 61, covering eastern and southeastern China, contains the primary missile forces oriented toward Taiwan, while Base 62 through 66 cover southeastern coastal regions, inland southern China, north–central and northwestern China, northeastern China, and central China, respectively. In peacetime, both nuclear and conventional units are administratively subordinate to their bases. During wartime, TC Commanders very likely exercise authority over and integrate conventional forces into joint command structures—while nuclear forces remain outside theater–level decision chains, maintaining centralized CMC authority. Missile units normally operate from garrison locations but train to disperse rapidly to hardened shelters, temporary holding areas, or ad–hoc launch sites during crises.[174]

Brigade and Tactical Force Structure

At the tactical level, each base typically commands six to seven missile brigades supported by specialized regiments responsible for training, communications, maintenance, logistics, operations support, and nuclear warhead management. Missile brigades generally consist of six launch battalions and four to five support battalions, with launch battalions further divided into two launch companies. This structure enables dispersion and independent launch capability at the battalion level, enhancing survivability and operational flexibility. Launcher density varies significantly by missile type, with estimates suggesting approximately 6–12 launchers per ICBM brigade, 12–36 for MRBM units, 27–36 for IRBM brigades, and up to 36–48 launchers for SRBM and cruise missile brigades. The dispersed and modular nature of brigade organization supports rapid relocation, autonomous firing capability, and resilience against preemptive strikes.

Support Bases and Enabling Infrastructure

Three dedicated support bases provide critical functions enabling PLARF operations: *Base 67.* Oversees China's central nuclear warhead storage system, including secure storage, maintenance, and transport using specialized road, rail, and air assets, as well as associated ECM, air defense, and nuclear emergency response capabilities. *Base 68*. Functions as the engineering backbone of the PLARF, responsible for the construction of missile infrastructure, communications networks, and extensive UGFs that enhance survivability and concealment. These underground complexes, while not fully quantified, represent a significant survivability investment. *Base 69*. Serves as the primary testing and training base, supporting operational unit training, equipment evaluation, and research and development (R&D) activities through multiple test and training districts and associated support regiments. Together, these support bases provide warhead security, infrastructure resilience, and technical modernization capacity across the force.

Independent Commands and External Functions

Beyond its base structure, the PLARF maintains specialized independent organizations that support long–term capability development and external cooperation. The PLARF Research Academy conducts applied research on missile technologies and operational concepts, contributing to modernization and doctrinal evolution. Additionally, the Golden Wheel Engineering Project with Saudi Arabia reflects historical and ongoing missile cooperation activities, assisting foreign partners in ballistic missile development.[xxvi]

[xxvi] The PLA sold Saudi Arabia DF–3s in the 1980s and the DF 21A in the 2010s. In late 2021, media reports indicated the U.S. intelligence community assesses Saudi Arabia is manufacturing ballistic missiles with Chinese assistance.

Base	AOR (China)	Key missions	Notes
61	E & SE	Conventional & nuke missile ops; primary force f/Taiwan contingencies	*Core counter–Taiwan strike base; high force density*
62	E	Regional strike ops vs. maritime & coastal targets; support joint TC ops	*Supports SCS & Taiwan–adjacent operations*
63	Inland S	Provide depth strike capability & strategic reserve missile forces	*Adds survivable interior strike capacity*
64	NW & N.Central	Strat missile ops & inland force posture; poss. long–range strike focus	*Geographic depth supports survivability & dispersal*
65	E & NE	Missile ops oriented toward NE Asia contingencies	*Korean Pen coverage; regional deterrence*
66	Central	Strat reserve and nationwide strike support	*Centrality = flexible reinforcement across theaters*

Table 9: Operations–focused PLARF Bases roles and missions

Base	Force-wide Functional focus	Key missions	Notes
67	Nuke warhead management	Oversight: nuke warhead storage, maintenance, transportation; ECM, air defense, and nuclear emergency response	*Central node f/nuke custody & survivability*
68	Engineering & infrastructure	Construction: missile infrastructure, comms networks, & UFG; engineering brigades & maintenance units	*Critical to survivability & hardened basing strategy*
69	Testing & training	Missile testing, operational training, system development, & evaluation across multiple test districts	*Enables modernization, experimentation, & realistic training*

Table 10: Support–focused PLARF Bases roles and missions

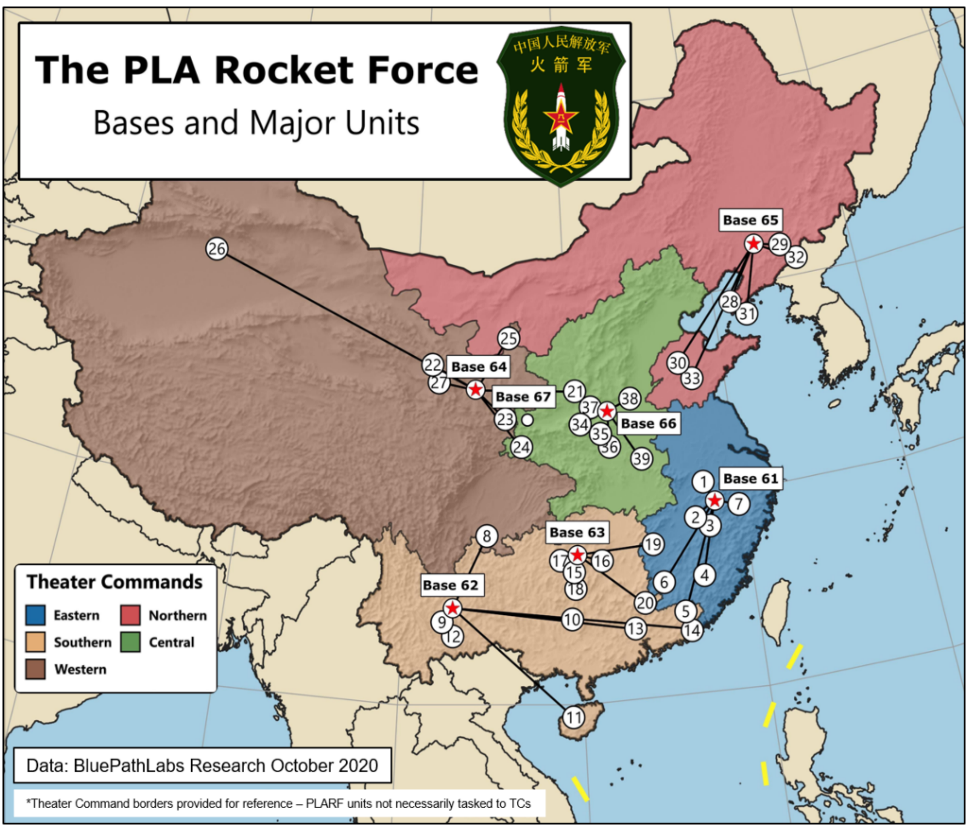


Figure 47: PLARF force structure and key installations

Leadership and Personnel

Officers

PLARF officers are primarily commissioned through the Rocket Force Engineering University in Xi'an, with increasing recruitment from civilian universities to improve technical depth. Many cadets gain practical familiarity with launch procedures during temporary assignments with operational units prior to commissioning. Early career officers typically serve as deputy and then company commanders, responsible for small launch teams operating one to four launchers. Greater autonomy emerges at the battalion level, where dispersed launch battalions may operate with limited communications and must independently interpret brigade intent under threat. Career progression commonly includes staff assignments followed by battalion and brigade leadership roles, culminating in responsibilities that integrate launch and support elements and coordinate with joint command structures during exercises/operations.

Enlisted Force and NCO Corps

The enlisted and NCO corps have historically faced limitations in receiving education despite occupying technically demanding roles. As the PLARF transitions toward advanced missile systems and complex joint operations, the force is prioritizing professionalization of the NCO corps. The Rocket Force NCO School trains large numbers of personnel annually, including new recruits, conversion candidates, and college graduates entering technical specialties. Expanded educational opportunities and targeted recruitment efforts aim to produce a more technically capable enlisted force capable of sustaining dispersed missile operations and supporting survivability requirements.

Technical Competence

Improving technical proficiency across the force remains central to personnel modernization. Education initiatives include short–term technical training at military institutions as well as partnerships with civilian universities, state–owned enterprises, and industrial facilities. These programs seek to address maintenance challenges associated with advanced missile systems, nuclear handling requirements, and increasingly complex C2 and targeting processes. The emphasis on cross–training and multi–role competency also reflects leadership's emphasis on survivability, ensuring launch units can maintain operational capability even after personnel losses.

Integration and Support

The PLARF has developed an extensive military–civil fusion (MCF) technical support network composed of civilian reserve specialists embedded within research, production, and maintenance organizations.[175] This network enhances technical capacity and supports mobilization by providing expertise in equipment sustainment and infrastructure maintenance. Officers and enlisted personnel participate more frequently in joint and inter–regional exercises, integrating conventional and nuclear missions, and strengthening joint firepower strike capabilities.[176]

Challenges

Despite progress, PLARF force development continues to face obstacles, including gaps in technical expertise, maintenance proficiency, joint operational experience, and leadership development. Reliance on civilian technical specialists introduces additional vulnerabilities related to recruitment, reliability of mobilization, and corruption. These challenges occur alongside broader institutional pressures to meet the PLARF's core requirements to fight at any time, launch on time, and deliver effective damage, underscoring the importance of continued investment in education, professionalization, and resilient personnel structures.[177]


PLA Information Domain Forces
Aerospace Force (ASF)
中国人民解放军
军事航天部队
Cyberspace Force (CSF)
中国人民解放军
网络空间部队
Information Support Force (ISF)
中国人民解放军
信息支援部队

Information Domain

Views of the Information Domain

The PLA recognizes the critical role of information in modern warfare and considers the information domain a warfighting domain in its own right. In the Chinese model, the information domain is not merely supportive but central, often designated as the “supported” domain, with other physical domains acting in service of achieving information superiority. The PLA sees the acquisition and control of information as a prerequisite for initiating and succeeding in any kinetic action. The Chinese Communist Party (CCP) and the PLA prioritize the information domain as the decisive battleground, believing information dominance generates success in all other domains.

For the PLA, the information domain encompasses not only actual information, but the digital signals composed of ones and zeros transmitted through computer networks. This includes the electromagnetic and cyber spectrum over which these signals travel, the cables and fibers connecting network components, and the computers themselves constituting the network. Furthermore, it involves the transformation of these bits into meaningful information that can influence the perceptions and decisions of individuals receiving and utilizing that information, a concept known as the “cognitive domain.

The PLA places information operations in its broader military framework of system–of–systems warfare (also known as systems warfare). Systems warfare can be understood as a strategic approach that targets the critical nodes within an adversary's broader operational structure, rather than engaging in direct attacks on individual components such as fighter jets or tanks. The objective is to disrupt the interconnected support systems—such as logistics, fuel supply, and communication networks—that enable these components to function effectively. In this context, information plays a central role, acting as the connective tissue across the adversary’s systems, particularly through C4ISR. By targeting these informational linkages, an actor can inflict disproportionate disruption across the enemy’s operational capability.

Systems warfare encompasses both offensive and defensive dimensions: the offensive, referred to as "system destruction warfare," aims to dismantle the opponent's integrated system, while the defensive, known as "system survival," focuses on preserving and protecting one’s own. The PLA regards information as the critical element that connects and binds the joint force and enables all other elements of combat power. Their strategy prioritizes the elevation of information control to attain information superiority, a critical step toward broader strategic success.

Information Domain Forces

From 2016 to the spring of 2024, the PLASSF served as the institutional core of China’s information warfare enterprise, providing support across the PLA and reporting directly to the CMC. In April 2024, the PLASSF was dissolved, and its principal components, the ASF, the CSF, and the newly established ISF, were reorganized as forces directly subordinate to the CMC. This restructuring represents a significant institutional refinement of Xi Jinping’s long–standing vision to accelerate the PLA’s transition toward informationization, emphasizing dominance across space, cyber, electromagnetic, and data–centric operational environments. By disaggregating the PLASSF’s broad mandate into more clearly defined and functionally specialized forces, the CMC sought to improve command clarity, operational effectiveness, and the integration of information capabilities with joint warfighting requirements. Together, the ASF, CSF, and ISF form the organizational backbone of the PLA’s approach to informationized warfare, each addressing a distinct yet interdependent dimension of competition in the modern information domain.

Aerospace Force

“Military” Aerospace Force (军事航天部队) Differentiated

On April 19, 2024, the CMC announced that it had disbanded the PLASSF to create three separate branches, each directly subordinate to the CMC. The former PLASSF Space Systems Department (SSD) would be renamed the “Military Aerospace Force,” making it the only new branch with the word “military” (军事) in its title. This is significant, not redundant. At the time, unofficial Chinese commentators speculated that this was China’s attempt to be transparent and distinguish the military space program from other aspects of the national space program. While only netizen chatter, there are other signs of differentiation that can be seen in the astronaut program and the in the commercial space sector.

At the PRC's annual Twin Sessions (National People's Congress (NPC) and the Chinese People's Political Consultative Conference (CPPCC)) in 2025, Yang Liwei, a former astronaut and a Deputy Director of China's Manned Space Engineering Office wore a CMC arm badge; Wang Yeping, a current astronaut, wore an ASF badge. Separately, China's 2025 commercial space guidelines also defined "commercial space projects" as those without national or military funding, but to include provincial funding, probably in a minority position, in order to accelerate private investment, regulation, and insurance in the sector.[178]

At the ASF's inception, the Chinese Ministry of National Defense stated that the ASF continues to be tasked with supporting "space security," "crisis management," and "the capacity to safely enter, exit, and openly use space."[179] China's authoritative documents also continue to refer to space as a "security domain," a "commanding height in international strategic competition," or an "operation area," not a "warfighting domain."[180]

Missions

According to the updated 2024 PLA teaching materials on space operations, the ASF maintains the same mission areas as outlined in the 2013 Lectures on the Science of Space Operations. The updated text now includes additional details on implementation, indicating enhanced professionalization among the core ASF and clearer direction for joint space operations. The five ASF space mission areas are deterrence operations (太空威慑作战); space blockade operations (太空封锁作战); offensive operations (进攻作战); defensive operations (太空防御作战); and space information support and assurance operations (太空信息支援保障作战).[181]

Deterrence operations can be independent ASF or joint operations ranging from the four levels of deterrence, which have been adjusted and recharacterized since the 2013 text. The deterrence levels are now: warning, disposition of forces, space exercises, and punitive strikes. Next, space blockades are offensive operations reserved for when the PLA believes it has the upper hand at any level of war to include tactical, campaign, or strategic. They are primarily joint ground operations to counter adversary space bases with joint fires. The updated textbook significantly deemphasized orbital blockades. Third, offensive operations are defined as being primarily at the strategic level. The PLA describes two types: ground-to-space and space-to-ground. It's important to note that ground to space attacks against satellites are primarily with spectrum weapons for soft or hard kills. Direct-ascent anti-satellite missiles are deemphasized and described as primarily a deterrent. Space-to-ground weapons include "ground-space-ground" strategic attacks with "orbital bombardment" weapons. Fourth, defensive operations can be ground-based or space-based. Ground-based operations are joint counter-missile operations to defend Chinese launch centers and launch tracking ships. Space-based defensive operations are described as the most difficult. Last, the ASF's role in the space information support and assurance mission has shrunk, but they have a new support area for on-orbit logistics and the main space data service area they support is space-to-space data relay.

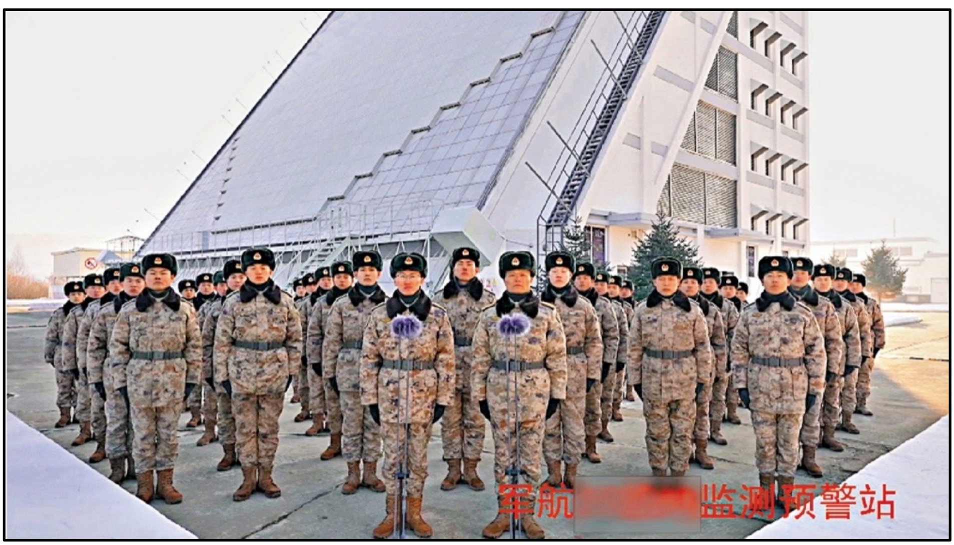


Figure 48: ASF Unspecified NTC Tracking and Early Warning Station

Figure 49: Mobile solid–state early warning LCQ–776 during training in STC, 2024

Force Structure

As of the latest reforms, the ASF's structure does not strictly align with the regional TCs like the CSF and ISF. This is because its mandates continue to be primarily functional and strategic. Additionally, at least for now, the ASF still provides support to the non–military national space program, such as the United States Space Force's management of satellite launch centers and National Aeronautics and Space Administration's management of the International Space Station and scientific exploration satellites. It is reasonable to speculate that the PLA intends the ASF to offload much of the broader national program to other players when, and if, China's national space science program and commercial space sector strengthen; but even then, the PLA seems to intend the ASF to remain more strategic and functional like the PLARF. The ASF has a wider range of reversible to destructive capabilities compared to the PLARF, but the PLA views escalation and debris–generating events in the space domain nearly as impactful as nuclear escalation.[182] Reversible and non–reversible satellite interference can, after all, lead to death on the ground.

As of writing, the majority of the ASF's bases and centers remain the same, but two of the new bases, which the CMC established during the 2015 reforms, seem to be either still in transition or likely to remain joint bases. Of the facilities that remain unchanged, China has five launch centers: Base 20 in Jiuquan; Base 25 in Taiyuan; the co–managed Dongfang Space Port in Shandong; Base 27 in Xichang; and, the co–managed Wenchang Satellite Launch Center on Hainan Island. More research is needed to determine whether the Shandong spaceport still relies on Taiyuan for support or has successfully transitioned to the provincial and commercial sectors. Additionally, China has six main space telemetry, tracking, and control (TT&C) bases and centers including: Base 23 in Jiangsu; Base 26 and Base 37 in Xian; and, the Beijing Aerospace Flight Control Center (BACC), Beijing Institute of Tracking and Telecommunications Technology (BITTT), and Beidou Positioning, Navigation, and Timing Main Station, all in Beijing.[183]

In regard to some of the newer bases with still evolving structure, the former PLASSF bases 35 and 36 are either still in transition, or the CMC intends them to be joint. The PLA's Base 35 for Battlefield Environment Support seems to be almost completely transitioned to the ISF, but with an important ASF role in the base's interface with the Beidou ground segment. The PLA's Base 36 for New Technology "undertakes weapons and equipment demand demonstration, testing, appraisal and evaluation tasks."[184] Subordinate units in Henan Province work closely with the nearby CMC Equipment Development Department (EDD)'s Base 33, which manages spectrum warfare weapons from the optical to radio frequencies. If, post–2024 reforms, this base is indeed an ASF base, it is possible that Base 36 is where the ASF will support and join the PLA services' ground–based offensive and defensive space and strategic missile mission. On the other hand, Base 36 subordinate units in Beijing work on a different type of new technology, primarily space–based hardware and software not just for countering satellite capabilities, but also countering rocket and missile capabilities once they enter space.[185]

Force Employment

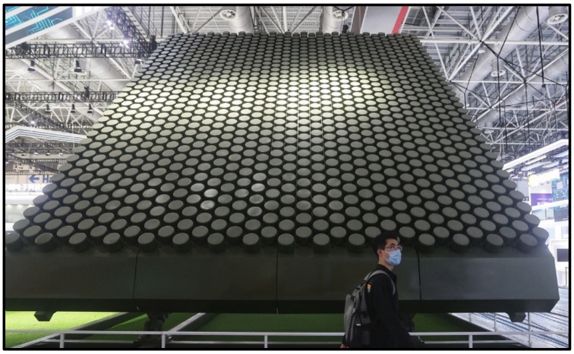


Figure 50: SLC–18 space surveillance active phased array radar displayed during Zhuhai Aerospace Exhibition 2022

Figure 51: XZ231 EW vehicle during 2025 parade

While the ASF missions and bases have mostly persisted through large scale PLA reforms, the force structure for carrying out the missions has clarified and changed. There is more clarification on the PLA ASF's newer Monitoring and Early Warning Base 37, which the PLA established during reforms in 2015 when they merged cross–service functions into the now defunct PLASSF. Base 37 realigned some space TT&C functions and experimental technology departments from ASF Base 26, as well as absorbed mostly PLAAF, but some PLAN high altitude missile tracking radars.[186] During Xi Jinping's January 2025 visit to the Northern TC (NTC), he made remote New Year's wishes to a group of each of the PLA services and branches; the ASF unit on display was from Base 37 and one of its tracking and early warning phased array radars.[187]

The ASF's role in ballistic missile early warning and targeting with stationary (depicted above) and mobile (depicted below) phased array radars supports many of the five space operations mission areas. For the PLA, keeping space and missile warning organized together supports space deterrence, blockade, and space offensive and defensive operations not only for satellite and satellite services, but also launch vehicles and ballistic missiles after they have entered space. Maintaining a space and missile link also leverages the ASF's long history in supporting missile tracking and testing facilities for the PLA services across the NTC and Western TC (WTC). While in the past, the support was most obviously in testing and evaluation, the ASF now directly supports joint warfighting and missile defense. Furthermore, many of the mobile phased array radars have a dual function of tracking and jamming, as illustrated in images from two different PLA parades and a Chinese Air Show showing PLAAF missile early warning radars, space object tracking radars, and joint PLAA and ASF EW mobile phased arrays, probably synthetic aperture radar (SAR) jammers.[188]

There is also an important change to the way the ASF contributes to the space information support and assurance mission area. The PLA is in the process of transitioning much of the information support and assurance functions across domains, including in space, to the ISF, but the ASF will remain in control of operating dedicated military satellites in orbit. This includes being the first intermediary when acquiring battlefield information from reconnaissance, ocean surveillance, early warning and detection, meteorological, and mapping satellites. The ASF's duty is the first of six that make up the space information support and assurance mission. The latter five areas are transitioning to the ISF. The six functional groups of the space information and assurance mission area include: information acquisition; positioning, navigation, and timing (PNT); transmission; resource management; ground applications; and assurance. At the time of writing, only the space information acquisition units remain exclusively with the ASF. The PNT and resource management units are currently still composed of both ASF and ISF personnel, which may be a sign of ongoing transition or that the CMC intends the mission to remain joint. The ISF appears to have already absorbed the ground–to–space transmission, space–to–ground application, and space information assurance units. For example, as depicted below from the PLA's 2025 parade, the ISF now operations the PLA's ground mobile satellite communications equipment, which enables troops and the CMC to use secure satellite communications, primarily in geosynchronous Earth orbit, given the size of the point–to–point parabolic antennas.[189] Though relatively small compared to the CSF and ISF, the CMC's adjustment of ASF force employment might result in a decrease, increase, or null impact on force strength. While speculative, the adjustments may shift the ASF's recruitment needs towards ground–air–space integration for space and high–altitude missile tracking and warning, and away from space information support. What is clear is that Base 36 and the ASF's Space Engineering University are increasingly preparing ASF personal for on–orbit activities, to include space logistics and maintenance, which also enables training for an on–orbit component of any of the ASF's space mission areas.[190]

For example, in 2021, an ASF "director" Gao Yong and a deputy director at the Academy of Military Sciences published a widely reviewed on–orbit servicing training textbook for China's on–orbit services units (the ground–based aerospace service teams (航天勤务队)often discussed in Chinese media are typically at launch centers, but in the future, they may also sit in Beijing or Xian to service orbiting satellites).[191] The text is "foundational" training for on–orbit satellite servicing and refueling in low Earth orbit and "high orbit," which could be a highly elliptical orbit or geosynchronous earth orbit. The training text covers what was at the time of publication (2021) the most up to date Chinese and foreign research on conducting rendezvous and proximity operations with cooperative and non–cooperative space targets in any orbit. The authors concluded that the training materials will "provide strong support for on–orbit experiments or ground simulation training." However, the authors emphasized it was the bare minimum and more research was needed to keep apace of all the advancements in autonomous decision–making: "In view of some problems in the planning of on–orbit servicing tasks, this book introduces [various methods], but due to the limitation of knowledge reserve, we feel that there are still many problems worthy of further research and exploration."[192] A dominant interpretation of this hesitancy in readiness is that the PLA is not currently poised to use the dual–use rendezvous and proximity operation skills in any near term battle. As reiterated multiple years in a row, the 2025 U.S. Office of the Director of National Intelligence's Annual Threat Assessment says, "China also has conducted orbital technology demonstrations, which, while not counterspace weapons tests, prove its ability to operate future space–based counterspace weapons."[193]

Education

The ASF still relies on the Space Engineering University (SEU) in Beijing to train Officers and NCOs. SEU is composed of three main campuses across Beijing: in Huairou, Changping, and Shahe. In total, the university has a graduate school, aerospace command college, aerospace technology college, aerospace information college, aerospace service college, aerospace NCO school, and a basic teaching department. Furthermore, SEU has two national key laboratories, the National Key Laboratory of Laser Propulsion and Applications, and the National Laboratory of Electronic Information Equipment Systems. In addition to the national laboratories, SEU has a number of key professional laboratories, such as the Aerospace Simulation Training Center, the Aerospace Science and Technology Innovation Center, the Deep Space Exploration Network Antenna Array, the Aerospace Measurement and Operation Control and Comprehensive Application Platform, the Aerospace Measurement and Control Station, and the National Nuclear High–Based Integrated Technology Research Base. [194]The university provides opportunities for students to participate in the talent training platform called the "Qian Xuesen Space Technology Experimental Class" (钱学森空间技术实验班) and the China Aerospace Foundation's (中国航天基金会) space fund award for students with excellent grades, outstanding overall performance, and excellent results in international, national or military–wide subject knowledge and discipline innovation competitions.[195,xxvii]

Figure 52: SEU Emblem

Figure 53: From a 2024 state media article "Military academy acceptance letters are here! Which one excites you the most?"[196]

[xxvii] The CMC allotted only 376 officer billets for SEU annual recruitment. This is less than the ISF's Engineering University with 401 and the CSF's Information Engineering University with 1,277 annual officer recruits. For 2025, the ASF also recruited the smallest number of NCOs.

Figure 54: SEU graduate students from a 2023 master's degree program admission brochure[197]

"Cyber Superpower" Narrative

The establishment of the CSF can be understood as an institutional embodiment of Xi Jinping's long–standing call to transform China into a "cyber superpower." By elevating cyber operations to a distinct organization, the reform operationalizes Xi's strategic narrative, aligning military modernization with broader national ambitions for technological dominance and information sovereignty. The emergence of China's "cyber superpower" narrative can be traced to early 2014, coinciding with the inaugural meeting of the Central Leading Group for Cybersecurity and Informatization, a body chaired by Xi Jinping that marked his consolidation of authority over cyberspace policy. The cyber superpower narrative quickly evolved into a unifying slogan that shaped a wide array of national and local policies related to cyberspace governance and digital technology, and it was elevated as a top–level strategic priority. Xi's landmark address at the April 19, 2016, Work Conference on Cybersecurity and Informationization, followed by a reinforcing speech in 2018, served to institutionalize the concept and embed it within the ideological framework of the CCP.

The cyber superpower narrative's significance was further underscored by its promotion through state propaganda, including patriotic music, reflecting its integration into broader efforts to mobilize public and bureaucratic support. The Cyberspace Administration of China (CAC), a key policy–drafting body, has framed cyberspace as critical to regime survival, asserting that failure to master the Internet would threaten the CCP's long–term governance. As articulated by Party officials, cyberspace is regarded as "the nerve center of both national governance and various spheres of society," positioning digital control and cyber capabilities as foundational elements of China's domestic stability and global strategic posture.

Cyberspace Force (CSF)

The CSF is tasked with directing the PLA's cyber operations and broader information warfare activities. Following the dissolution of the PLASSF, its institutional prominence has increased significantly. PLA doctrinal literature underscores the centrality of the cyberspace domain to joint operations, emphasizing its critical role in achieving operational objectives. Cyber operations are expected to play a central role in the initial stages of any conflict involving the PRC, positioning the newly established CSF as a critical indicator of the types of conflicts Beijing anticipates and prepares for. The creation and development of the CSF reflect the extensive reforms undertaken by the PLA to enhance its operational effectiveness, particularly in the cyber domain. This transformation illustrates a significant shift toward centralized command and streamlined intelligence capabilities. The result is a globally oriented cyber and intelligence apparatus no longer hindered by bureaucratic fragmentation and parochial interests that previously limited the effectiveness of Chinese cyber operations. Through these structural reforms, the PLA has signaled its commitment to building a highly coordinated and strategically focused force capable of supporting China's broader military and geopolitical ambitions.

Missions

With similarities to the United States National Security Agency and Cyber Command, the CSF main missions center around reconnaissance and offensive cyber-attacks. Network reconnaissance is a critical component of cyberspace operations, utilizing the characteristics of network structures, electromagnetic emissions, and information storage to gather intelligence from adversary computer information systems. This capability functions both as a foundational tool for conducting cyber–attacks and defenses, and as an independent operational function, particularly during peacetime when cyber reconnaissance represents the most prevalent form of military activity in cyberspace. The development of network reconnaissance capabilities centers on three key domains: network–based intelligence collection, electromagnetic signal interception, and media–based information acquisition. Network–based intelligence collection exploits vulnerabilities in enemy systems to access and monitor command, control, communications, computers, intelligence, surveillance, reconnaissance, and knowledge (C4ISRK) systems, as well as EW and weapons control systems. Electromagnetic interception employs electronic reconnaissance tools to detect, analyze, and decode electromagnetic signals emitted by adversary electronic systems. Finally, media–based intelligence acquisition involves obtaining sensitive data from information storage devices through espionage, cyber intrusion, or third–party transactions. Together, these elements form a comprehensive framework for strategic information gathering essential to cyber warfare and broader military planning.

In cyber warfare, offensive capabilities are considered more decisive than defensive measures, with cyberspace attack capacity viewed as the core combat strength within this domain. Cyberspace attack involves penetrating adversary networks through techniques such as information interference, jamming, and destruction, with the objective of paralyzing or degrading the opponent's operational systems. Typical methods include deploying computer viruses, executing hacking operations to steal or manipulate data, and injecting false information to mislead enemy decision–making. These attacks aim not only to incapacitate enemy command and control infrastructure but also to distort situational awareness through deception.

Organizational Structure[198]

The CSF's primary operational structure is the Technical Reconnaissance Bases (TRB). Each TC contains a TRB, and each TRB is generally aligned with the TC's strategic direction. The TRB is a Corps Leader–grade organization and composed of units from former military regions (MR), service–level entities, and, in some cases, former General Staff Department (GSD) Third Department (3PLA) technical reconnaissance bureaus. The establishment of the TRBs involved significant organizational changes, including the splitting of existing units, promotion of subordinate units to new echelons, and reassignment of command–and–control structures. This restructuring aimed to consolidate and realign existing structures to align with new administrative and operational frameworks, thereby enhancing the PLA's cyber capabilities.

Additionally, the Cyberspace Operations Base (CSOB) now oversees the PRC's offensive cyber forces. The Cyberspace Operations Base represents a newly established, Corps Leader–grade organization within China's CSF, positioned alongside the regional TRBs. Tasked with nationwide responsibilities, the CSOB oversees cyber offense, EW, psychological operations (PSYOPS), and advanced cybersecurity R&D. It consolidates previously disparate units from former branches of the PLA, including 3PLA and GSD Fourth Department (4PLA), as well as the Air Force, Navy, Rocket Force, and regional commands. The CSOB has been referred to under various names—such as the Information Technology Force, Cybersecurity Base, and

Cyberspace and Electronic Warfare Information Center—reflecting both its broad mandate and the opacity surrounding its activities. Structurally, the base integrates four primary functional components: cyber warfare, EW, psychological warfare, and cyber R&D. Its cyber units are subdivided into offices that are geographically distributed across the PLA's TCs, aligning operationally with the boundaries of military theaters and their associated TRBs. This institutional consolidation reflects a broader effort to centralize and professionalize the PLA's cyber capabilities under a unified command structure.

Development

China's CSF ambitions reflect a comprehensive and multi–pronged strategy aimed at strengthening its capabilities in network–centric warfare. First, it seeks to establish an integrated command and mobilization system that unifies reconnaissance, offensive, and defensive functions in cyberspace to maximize joint operational effectiveness rather than promoting siloed capabilities. Second, China emphasizes the accelerated development and exploitation of cyberspace resources, including electromagnetic spectrum assets vital for navigation, communications, and radar; network information resources akin to U.S. "big data" capabilities; and hardware and software system resources for improved operational efficiency. Third, China prioritizes realistic combat training for cyber forces, viewing such exercises as essential to innovating new modes of warfare and maintaining readiness, like the U.S. Defense Advanced Research Projects Agency (DARPA) National Cyber Range model. Fourth, China advocates for the development of a robust legal and regulatory framework to govern the construction and application of cyberspace forces, drawing parallels to U.S. initiatives like the "Cyberspace Policy Evaluation." Finally, cultivating a highly skilled cyber warfare talent pool is considered imperative, with an emphasis on training both strategic planners and technical experts capable of securing dominance in future network–based confrontations.

Capabilities

The PLA's cyber capabilities likely prioritize degrading U.S. force projection in the event of a conflict. In such a scenario, Beijing would probably employ cyber operations to deter or delay U.S. military intervention by disrupting decision–making processes, generating societal uncertainty, and impeding the deployment and sustainment of forces. Ongoing cyberespionage and network prepositioning activities conducted by Chinese actors are not mutually exclusive from potential attack pathways; rather, access established for intelligence collection could be repurposed for disruptive or destructive operations. Moreover, cyberespionage alone may undermine U.S. operational effectiveness by enabling the exfiltration of sensitive military information. Observed targeting patterns—such as those attributed to Volt Typhoon—suggest that Chinese cyber activities are oriented toward undermining U.S. capacity and political will to support Taiwan during a contingency. Chinese cyber operators appear increasingly focused on mission–specific intrusions into systems relevant to DoD functions. This trend aligns with PLA writings that emphasize the early use of non–kinetic capabilities, including cyber operations, to degrade an adversary's C4ISR architecture, weapons systems, and logistical support networks in order to secure information dominance at the outset of hostilities. As cross–Strait tensions persist, China may expand cyberespionage or offensive cyber operations against U.S. government and military entities. In the initial phases and throughout a conflict, Beijing would likely seek to generate both disruptive and destructive effects—ranging from denial–of–service operations to actions affecting critical infrastructure—to shape strategic decision–making and constrain military operations. Probable initial targets would include U.S. military C4ISR and logistics nodes, alongside civilian infrastructure of political and economic significance.

Information Support Force (ISF)

The ISF is tasked with providing strategic information and communications support to the PLA. It centralizes the collection and management of technical intelligence and provides strategic intelligence support to TCs, including those engaged in operations during a Taiwan contingency. According to Senior Colonel Wu Qian, spokesperson for the Ministry of National Defense of the PRC,

"Establishing the Information Support Force through restructuring is a major decision made by the CPC Central Committee and the Central Military Commission… This is of profound and far–reaching significance to the modernization of national defense and the armed forces and effective fulfillment of the missions and tasks of the People's military in the new era. The ISF is a brand–new strategic arm of the PLA."[199]

Xi Jinping has characterized the newly established ISF as a "strategic force and a key support for coordinating the construction and application of network information systems." He further emphasized that the ISF is intended to facilitate the seamless integration of information flows, enhance the protection of information infrastructure, and ensure the efficient provision of information support. These functions are deemed essential for enabling the PLA to conduct multi–domain joint operations in the contemporary operational environment.

Although not a one–to–one comparison, the ISF has a similar mission to that of the Defense Information Systems Agency (DISA), a U.S. DoD combat support agency that provides information technology and communications support to the President of the United States (POTUS), Vice President (VP), Secretary of Defense (SECDEF), the DoD, the combatant commands, and any individual or system contributing to the defense of the United States. DISA is responsible for planning, engineering, acquiring, fielding, operating, and supporting global net–centric solutions. A statement used often in the PLA, while not officially connected with the ISF, quickly sums up the core aim of the ISF: "There's no network we cannot connect to, there's no connection where we can't get victory".

Missions

The primary mission of the ISF is to advance the ongoing "informationization" of the PLA, a core component of China's broader military modernization strategy. Central to this mission is the development, integration, and maintenance of military network information systems that enable real–time data sharing and coordinated operations across various service branches. The ISF is also responsible for constructing and securing the strategic communications backbone infrastructure, particularly the National Defense Communications Network, which underpins command and control functions. Additionally, the force plays a critical role in network defense and cybersecurity, ensuring the protection of military communication channels from external threats. This includes safeguarding sensitive information and maintaining the integrity and confidentiality of military data systems. Moreover, the ISF oversees the management and allocation of the electromagnetic (EM) spectrum, a key enabler for both offensive and defensive operations in the information domain.

As the ISF begins to operationalize its mandate within the PLA, it is likely to prioritize several key areas critical to the modernization of China's military capabilities. Foremost among these priorities is the integration of advanced artificial intelligence (AI) and autonomous decision–support systems to enhance the effectiveness of joint operations across multiple domains. The ISF is also expected to expand its training programs to emphasize realistic combat scenarios that reflect the complexity of hybrid threats, thereby improving operational readiness in contested and information–dense environments. In parallel, increased collaboration with China's civilian technology sector will likely be pursued to accelerate innovation and incorporate cutting–edge capabilities into military systems. The development of next–generation cyber defense mechanisms, including tools to address emerging quantum and AI–enabled threats, will be essential to securing critical information infrastructure. Additionally, the ISF is expected to focus on ensuring operational continuity under conditions of sustained, multifaceted attack, thereby enhancing the PLA's resilience in information–centric warfare.

Organizational Structure

Little is known about the overall organizational structure of the ISF outside of the likelihood that ISF bases relate to each TC. The leadership structure reflects an intentional effort to streamline command and enhance domain–specific expertise within the PLA. Lieutenant General Bi Yi, appointed as the inaugural commander, brings extensive experience from the NTC and previously served as a Deputy Director of the CMC's Training and Management Department (TMD). This role involved setting joint training requirements, providing him with a critical understanding of how information systems should be integrated into multi–service exercises. His prior position as a Deputy Commander of the PLASSF further equips him with relevant operational insights. The ISF’s first PC, General Li Wei was removed from his position in early 2026, likely as part of Xi Jinping’s corruption purge. He formerly served as the PC of the PLASSF, which positioned him effectively to advocate for the ISF within the broader military bureaucracy. At the time of writing, a new PC has not yet been appointed, and it is unclear what impact Li Wei’s removal may have on the ISF. Overall, the creation of the ISF represents an organizational shift from the previous model under the PLASSF, which housed both cyber and aerospace operations within a single, expansive command. By establishing a distinct force focused exclusively on information support, the PLA aims to eliminate the inefficiencies of a centralized but overly broad HQs, instead fostering more direct and specialized oversight of critical domains such as cyber, space, and information warfare.

ISF Modernization Priorities

The ISF’s modernization priority is the informationization of the PLA. This transformation unfolds in three distinct but interconnected stages. The first stage, digitalization focuses on integrating information technologies across all levels of the force to enhance data collection, transmission, and basic interoperability. The second stage, networkization, builds upon this foundation by connecting units and systems into a cohesive network, enabling system–of–systems warfare and facilitating joint, multi–domain operations. The third and most advanced stage, intelligentization, aims to leverage AI, big data, and automation to achieve real–time, machine–speed decision–making and operational execution. At this stage, warfare becomes increasingly shaped by emerging technologies, including autonomous systems and cognitive warfare tools. A key enabler of this phase is the envisioned development of a military metaverse—a synthetic, integrated digital environment that unifies command and control, simulation, training, and operations. Through these priorities, the ISF seeks to position the PLA as a technologically superior force capable of dominating future conflicts characterized by speed, complexity, and information dominance.

ISF Force Employment

Although publicly available information on ISF force employment remains limited, its strategic significance within the PLA is already apparent. Given the ISF’s mandate to provide joint force support and the PLA’s longstanding emphasis on the information domain as central to achieving victory in informationized local wars, it is anticipated that the ISF will serve a foundational role across all PLA operational contexts. The ISF is likely to be integral not only to enabling command and control, communications, and data integration, but also to ensuring the effectiveness of joint operations across land, sea, air, space, cyber, and electromagnetic domains. As such, even in the absence of comprehensive details, the ISF is positioned to become a critical enabler of the PLA’s broader modernization and warfighting capabilities.

ISF Training & Education

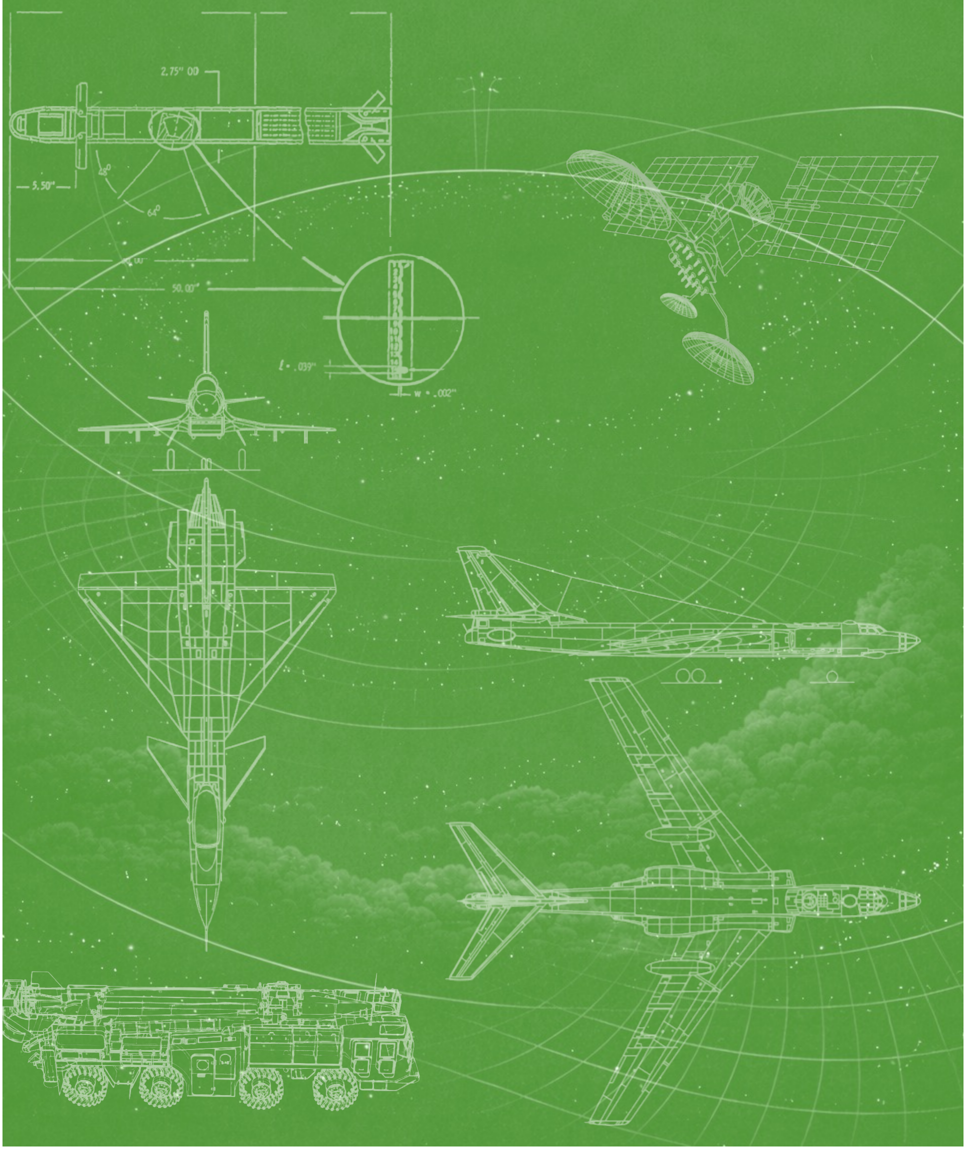
A key element of ISF development is likely to be the education and training of its personnel at the Information Engineering University (IEU) in Zhengzhou, Henan Province. The IEU, which offers both undergraduate and graduate degree programs, serves as a central institution for cultivating technical expertise in areas such as network systems, cyber defense, EW, and military communications. Its absorption of the Luoyang Foreign Languages Institute further broadens its strategic scope, integrating foreign language capabilities critical to cyber operations and information warfare. As the ISF matures, its forces are expected to be increasingly integrated into joint PLA training exercises, providing real–time operational support in areas such as communications infrastructure, network security, and electromagnetic spectrum management.

The Sino–Tanzanian joint training exercise Peace Unity–2024, conducted in July and August 2024, offers a valuable glimpse into the ISF’s emerging role within the PLA. The participation of the Central TC (CTC)'s Information Communications Regiment—an element likely reassigned from the former PLASSF to the ISF following the PLASSF's restructuring in early 2024—highlights the ISF's growing operational significance. Information communication regiments and brigades, historically responsible for establishing and defending communication networks for TCs, now appear to function under ISF authority, supporting the PLA’s broader goals of integrated, information–enabled warfare. The involvement of such units in Peace Unity–2024 underscores the exercise’s importance not only as a venue for combined training with the Tanzania People's Defence Force (TPDF) but also signals the ISF’s evolving role as a core enabler of multi–domain operations within the PLA’s broader strategy of informatized and intelligentized warfare.

PLA Army

Aviation Branch

Air Defense Branch



PLAA Aviation Branch

Overview

The aviation branch of the PLAA is relatively new. The PLAA began planning to establish an army aviation branch in 1986, and it was not until 1988 that it established its first helicopter unit within a group army in Northern China.[200] By the end of the first decade of the 21st century, the branch had expanded to include an army aviation regiment in each MR, with the exception of the Nanjing MR, which had two. Over the past decade, the PLAA's aviation branch has grown even more rapidly. The PLAA aviation branch's primary missions include providing close air support, reconnaissance, and airlift for air assault operations, as well as the infiltration and exfiltration of special operations forces. It also conducts noncombat missions such as medical evacuation and the transport of personnel and materiel for deployments or disaster relief.

The development of the PLAA's aviation branch is a key aspect of the PLAA's modernization. While the initial focus of the modernization program was on rationalizing and modularizing the force structure, the current focus is on enhancing the capability to conduct combined–arms operations across multiple domains and environments, for which the aviation branch is essential. The PLAA's aviation branch continues to modernize its helicopter fleet. Perhaps attesting to the difficulty of developing rotary wing aircraft, almost all the PLAA's helicopters are either of foreign design or based on foreign designs. For the first two decades of its existence, the branch lacked a proper attack helicopter, relying instead on a modified French transport helicopter to fulfill that role. However, the PLA has worked to develop more suitable designs over the past three decades, and these designs have been rapidly operationalized and fielded at a steady pace in the last decade.

Force Employment

The PLAA's aviation branch routinely trains to execute its full range of missions. Aviation brigades rotate to training grounds in different regions of the PRC to practice operating in diverse climates and altitudes. They also provide airlift support for PLAA special operations forces training and they regularly train with elements from other combat arms, such as infantry and armor. However, the variety and tempo of this training are recent developments, having begun in the latter half of the 2010s. As a result, the aviation branch's proficiency in these areas is likely still developing, but its efforts are serious, and its capabilities will almost certainly improve throughout the remainder of this decade. Overwater flight training has become more frequent since the beginning of the 2020s. Not only are pilots practicing individual skills, such as nighttime flight and attacking maritime targets, but their units are also practicing operating from improvised airfields. The participation of air defense units in these training events has helped the aviation branch refine its tactics for avoiding detection over the sea.[201] These improvements will be essential if the aviation branch is to support a potential invasion of Taiwan. In such a scenario, the aviation branch would be expected to support the infiltration of special operations forces, conduct air assaults to seize key terrain or facilities, and provide close air support to invading forces—even against maritime targets. Successfully executing these missions would require pilots and aircraft to routinely cross the featureless Taiwan Strait.

Organization, and Command and Control

The PLAA's largest operational formation is the group army, which is hierarchically equivalent to a U.S. Army corps, but whose size falls somewhere between a U.S. division and a corps. Each of the PLAA's group armies has an aviation brigade. The Xinjiang and Tibet Military Districts, independent regional commands within the WTC, are similarly organized and also have their own aviation brigades. In total, the PLAA has 15 aviation brigades. Two of the PLAA's aviation brigades are air assault brigades. (The PLAAF's airborne corps also fields one air assault brigade, bringing the PLA's total to three.) Except for the two air assault brigades and the Xinjiang and Tibet Military Districts' units, each unit's designation reflects that of its parent unit.[202]

The PLAA's aviation brigades are administratively and, typically, operationally subordinate to their parent group armies. Group armies are administratively subordinate to the theater armies and operationally subordinate to the TCs. However, group armies appear to be primarily administrative formations and may not always exercise operational control over their subordinate units during wartime. Therefore, if a TC tasks a group army with operations in a specific sector during a campaign, the group army would likely retain operational control over its aviation units. However, it is also conceivable that the TC would attach an aviation unit to a task force or place an aviation unit under the direct command of the theater's land component commander for more limited operations.

The precise structure of the PLAA's aviation brigades is unknown, but they almost certainly include four transport battalions, two attack battalions, one aircraft maintenance battalion, and one UAS company.[4] They likely also contain a reconnaissance battalion. Air assault brigades are similarly structured, though they may have up to six transport battalions and three infantry battalions. With each battalion estimated to have 8 to 12 helicopters, an army aviation brigade likely fields 56–72 helicopters, while an air assault brigade likely operates 64–96 helicopters.

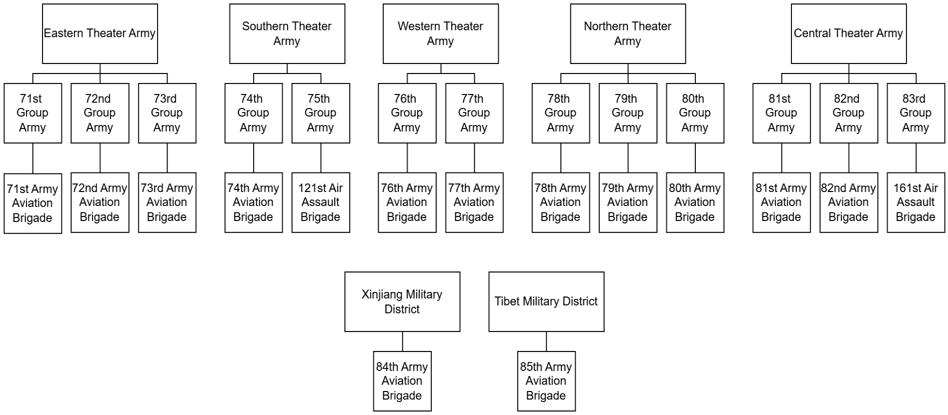


Figure 55: Aviation Brigades of the PLAA

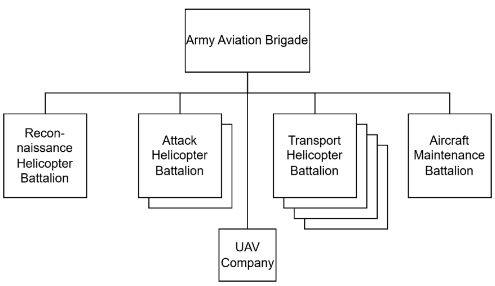


Figure 56: Army aviation brigade composition

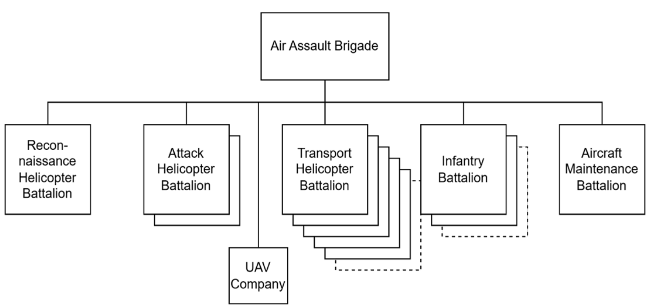


Figure 57: Army assault brigade composition

Leadership and Personnel

Figure 58: Z–8G, Z–20, and Z–10 fly in formation

The PLAA's pilots are all officers. The PLA does not separate officer and technical training; officer candidates typically receive specialized training at the same schools where they undergo officer instruction. However, the PLAA's Aviation Academy does not provide officer training to its pilot candidates. Instead, there appear to be at least two paths to becoming a pilot in the aviation branch. Apparently, prospective pilots may complete up to four years of officer training and aviation education at the PLAA's Engineering University, followed by one and a half years of flight training at the PLAA's Aviation Academy.[203] Alternatively, prospective pilots may first attend the PLAAF's Aviation University, where they undergo almost four years of officer training and aviation education before transferring to the PLAA's Aviation Academy, where they undergo one and a half years of flight training.[204] During this period, pilot candidates accumulate 180 flight hours.[205]

Prior to 2022, newly commissioned pilots likely underwent an additional year of transition and combat training within their assigned units after graduating from the Aviation Academy. However, in early 2020, it was reported that a limited number of pilot candidates at the academy were training to operate the Z–10 and Z–19 attack helicopters.[206] This development facilitated the implementation of a new program at the academy known as the "two levels with operational aircraft" (实装两级) program. This program certifies pilot candidates to operate basic trainers[xxviii] as well as more advanced types, such as the Z–9, Z–10, and Z–19.[207] As a result, new pilots graduating from the program no longer require transition training on these helicopter types after being assigned to an operational unit, thus reducing the training burden on those units.[208] (New transport helicopter pilots likely still require unit–level transition training.) The program was implemented from the academic year of 2020, every pilot candidate in each subsequent class has participated in the program.[209]

Most of the leaders of the PLAA's aviation units are aviators themselves, people who have earned the special–class flight rating. Similarly, helicopter battalion commanders are typically aviators with first–class flight ratings. Unlike in the PLAN and PLAAF, aviators in the PLAA can serve as political officers at all levels within an aviation brigade.[210] While it is unlikely that the PLAA trains political officers to become pilots, temporary reassignments between "military" and political officer billets below the brigade level are common. Thus, the presence of aviators in political officer roles might stem from this practice.

Alternatively, though less probable, the PLAA might permanently assign aviators to political officer positions within its aviation units. Given that political officers in the PLA act as both counselors and commanders, assigning aviators to these roles could enhance their ability to connect with subordinates and make informed operational decisions.

Types of Aircraft Operated by the PLAA Aviation Branch

The following table details the types of helicopters that have been confirmed to exist in each of the PLAA's aviation brigades within the past four years. Older helicopter models are often redistributed to brigades operating even older types when newer models are introduced. Therefore, brigades listed with a mix of older and newer types are likely to have already shed or will soon shed their older models.

The absence of confirmation that a brigade operates the Z–19 should not be interpreted as confirmation that it does not operate the Z–19 or lacks a reconnaissance battalion. The PLAA categorizes the Z–19 as an attack helicopter, so it is also possible that the Z–9, for example, fulfills the role of reconnaissance in those brigades operating the Z–10 but not the Z–19. Those types marked with an asterisk (*) are older types whose existence was last confirmed more than two years before and whose continued existence in the brigade is increasingly unlikely due to the introduction of newer types in the same brigade.

[xxviii] The academy's basic trainers are the Z–11 and HC120 light utility helicopters. The HC120 is a license–built version of the Eurocopter EC120. A light attack and reconnaissance version of the Z–11, the Z–11WB, exists and is apparently in service with the PLA, perhaps in some special operations forces. 威虎堂 [Weihutang],

Transport

Variants of the Mi–8

The PLAA has acquired perhaps as many as 400 of the export variants of the venerable, medium–lift Mi–8: the Mi–17; the Mi–17–1V, Mi–17V–5, and Mi–17V–7, which are all optimized for high–altitude operations and capable of being armed. The Mi–171Sh and Mi–171E are also in service, with the latter being the most numerous variant within the aviation branch.[211] The PLAA's airborne EW and airborne early warning and control platforms are based on these variants. Because of these helicopters' versatility and reliability, it is likely that the PLAA will operate most of them until the end of their service lives.

Figure 59: Mi–8

Z–8A/B

The Z–8A and Z–8B are variants of the PLAN's Z–8, a reverse–engineered version of the medium–lift Aérospatiale's SA 321 Super Frelon.[212] The Z–8B can be identified by its faired engine cowlings. The Z–8A/B appears to be transferred from units receiving newer designs, suggesting the PLAA intends to eventually replace these types.

Figure 60: Z–8A/B

Z–8G:

A derivative of the Z–18 (an improved variant of the Z–8), the Z–8G is optimized for high–altitude flight, essential for operations in western China.

Figure 61: Z–8G

Z–8L

The Z8L is a derivative of the Z–8G. It is the PLAA's first heavy–lift helicopter. Wider than the Z–8G, it can potentially transport small all–terrain vehicles. It is also identifiable by its elongated sponsons.

Figure 62: Z–8L

Z–20

The Z–20 appears to be a reverse–engineered version of the Sikorsky UH–60 medium–lift helicopter. It is rapidly replacing the Z–8A/B and is likely to become a mainstay of PLAA aviation transport, alongside the Z–8G and Z–8L. A new version, the Z–20T, has entered service, featuring two stub wings, each with two hardpoints.

Figure 63: Z–20

Attack

Z–9

The Z–9 is an armed variant of the license–built Aérospatiale SA 365, a medium–lift transport helicopter. Despite being less than ideal for the role, it served as the PLAA's primary attack helicopter until the Z–10 began to replace it in the 2010s. It appears to remain the primary attack helicopter in two PLAA aviation units, and it is also used as a trainer at the PLAA Aviation Academy.

Figure 64: Z–9

Z–10

The Z–10 is an entirely original design, though its initial design was supported by Kamov. It is the PLAA's first dedicated attack helicopter and has largely replaced the Z–9 in this role.

Figure 65: Z–10

Reconnaissance Helicopters

Z–19

The Z–19 appears to be a derivative of the Z–9. While designated as an attack helicopter, it lacks a cannon and is sometimes observed with a mast–mounted radar. During training exercises, it has been seen cuing targets for Z–10 attack helicopters, suggesting it may primarily function as a reconnaissance platform.

Figure 66: Z–19

Uncrewed Aerial Vehicles

WZ–6

The WZ–6 is a truck–launched, tactical reconnaissance UAS. It is frequently used to identify targets for attack by manned helicopters in training.

Figure 67: WZ–6

		Rotary–wing type		
TC	**Aviation Brigade**	**Transport**	**Attack**	**Reconnaissance**
Eastern	71st Army Aviation Brigade	Z–8A, Z–8B, Z–20	Z–9	Z–19
	72nd Army Aviation Brigade	Mi–17, Z–20	Z–9*, Z–10	
	73rd Army Aviation Brigade	Mi–17, Z–20	Z–10	
Southern	74th Army Aviation Brigade	Mi–17	Z–9*, Z–10	
	121st Air Assault Brigade	Z–8B*, Z–8G, Z–20	Z–10	Z–19
Western	76th Army Aviation Brigade	Mi–17, Z–8G, Z–20	Z–10	
	77th Army Aviation Brigade	Mi–17	Z–9*, Z–10	
	84th Army Aviation Brigade	Mi–17, Z–8G, Z–20	Z–10	
	85th Army Aviation Brigade	Mi–17, Z–8G, Z–20	Z–10	
Northern	78th Army Aviation Brigade	Mi–17, Z–20	Z–9	Z–19
	79th Army Aviation Brigade	Mi–17, Z–8G	Z–9*, Z–10	Z–19
	80th Army Aviation Brigade	Z–8A, Z–8B, Z–8G	Z–9*, Z–10	Z–19
Central	81st Army Aviation Brigade	Mi–17	Z–9*, Z–10	Z–19
	82nd Army Aviation Brigade	Z–8A*, Z–8B*	Z–9*, Z–10	Z–19
	161st Air Assault Brigade	Mi–17, Z–8G, Z–8L, Z–20	Z–10	Z–19

Table 11: Types of rotary–wing operated by each PLAA aviation brigade

PLAA Air Defense Branch

Overview

The origins of the PLAA air defense branch date to the 1940s. Before 2016, the PLAA's air defense branch was not rationally organized for modern warfare, as it was primarily composed of large and separate AAA and SAM formations. The 2016 reform consolidated AAA, SAM, and EW elements into air defense brigades under the PLAA's group armies and into air defense battalions under the group army's combined arms brigades. Although the PLA has maintained EW units since 1958, these units historically operated in isolation as direct–reporting units to MRs.[213] The 2016 reforms integrated these EW elements into battalions under air defense brigades, enabling their full incorporation into modern air defense operations.[214]

The mission of the PLAA's air defense branch is to provide point defense for PLAA units and facilities against aerial threats. As a specialized branch organic to the group army, the PLAA's air defense brigade is primarily responsible for local area air defense in support of its parent group army's operations. Its mission includes protecting theater–level command centers, communication hubs, logistics bases, and airfields, as well as securing critical civilian infrastructure, such as ports and bridges, from enemy air strikes.[215]

Air defense battalions within the PLAA's combined arms brigades focus more narrowly on mobile organic air defense for their parent brigade, which entails protecting assembly areas and the main axis of advance, providing overwatch during maneuvers, and defending artillery positions, tactical command posts, and key logistics supply points to mitigate enemy aerial interference.[216] The PLAA's air defense units are essential elements of the PLA's ground–based air defense capability, supporting the PLA's overall IADS.

Due to the point defense nature of the PLAA's air defense units, their radars and weapon systems have shorter ranges than those of the PLAAF and the PLAN. To address these limitations and enhance operational efficiency within the IADS, the PLAA's air defense units have conducted frequent joint training exercises with the PLAAF and PLAN in the past decades. The PLAA's air defense brigades maintain close training relationships with PLAAF Air Defense Bases, and their cooperation has evolved from rotational cross–attachment of personnel to the establishment of joint data links for sharing the PLAAF's early–warning network.[217] Arguably the best trained in joint operations, the PLAA air defense branch has built a mature system for joint command and control and has shared air situational awareness with the PLAAF, likely eliminating or reducing previous coverage gaps and delays in handover procedures.

Force Employment

Historically, the PLAA's air defense branch has been hindered more by its organizational structure than it was by its armament and equipment. AAA and SAM units traditionally dominated the branch, while information protection and early–warning assets, particularly EW battalions, were assigned supporting roles. These EW battalions were frequently silenced during exercises to prevent interference with friendly units or were used as OPFOR during joint exercises.[218]

After the 2016 reorganization, the PLA elevated information protection and sensing to the same level of importance as other combat elements and shifted its focus toward system integration and realistic combat training. PLAA air defense units began cross–training on the equipment and tactics of different branches and fully integrated EW into their training cycles.[219]

Reports from the early 2020s indicate that PLAA air defense units had improved integration with other branches during combined arms operations.[220] In addition, the Southern TC (STC) PLAA's air defense brigades have reportedly integrated into the PLAAF's early warning network, enabling the theater to conduct joint air–ground combat drills and synchronized remote command–post exercises.[221]

Organization and Command and Control

The PLAA has 14 air defense brigades. In addition, each group army has six combined–arms brigades that each have an air defense battalion. Except for the Xinjiang and Tibet Military Districts, the designation of each unit follows its parent unit's designation. PLAA air defense brigades are also administratively and, typically, operationally subordinate to their parent group armies. However, operational control of an air defense brigade depends on the specific mission. A group army may retain control of its own air defense brigade, or an air defense brigade may be assigned to a joint task force under the direct command of the theater's air component commander for more limited–scale operations.

The PLAA's air defense units are equipped with a variety of mobile, modern weapons. They have established an integrated firepower architecture centered on SAM systems and supported by AAA and heavy machine guns. To enhance rapid deployment on the battlefield, the PLAA emphasizes realistic training environments that simulate combat conditions, with a particular focus on improving equipment maneuverability and communications. Air defense brigades have leveraged high–precision radar, advanced missile systems, highly mobile AAA, and EW assets to form a multi–layered air defense network that covers long–, medium–, and short–range engagements, as well as high–, medium–, and low–altitude engagements.

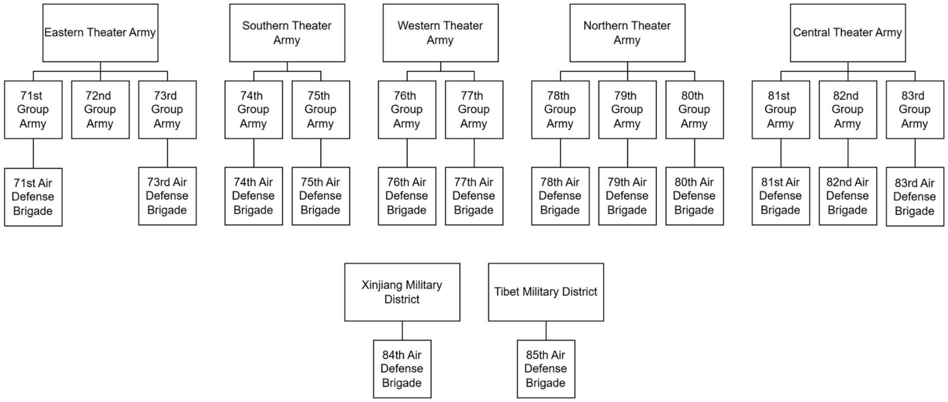


Figure 68: Air defense brigades under group armies

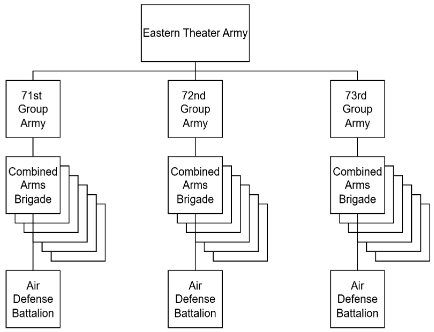


Figure 69: Air defense battalions under combined arms brigades in Eastern Theater Army

Unit Structures and Common Equipment

A typical air defense brigade consists of one medium–range SAM battalion, two short–range SAM battalions, one EW battalion, and a command and support company.[222] Open sources also suggest that these brigades include one or two AAA battalions, which serve as a terminal engagement layer to intercept targets that bypass initial missile defenses.[223]

The HQ–16A/B medium–range SAM is the core of air defense brigades. First fielded to an air defense brigade under the Shenyang Military District in 2011, the HQ–16A is touted by Chinese media for its area defense and precision strike capabilities.[224] It operates at the battalion level, typically consisting of six launcher vehicles supported by search and guidance radar vehicles, command vehicles, and support vehicles with mobile chassis that combine storage, transport, and launch capabilities that allows the system to complete a fire cycle within 13 minutes. In 2017, the PLA introduced the HQ–16B at the exhibition commemorating the 90th anniversary of PLA's founding and reported its successful high–altitude test launch. Since then, the PLA has begun phasing out the HQ–16A in favor of the extended–range variant with a phased array radar and has deployed HQ–16B to at least two air defense brigades within the Eastern TC (ETC) and the Tibet Military District.

Short–range SAM systems employed by PLAA air defense brigades originated with the Russian Tor–M1 and transitioned to HQ–7 in 2008, followed by a further upgrade to the HQ–17 starting in 2016. According to reports from the *PLA Daily*, the PLAA air defense brigades have established IADS networks focusing on HQ–16, HQ–17, and AAA. These reports highlighted a successful exercise to rehearse the mentioned integration networks, conducted by the former 42nd Group Army (now the 74th Group Army of the STC) and the 1st Group Army (now the 71st Group Army of the ETC).[225]

The PLAA has an estimated 82 or 84 combined arms brigades distributed across 13 group armies under five TCs.[xxix] Combined arms brigades are categorized as either heavy, medium, or light. Each brigade is organic to an air defense battalion responsible for brigade–level field air defense.[226] Air defense battalions within these three types of combined arms brigades generally mirror each other's structure and are composed of a SAM battery, three AAA batteries, a man–portable air defense system (MANPADS) battery, and a command and support battery, but differ in the specific equipment used.

Heavy combined arms brigade air defense battalions are equipped with SAM batteries utilizing the HQ–17 tracked self–propelled SAM system, while AAA batteries are equipped with six PGZ–09 tracked self–propelled AAA systems. SAM batteries of medium combined arms brigade air defense battalions primarily operate the HQ–17B, and some units have already begun receiving the newer HQ–17A wheeled self–propelled systems. Its AAA batteries mainly utilize the towed PG–99 or the newer Type–625E, with each battery fielding six guns.[227]

In contrast, air defense battalions within light combined arms brigades did not traditionally include a SAM battery until 2025, when the PLAA began deploying HQ–13 self–propelled SAM systems to light combined arms brigades in the 72nd Group Army of the ETC.[228] These light combined arms brigade air defense battalions are composed of three AAA batteries of Type–09 self–propelled anti–aircraft gun or Type–625E.[229] It has been reported that the SWS3 gun–missile air defense system that pairs two HQ–13 and one 35 single–barrel autocannon has already entered service in the PLAA's light combined arms brigades to engage low–altitude and ultra–low altitude targets.[230] To provide point defense, these battalions employ MANPADS, such as QW–2 and FN–6B, mounted onto wheeled platforms as organic protection against low–altitude threats for maneuvering mechanized units.[231]

[xxix] Xinjiang Military District is organized into four combined arms division and specific arms brigades such as artillery brigade, EW brigades, etc. Under the combined arms division, there are three combined arms regiments, fires regiment and logistics and support regiment. Due to the difference in size and equipment, Xinjiang Military District is not included in the discussion of Combined Arms Brigades.

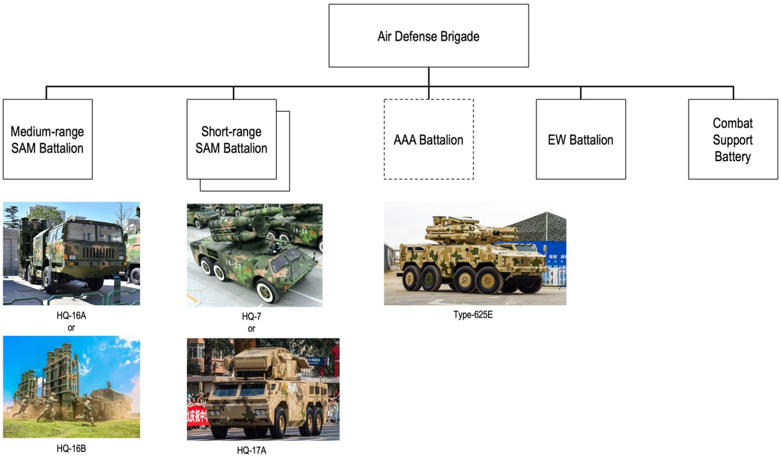


Figure 70: Air defense brigade units and equipment

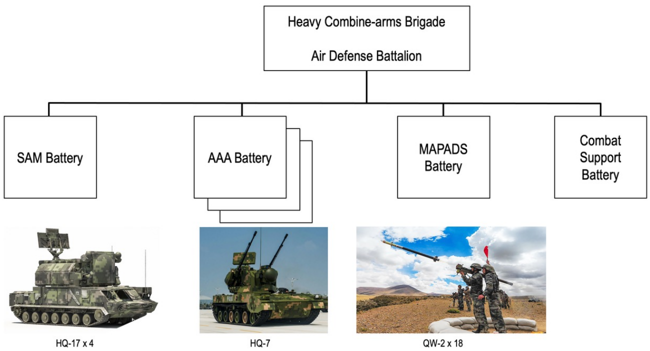


Figure 71: Composition and equipment of an air defense battalion under heavy combined arms brigades

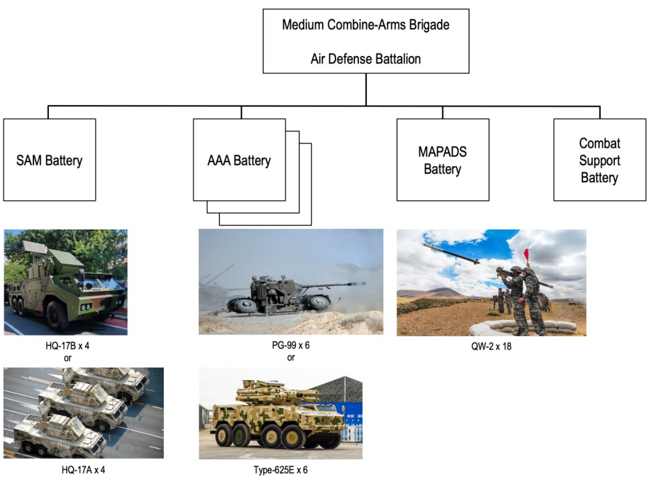


Figure 72: Composition and equipment of an air defense battalion under medium combined arms brigades

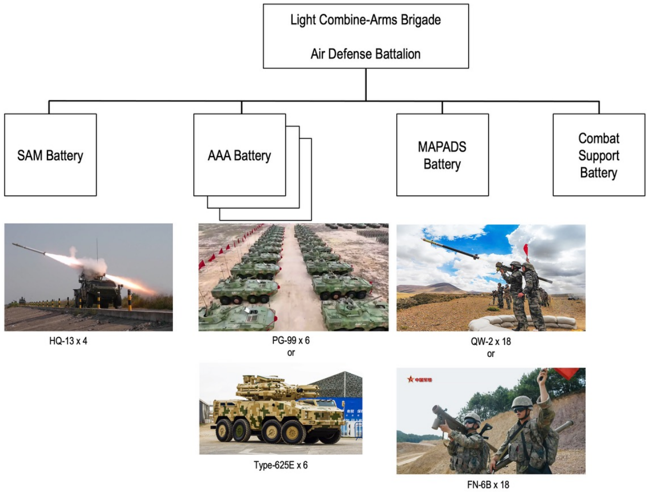


Figure 73: Composition and equipment of an air defense battalion under light combined arms brigades

China's Defense Industrial Base

China's Defense Industrial Base

While it is necessary to focus on China's military forces, a complete understanding of PLA aerospace power requires knowledge of the support infrastructure, industrial base, and Military–Civil Fusion [军民融合] (MCF) that equips, deploys, enables, and sustains China's capability and capacity to employ military force. The following section has three parts: the first examines how the PRC manages and organizes its defense industrial base (DIB), the second explains the key role MCF plays in the PRC DIB, and the third describes key shifts in China's aerospace sector.

The scale and growth of China's economy mean that military production has probably not yet imposed an undue economic burden. In fact, the share of gross domestic product (GDP) spent on the DIB, along with other costs associated with military modernization, has remained under 2 percent of GDP from 2003 to 2024 based on the official defense budget.[232] While actual defense expenditures are hard to determine, even at higher estimates, China's defense spending still only accounts for around 2.3–2.4 percent of GDP. Moreover, China's defense expenditures have slowly decreased from 9–10 percent of its total national budget in the 1990s to around 6.2 percent in 2025, indicating the CCP may have room to increase the defense budget, if necessary.[233] More broadly, from 1980 to 2025, China's economy grew around 9 percent annually in real value terms. By the end of 2025, China's official GDP reached $20.4 trillion, second only to the United States at $31.44 trillion.[234] Despite the PRC's marked economic and technological progress over the past four decades, closing the gap with the U.S. economy has been a challenge. Over the last three years, the gap between the respective nominal U.S. and PRC GDPs has widened from $7.5 trillion in 2022 to $11.04 trillion at the end of 2025.

A large economy alone does not guarantee innovation nor a strong DIB. Developing an ecosystem that links and resources companies, research organizations, and universities throughout the development pipeline across industrial and service sectors is a complex endeavor for any country. In terms of the DIB in particular, Chinese and Western researchers note that while China could in the past focus its resources mainly on modernization, it has now reached a level at which it faces difficult choices between investment in modernization and force readiness and sustainment, a choice that peer military powers have faced for some time. The choices China makes regarding the organization of its DIB will have long–term impacts due to the time required to build relationships across sectors and the potential for delays caused by policy uncertainty.

Organizing and Managing the Defense Industrial Base

Industrial organization in China is characterized by a mix of state–owned enterprises (SOEs), mixed–ownership enterprises (MOEs, which include both private and government investment with the government controlling a 51 percent or higher ownership stake), and private companies. The latter continue to be the principal drivers of China's growth and efficiency, but the SOEs have retained the most state support. Over the past ten years, the revenues and assets of state defense firms have increased by over 150 percent, a slower rate than the economy but sufficient to put them on par with the likes of Raytheon, BAE, and Northrop–Grumman as some of the world's largest defense companies. In recent years, as the implementation of MCF has accelerated, state–owned heavyweights such as AVIC and CASC have been joined by a growing number of nominally private companies, some of which spun off from SOEs or other parts of the DIB, such as university labs, to produce an increasingly sophisticated array of military technologies.

Currently, ten large SOEs are the PRC DIB's primary research, development, and production consortiums: AVIC, Aero Engine Corporation of China (AECC), CASC, CASIC, NORINCO, China South Industries Group Corporation (CSGC), China State Shipbuilding Corporation (CSSC), China National Nuclear Corporation (CNNC), China Electronics Technology Group Corporation (CETC), and China Electronic Corporation (CEC). In the military aerospace sector, the four primary SOEs trace their immediate origins to the companies that emerged from the State Council's 1993 decision to split the former Ministry of Aerospace Industry into two large state–owned enterprises: the AVIC and the China Aerospace Corporation. AVIC assumed responsibility for military aviation, while the China Aerospace Corporation took control of the production of missiles, rockets, and space technology for the PLA. In May 2008, AVIC split off two of its Shanghai subsidiaries to establish a new company, Commercial Aircraft Corporation of China (COMAC), which is dedicated to producing civilian passenger aircraft.[235] Although COMAC is focused on the commercial sector, it retains ties to the Chinese military—AVIC retains a minority stake in the company and exercises significant influence over it. In January 2025, COMAC was added to the Defense Department's list of Chinese military companies operating in the U.S.[236]

In 1999, China Aerospace Corporation was split into two entities: the CASC and the China Aerospace Machinery and Electronics Corporation, which in 2001 was renamed CASIC.[237] Following the breakup of the former China Aerospace Corporation, a division of labor emerged between CASC and CASIC in China's rapidly expanding missile and space launch vehicle industry. CASC assumed responsibility for space launch vehicles for the PRC space program and strategic weapons, including intercontinental ballistic missiles and other long–range strategic missiles. CASIC became the PRC's primary tactical missile manufacturer, producing medium– and short–range ballistic missiles, cruise missiles, and surface–to–air missiles.[xxx] In 2016, the military aviation sector was also broken into two large SOEs, with AVIC's aeroengine enterprises creating another large military aviation SOE,[xxxi] the AECC.[238] The State–owned Assets Supervision and Administration Commission of the State Council (SASAC) directly owns and controls one hundred centrally administered SOEs in strategic sectors, including the ten SOEs that dominate the PRC's defense industrial base.[239] However, these SOEs are directly supervised by the State Administration of Science, Technology and National Defense (SASTIND) under the Ministry of Industry and Information Technology (MIIT). In this capacity, SASTIND is responsible for organizing and coordinating the research, development, and production of weaponry and equipment across fields such as nuclear energy, aerospace, aviation, shipbuilding, ordnance, and electronics, as well as building core capabilities within the defense industry.[240]

SASTIND works closely with the CMC EDD to conduct DIB oversight. The EDD provides centralized direction to the PRC's armament system, including oversight of defense procurement, acquisition, defense research, and weaponry and other military equipment development.[241] In this capacity, the EDD manages contracts and other transactions with defense enterprises and their subsidiaries.[242] The EDD works with SASTIND to oversee weapons and equipment R&D and production licensing, and maintains a catalog of military and dual-use items that require production licenses due to their impact on national and public security.[243] The EDD also works with relevant civilian bureaucracies to set export controls on key military technologies in which it believes China has a comparative advantage, such as UAV technologies.[244]

The PRC's extensive network of research academies and elite scientific and technical universities is a crucial element of MCF and the Chinese defense industrial base's innovation ecosystem. In particular, the seven universities affiliated with MIIT, popularly known as the Seven Sons of National Defense [国防七子], military universities, research academies, and other top research universities under the Ministry of Education are key centers for the research and development of defense and dual–use technologies. These entities, along with defense SOEs, host a panoply of State Key Laboratories and Defense State Key Laboratories (DSTKLs) that advance research in strategically significant scientific sectors.[245] Often, research universities and SOEs co–host such labs, enabling direct "school–enterprise" cooperation. For example, Beihang University's (one of the Seven Sons) School of Instrumentation and Optoelectronic Engineering and the CASIC Third Academy's (China's main cruise missile production complex) 33rd Research Institute, also known as Beijing Automation & Control Equipment Institute, jointly administer the DSTKL of Inertial Technology. This laboratory focuses on developing precision navigation and guidance instruments for missiles, satellites, and other aerospace systems.[246]

Military–Civil Fusion[247]

With an awareness that the DIB can drive economic development and military strength, Beijing has leveraged the DIB to invigorate the broader civilian economy through its Military–Civilian Fusion strategy. MCF has gone through various iterations, starting with Deng Xiaoping's focus on keeping the defense sector alive during peacetime and economic reform in the 1970s. Starting in 2017, Chinese leaders and scholars have tried to further articulate how MCF should support national defense and economic strategies. Chinese media have reported on Xi Jinping's speeches on the matter at the 19th Party Congress:

"The ultimate goal of MCF is to build up China's unified military–civil system of strategies and strategic capability, that is, to achieve a balance between national development and national security, to unify building a prosperous nation and a strong military…to form a strategic posture that enables the integrated deployment of politics, economy, military, science and technology, diplomacy, and culture to enhance the country's overall strength and strategic competitiveness..."[248]

[xxx] For an excellent overview of the PRC's ballistic missile production see, Peter Wood and Alex Stone, "China's Ballistic Missile Industry," CASI, May 11, 2022, https://airuniversity.af.edu/CASI/Articles/Article-Display/Article/2599627/chinas-ballistic-missile-industry/.

[xxxi] AVIC had previously been split into AVIC I and AVIC II from 1999 to 2008.

Military–Civil Fusion seems like a counterpart to the American term civil–military integration (CMI), but in reality, it is far deeper and more complex. Whereas, according to the U.S. Congressional Office of Technology Assessment, America's CMI is "cooperation between government and commercial facilities in R&D, manufacturing, and/or maintenance operations," China's MCF strategy is a state–led, state–directed program and plan to leverage all levers of state and commercial power to strengthen and support the PLA. China's MCF program is not new. Every leader since Mao Zedong has had a program to compel the "commercial" and "civil" parts of Chinese society to support the PLA. These efforts have had various other labels over the years, such "military–civil integration" and "military–civil fused development," but General Secretary Xi Jinping has elevated the concept to "military–civil fusion." In all cases, it is the "military" that comes first. Whereas in the United States there is a partnership for spin–off and spin–on technologies, with the goal of assisting commercial companies as well as the military, this is simply a happy coincidence when, and if, it happens in China. Since Xi Jinping's assumption of power, the role of the military and the importance of MCF have markedly increased.

As the name suggests, the MCF strategy hopes to achieve a state of "deep fusion" through the integration of the two essential building blocks: the "military" and the "civil." The "military" includes every aspect of the national defense and force–building endeavor, including the armed forces, national defense technology, industry, facilities, mobilization, education, and resources, as well as the major operational domains. The "civil" refers to fields in the economic and social system that are closely related to national defense and force–building, such as the national science and technology and industrial systems, the national talent education and training system, the national social services system, and the national emergency management system, as well as emerging domains and nascent technological areas such as maritime, space, cyberspace, and artificial intelligence that are closely linked to the generation of "new type combat capabilities."

The optimization of national resource allocation and the generation of combat readiness and economic benefits are near–term, basic goals of the strategy. Its ultimate goal, according to Xi and Chinese experts, is the "gradual build–up of China's unified military–civil system of strategies and strategic capability." From Chinese writings, MCF is clearly not a simple addition to China's other national strategic priorities, but rather a strategy whose components are to be woven into China's system of national strategies to form an organic, powerful, and comprehensive national strategic system that will advance the PRC's overarching security and development goals.

Central and local government procurement is a large contributor to the DIB, but government spending alone cannot account for its growth. SOEs have also raised private capital by creating publicly traded and privately owned subsidiaries and MOEs. China's leaders understand the lofty goals of MCF are currently within reach, and they have set up intermediate milestones to keep the enormous number of players in the system on the same path. According to Chinese documents on MCF strategy, the near–term goal is to improve and deepen cross–sectoral integration between the national defense and economic systems to ensure the optimal use of resources, in addition to accelerating the development of military capability and capacity. China has prioritized several areas for access to resources in the near and medium term.[249]

China is the fifth–largest arms supplier in the world, exporting a variety of equipment, including UAVs, fixed–wing aircraft, and precision–strike weapons, primarily via SOEs such as AVIC and NORINCO.[250] Chinese DIB firms have also raised capital by issuing asset–backed securities and have benefited from "government guidance funds" established by central and local governments. Other types of government support include tax breaks, free land, free utilities, and, in some cases, even free facilities.

The logic of efficient resource use in China's DIB entails difficult decisions and ongoing debates. In the opinion of key MCF academics, NUDT professors He Kun and Zeng Li, the core of the "MCF deep fusion" strategy lies in the need to continuously enhance efficient resource allocation, which, they argue, is essentially an economic issue. The tension between the competing demands of defense spending and slowing economic growth is likely to be even stronger in the near future, given that China's armed forces "are moving towards informatization and shouldering arduous tasks in following the trends of the worldwide Revolution in Military Affairs." Central government R&D funding mechanisms have also been reformed to improve information and resource sharing.

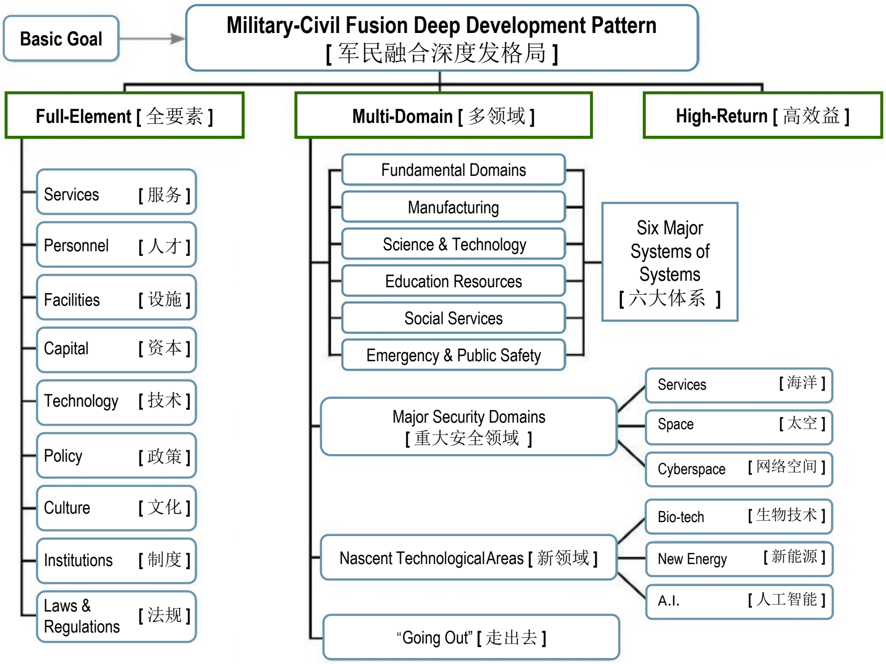


Figure 74: MCF development pattern (Remade at higher res based on China's Military–Civil Fusion Strategy, Stone & Wood pg. 28)

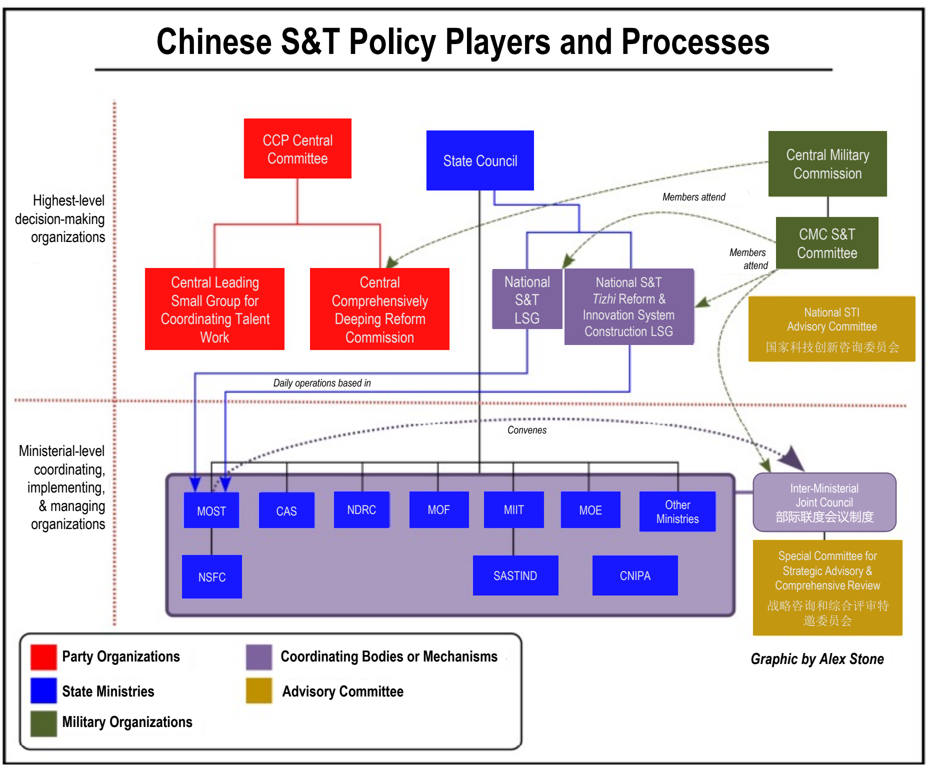


Figure 75: Science and technology policy landscape

Shifts in China's Aerospace Sector

Shifts in the civilian market and military requirements are having a major impact on the Chinese aviation industry. Airport sharing between the PLA and the Civil Aviation Administration of China (CAAC) began in 1985. According to information provided by CAAC, as of 2017, China had 64 military–civilian airports in operation, accounting for over 28 percent of all transport airports. Among them, 59 airports were shared by civil aviation and the PLAAF, accounting for more than 92 percent of the total. The remaining five are believed to be shared with other services. The *PLA Daily* reported in August 2019 that these 59 airports had jointly completed over 1 million flights and transported 92.21 million passengers since 2018, accounting for 7.3 percent of the national total.[251] In addition to sharing spaces, the industries have some natural cross–pollination as civilian aircraft manufacturers leverage new advanced techniques and meet the demand of the growing middle class for air travel.

The civilian aviation industry, working in tandem with the central government, is attempting to meet domestic demand with indigenously produced aircraft. Broader manufacturing sector improvements, particularly the use of computer–integrated manufacturing systems, which include a full range of processes and tools such as computer–aided design, modeling, quality control, 3D printing, and computer numerical control milling and lathing, have dramatically improved quality. Manufacturers are using new materials such as composites, carbon fiber, and titanium, which reduce radar cross–sections, reduce weight, and allow faster construction of new airframes.

PLA requirements, together with shifts in the operational use of aviation by the Naval Aviation and Army Aviation branches, drive the direction of military aviation R&D. One example of these requirements is the transition to a "strategic air force" in 2014. In an interview with *People's Daily*, Air Force Command College Professor Wang Mingliang described a "strategic air force" as possessing three capabilities: strategic defense capability across all domains; strategic attack capability, including the ability to conduct deep strikes against enemy positions regardless of terrain; and strategic power projection. This last capability is particularly important and involves the logistical support required to gather resources needed for operations, as well as the ability to deliver them over long distances in a short time.

Both the PLA Navy's aviation branch and the PLA Air Force have been the recipients of major upgrades over the past decade. Indigenous production of the Y–20 heavy–lift transport aircraft, the introduction of advanced variants of the H–6 bomber, and the ongoing development of an "H–20" bomber can all be understood as responses to this strategic guidance. As a result of advances in manufacturing and the use of other advanced systems, projects have been completing their conception–to–test–flight phases more rapidly since 2000. AVIC's Hongdu Aviation Industry Group and CASIC's Hubei Sanjiang Aerospace Honglin Exploration Control Company are among the top ten Chinese military companies based on the number of patents as of 2019, and, at present, large aviation factories have largely been consolidated under AVIC's banner. SIPRI included several PRC aerospace giants on its list of the world's largest arms–producing and military services companies in 2024: AVIC ranked eighth globally, registering $20.3 billion in arms revenue; CASC ranked 17th with roughly $10.25 billion; and AECC 26th with around $6.3 billion in revenue.[252]

As a Shanghai–based market research firm noted in 2025, AVIC and other large defense SOEs increasingly tend to "consolidate their disparate assets within the same business domains" so as "to resolve issues of intra–industry competition and foster creation of specialized, leading enterprises."[253] For example, in recent years, AVIC has consolidated its bomber and transport aircraft production under AVIC Xi'an Aircraft Industry Group. The company has also grouped its fighter aircraft assets under two major subsidiaries, Shenyang Aircraft Corporation and Chengdu Aircraft Industrial Group (CAIG). The latter was recently "acquired" by a much smaller subsidiary, AVIC–Zhonghang Electronic Measuring Instruments Co. Ltd. (ZEMIC), which has already gone public on the Shenzhen Stock Exchange, effectively acting as a vehicle for CAIG's "backdoor listing" by AVIC.[254]

China has historically been overwhelmingly reliant on imports of foreign technologies, including for PLA modernization, but in recent years its DIB has made significant progress toward technological self–sufficiency. This process was well underway in the 2010s as part of MCF, but mounting trade restrictions on critical technologies and the global responses to Russia's invasion of Ukraine likely further pressed Beijing to rapidly reduce dependence on imports. In 2023, the Defense Department recognized that the PLA had reached a point of "minimal reliance" on imports and was capable of developing systems "comparable to the most advanced U.S. and Russian equipment."[255] In aviation specifically, China's DIB has continued to make progress on its domestically produced WS series of jet engines, making it much less reliant on imported technology for the PLA's most advanced aircraft.

Another recent development in the PRC DIB's aerospace sector further demonstrates the depth of Xi's commitment to the MCF strategy: the emergence of private companies that supply the PLA with complete systems, such as drones, to the PLA. Until very recently, the Chinese military only acquired whole systems from large SOEs, such as CASC and NORINCO, that fall under SASTIND's control. However, in some dual–use technology areas, such as UAV production, several private companies have emerged as significant producers. For example, Sichuan Tengden Technology Science Innovation Joint Stock Limited Company, which was founded by a former AVIC engineer, has produced several UAVs for both attack and reconnaissance roles.[256] Another company, Lycon e Tech, founded by a former researcher at Northwestern Polytechnical University's (NWPU) National Key Laboratory of UAV Special Technology, has developed small VTOL and swarm UAVs for use by military or armed police forces.[257] Beijing ZhongHangZhi Technology Co., Ltd., which is also nominally private, has furnished unmanned helicopters to the PLA and supported field exercises. In the satellite remote sensing field, another nominally private company furnishing key aerospace technologies to the PLA is Chang Guang Satellite Technology Co., Ltd. (CGST). Founded as a joint venture between the Chinese Academy of Sciences' Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP) and the Jilin provincial government, CGST eventually spun off into a private company, albeit under a former CIOMP executive. CGST, whose main product is the Jilin constellation of remote sensing satellites, received start–up support from the former PLA Strategic Support Force and has provided the Chinese military with satellite imagery services.[258]

PLA Purges, Corruption, and the Military Aerospace Industry

The ongoing anti–corruption purges targeting corruption in the Chinese military began in mid–2023, with an early focus on the equipment procurement system and the PLA Rocket Force. This had a major impact on the defense aerospace industry, precipitating massive leadership turnover in aerospace defense SOEs. This is illustrated by the fact that all the party secretaries heading the major aerospace defense SOEs in mid–2023 have been investigated or punished for corruption. AVIC Party Secretary Tan Ruisong, who was dismissed from his position in early 2023, received a suspended death sentence for corruption–related offenses in March 2026. In December 2023, the National Committee of the Chinese People's Consultative Congress revoked the memberships of three senior executives from state–owned defense enterprises, including CASC President Wu Yansheng, the Party Secretary of NORINCO, and a Deputy General Manager of CASIC, who were all subsequently dismissed from their posts. Former CASIC Party Secretary Yuan Jie, who disappeared from public view in late 2023 and is believed to be implicated in the PLARF purges, was officially removed from his post as CASIC Party Secretary in March of 2024.

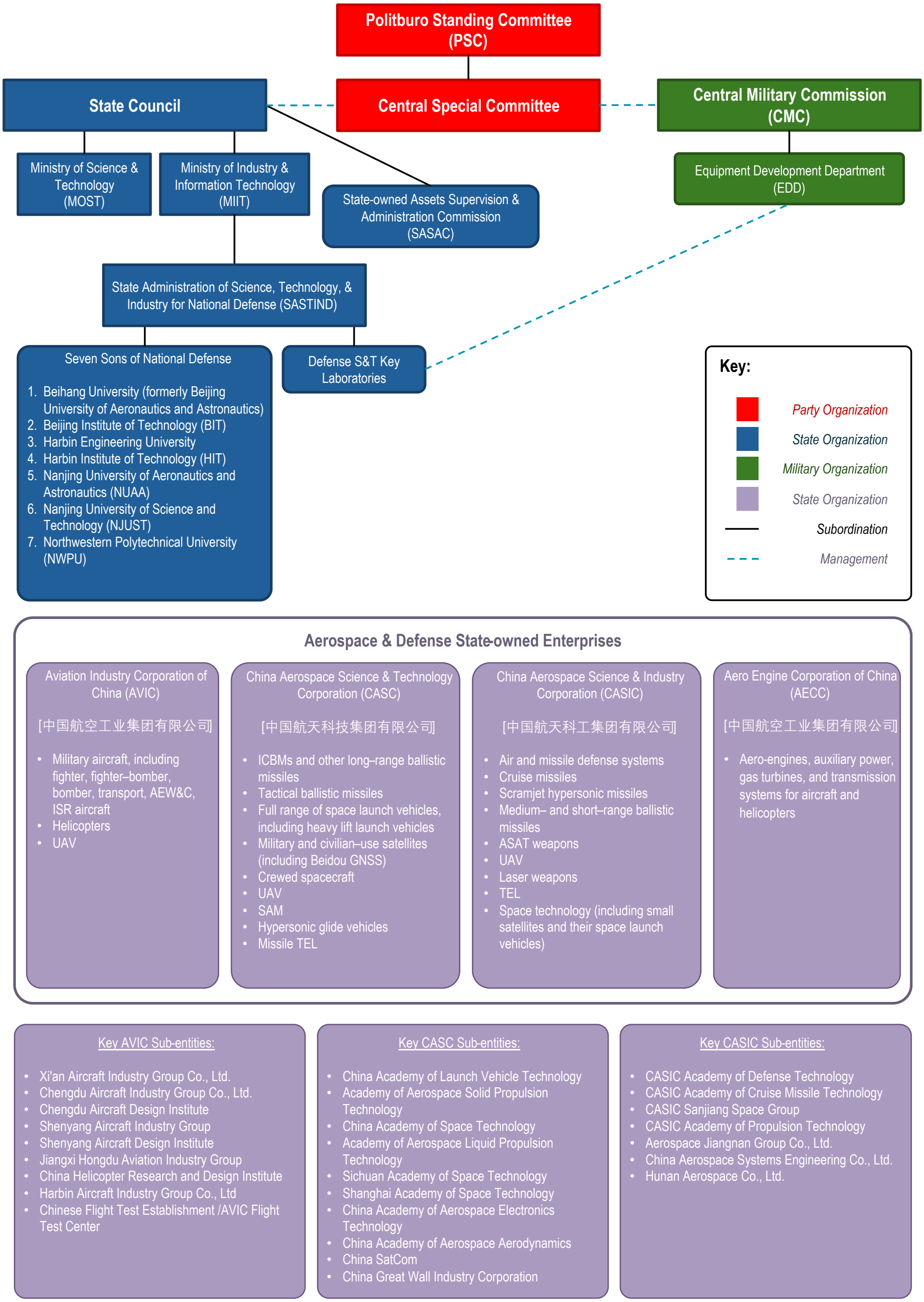


Figure 76: Chinese defense industrial base organizations and relationships

Endnotes

[1] Joel Wuthnow, “A New Step in China’s Military Reform,” *Joint Force Quarterly* online, April 2024, https://ndupress.ndu.edu/Media/News/News–Article–View/Article/4157257/a–new–step–in–chinas–military–reform/; Kevin Pollpeter et al., “PLA Update: Issue 20,” CNA, April 30, 2024, https://cna.org/our–media/newsletters/pla–update/issue–20.

[2] Pollpeter et al., “PLA Update: Issue 20.”

[3] Pollpeter et al., “PLA Update: Issue 20”; Brendan S. Mulvaney, “The PLA’s New Information Support Force,” China Aerospace Studies Institute, April 22, 2024, https://airuniversity.af.edu/CASI/Display/Article/3749754/the–plasnew–information–support–force; Joel Wuthnow, “A New Step in China’s Military Reform,” *Joint Force Quarterly* 117 (2nd Quarter 2025) 4–13, https://digitalcommons.ndu.edu/joint–force–quarterly/vol117/iss2/3.
Hereafter “China Aerospace Studies Institute” is cited as CASI.

[4] Wuthnow, “A New Step in China’s Military Reform”; Pollpeter et al., “PLA Update: Issue 20.”

[5] Yew Lun Tian, “China Says It Conducted Air Patrol with Russia in East China Sea, Western Pacific,” *Reuters*, December 9, 2025, https://reuters.com/world/china/china–says–it–conducted–air–patrol–with–russia–east–china–sea–western–pacific–2025–12–09/; “China and Russia’s Strategic Air Patrol: Tensions in the Skies,” *Devdiscourse*, December 9, 2025, https://devdiscourse.com/article/business/3724571–china–and–russias–strategic–air–patrol–tensions–in–the–skies; Tim Kelly, “Russian Bombers Join Chinese Air Patrol near Japan as Tokyo–Beijing Tie Strains,” *Reuters*, December 10, 2025, https://reuters.com/business/aerospace–defense/russian–bombers–join–chinese–air–patrol–near–japan–tokyo–beijing–tie–strains–2025–12–10/.

[6] Tian, “China Says It Conducted Air Patrol with Russia”; Kelly, “Russian Bombers Join Chinese Air Patrol near Japan.”

[7] Tian, “China Says It Conducted Air Patrol with Russia”; “China and Russia’s Strategic Air Patrol: Tensions in the Skies”; China Central Television (CCTV) [中华人民共和国中央电视台], “中俄第 10 次联合空中战略巡航 专家解读：中国构建海空联合立体威慑态势 [10th Joint China–Russia Strategic Air Patrol: Experts Analyze China’s Development of a Combined Sea–Air Dimensional Deterrence Posture],” 央视网军事频道 [*CCTV.com Military Channel*], April 1, 2025, https://web.archive.org/web/20250413110020/https://military.cctv.com/2025/04/01/ARTI1fZM7vRN5tJcChOU5S1e250401.shtml; “Китай и Россия провели 10–е совместное стратегическое воздушное патрулирование [China and Russia conducted their 10th joint strategic air patrol],” *Russian.people.cn*, December 10, 2025, https://web.archive.org/web/20251210012332/https://russian.people.com.cn/n3/2025/1210/c31521–20400387.html.

[8] Kelly, “Russian Bombers Join Chinese Air Patrol near Japan”; “Китайские и российские бомбардировщики впервые провели совместный полёт у побережья Сикоку [Chinese and Russian Bombers Conduct Joint Flight off Shikoku],” *Nippon.com* (Russian ed.), December 10, 2025, https://nippon.com/ru/news/yjj2025121000546/.

[9] Air Force Command Headquarters, Ministry of National Defense (Taiwan), “PLA Activities in the Waters and Airspace around Taiwan Jun. 8, 2025,” June 8, 2025, https://web.archive.org/web/20260320181121/https://air.mnd.gov.tw/EN/News/News_Detail.aspx?CID=214&ID=58160.

[10] Air Force Command Headquarters, Ministry of National Defense (Taiwan), “PLA Activities in the Waters and Airspace around Taiwan Jun. 8, 2025.”

[11] Li Yan [李岩], “东部战区半月两次位台岛周边演训，这次演练内容有新变化 [The Eastern Theater Command has Conducted Military Exercises near Taiwan Twice in the Past Two Weeks, and this Latest Drill Features New Elements],” 新浪新闻 / 北京青年报 [*Sina News* | *Beijing Youth Daily*], April 1, 2025, https://web.archive.org/web/20250402211007/https://news.sina.com.cn/c/2025–04–02/doc–inersuta5878244.shtml.

[12] Shi Yi [施毅], “东部战区组织陆海空火等兵力位台岛周边开展联合演训 [Eastern Theater Command Deploys Army, Navy, Air Force, and Artillery Forces Around Taiwan for Joint Military Exercises],” 央视网 [*CCTV.com*], April 1, 2025, https://web.archive.org/web/20250413110020/https://military.cctv.com/2025/04/01/ARTI1fZM7vRN5tJcChOU5S1e250401.shtml; Xie Ruiqiang [谢瑞强], “东部战区位台岛周边开展联合演训，这些关键信息值得关注 [Eastern Theater Command Conducts Joint Drills Around Taiwan; Key Details to Watch],” 澎湃新闻 [*The Paper*], April 1, 2025, https://web.archive.org/web/20251230103310/https://thepaper.cn/newsDetail_forward_30542457.

[13] Ahmed Al–Deeb, “Egypt and China Begin Joint Air Force Drill ‘Eagles of Civilization–2025,’” *Ahram Online*, April 2025, https://web.archive.org/web/20250811164621/https://english.ahram.org.eg/NewsContent/1/1237/544872/Egypt/Defence/Egypt–and–China–begin–joint–air–force–drill–%E2%80%98Eagle.aspx; “Joint Egyptian–Chinese Air Exercise ‘Eagles of Civilization–2025,’” State Information Service of Egypt, April 22, 2025, https://web.archive.org/web/20251113231306/https://sis.gov.eg/en/egypt/military–institution/joint–egyptian–chinese–air–exercise–eagles–of–civilization–2025/; Parth Satam, “China and Egypt Kick Off First Joint Aerial Drills,” *The Aviationist*, April 22, 2025, https://web.archive.org/web/20250811164621/https://english.ahram.org.eg/NewsContent/1/1237/544872/Egypt/Defence/Egypt–and–China–begin–joint–air–force–drill–%E2%80%98Eagle.aspx.

[14] “Joint Egyptian–Chinese Air Exercise ‘Eagles of Civilization–2025,’”; Al–Deeb, “Egypt and China Begin Joint Air Force Drill ‘Eagles of Civilization–2025,’”; Zhang Tianlei [张天磊] (ed.), “中国空军首次！‘文明之鹰-2025’中埃空军联合训练结束 [A First for the Chinese Air Force! ‘Eagles of Civilization 2025’ Joint Training Exercise Between the Chinese and Egyptian Air Forces Concludes],” 中国日报网中文版 [*China Daily (Chinese Edition)*], 5 May 2025. https://web.archive.org/web/20250620101730/https://cn.chinadaily.com.cn/a/202505/05/WS68183fd3a310205377031a13.html.

[15] Evan Lerouvillois, “China’s Fujian Carrier Proves Its Electro–Magnetic Catapult Launch Abilities, Rivaling U.S. Navy Technology,” *Army Recognition*, December 2025, https://armyrecognition.com/news/navy–news/2025/chinas–fujian–carrier–proves–its–electro–magnetic–catapult–launch–abilities–rivaling–u–s–navy–technology; Akira Nakamura, “China’s Military Firms Struggle as Corruption Purge Bites,” *World Ports*, December 1, 2025, https://worldports.org/feature–chinas–military–firms–struggle–as–corruption–purge–bites/;

Parth Satam, "J–35, J–15 and KJ–600 Shown Operating off PLA Navy's Fujian Carrier," *The Aviationist*, September 22, 2025, https://theaviationist.com/2025/09/22/j–35–j–15–kj–600–fujian–flight–ops/.

[16] Lerouvillois, "China's Fujian Carrier Proves Its Electro–Magnetic Catapult Launch Abilities, Rivaling U.S. Navy Technology"; Satam, "J–35, J–15 and KJ–600 Shown Operating off PLA Navy's Fujian Carrier."

[17] Nakamura, "China's Military Firms Struggle as Corruption Purge Bites."

[18] Lerouvillois, "China's Fujian Carrier Proves Its Electro–Magnetic Catapult Launch Abilities, Rivaling U.S. Navy Technology"; Satam, "J–35, J–15 and KJ–600 Shown Operating off PLA Navy's Fujian Carrier"; "福建舰开展舰载机电磁弹射起降训练画面公布 [Footage released of the Fujian aircraft carrier conducting electromagnetic catapult launch and recovery training for carrier–based aircraft]," 解放军报客户端 [*PLA Daily App*], September 22, 2025; Kang Zizhan [康子湛] and Qian Xiaohu [钱晓虎], "中国海军三型舰载机在福建舰成功完成起降训练 [Three Types of Chinese Naval Aircraft Successfully Complete Takeoff and Landing Training on the Fujian–class Aircraft Carrier]," 中国军号 [*China Military Herald*], September 25, 2025, https://web.archive.org/web/20251108221030/http://mod.gov.cn/gfbw/sy/rt/16411257.html.

[19] Pollpeter et al., "PLA Update: Issue 20"; "China Space Mission: A Look Back at Shenzhou–18 Crew's Journey," *China Global Television Network (CGTN)*, November 3, 2024, https://web.archive.org/web/20260321152447/https://news.cgtn.com/news/2024–11–03/China–Space–Mission–A–look–back–at–Shenzhou–18–crew–s–journey–1yeyQU9zKIE/index.html; Satam, "J–35, J–15 and KJ–600 Shown Operating off PLA Navy's Fujian Carrier."

[20] Wuthnow, "A New Step in China's Military Reform."

[21] Wuthnow, "A New Step in China's Military Reform."

[22] "2025 年 3 月国防部例行记者会文字实录 [Transcript of the March 2025 Regular Press Conference of the Ministry of National Defense]," 国防部 [Ministry of National Defense (PRC)], March 27, 2025, https://web.archive.org/web/20250328112609/http://mod.gov.cn/gfbw/xwfyr/lxjzh_246940/16377294.html; Li Yan [李岩], "东部战区半月两次位台岛周边演训，这次演练内容有新变化 [Eastern Theater Command Conducts Military Exercises Near Taiwan Twice in Half a Month; New Elements Introduced in This Round of Drills]," *Beijing Youth Daily*, April 1, 2025, https://web.archive.org/web/20250402211007/https://news.sina.com.cn/c/2025–04–02/doc–inersuta5878244.shtml.

[23] Greg Torode, "China's Military Firms Struggle as Corruption Purge Bites, Report Says," *Reuters*, November 30, 2025, https://reuters.com/business/aerospace–defense/chinas–military–firms–struggle–corruption–purge–bites–report–says–2025–11–30/; Nakamura "China's Military Firms Struggle as Corruption Purge Bites"; "China Files More than 4,000 Disciplinary Cases against Officials in 2024," *Reuters*, January 10, 2025, https://reuters.com/world/china/china–files–more–than–4000–disciplinary–cases–against–officials–2024–2025–01–10/; "中国军方征集违规军事装备招标行为线索 追溯至 2017 年 [The Chinese Military's Investigation into Irregularities in Soliciting Military Equipment Bids Dates Back to 2017]," 联合早报 [*United Morning Post*] July 29, 2023, https://web.archive.org/web/20230730091052/https://zaobao.com.sg/realtime/china/story20230729–1418702.

[24] Torode, "China's Military Firms Struggle as Corruption Purge Bites, Report Says"; Nakamura, "China's Military Firms Struggle as Corruption Purge Bites."

[25] Pollpeter et al., "PLA Update: Issue 20"; Mulvaney, "The PLA's New Information Support Force"; Al–Deeb, "Egypt and China Begin Joint Air Force Drill 'Eagles of Civilization–2025.'"

[26] Torode, "China's Military Firms Struggle as Corruption Purge Bites, Report Says."

[27] State Council Information Office of the PRC, "Shenzhou–18 Crew to Conduct Extravehicular Activities," May 27, 2024, https://web.archive.org/web/20241216171824/https://english.gov.cn/news/202405/27/content_WS66546744c6d0868f4e8e788f.html; "Shenzhou XVIII," China Manned Space Agency, April 25, 2024, https://web.archive.org/web/20250916112204/https://en.cmse.gov.cn/missions/shenzhou18/; "China Space Mission: A Look Back at Shenzhou–18 Crew's Journey."

[28] "Shenzhou XVIII"; "China Space Mission: A Look Back at Shenzhou-18 Crew's Journey"; "Shenzhou-18 Crew to Conduct Extravehicular Activities"; "神舟十八号 [Shenzhou–18]," 维基百科 [*Wikipedia (Chinese)*], last modified November 2025, https://zh.wikipedia.org/zh–cn/神舟十八号; Yang Xin [杨欣], Li Xinyuan [李欣媛], and Fu Yifei [付毅飞], "神舟十八号载人飞行任务取得圆满成功 [The Shenzhou–18 Manned Spaceflight Mission was a Complete Success]," 新华网 [*Xinhua*], 4 November 2024, https://web.archive.org/web/20251011165353/http://news.cn/tech/20241104/d52c489962e14a738cf66cda3443d898/c.html.

[29] Laurie Chen, "China Sends Its Youngest Astronaut to 'Heavenly Palace' Space Station," *Reuters*, October 31, 2025, https://reuters.com/science/china–launches–shenzhou–21–mission–tiangong–space–station–state–media–2025–10–31/; "China's Shenzhou 21 Docks with Space Station, Sets the Country's Own Speed Record," *Associated Press*, November 1, 2025, https://apnews.com/article/55db8a37059086663fd0c2cbf992a03b.

[30] Chen, "China Sends Its Youngest Astronaut to 'Heavenly Palace' Space Station."

[31] "Shenzhou XVIII"; Namrata Goswami, "China's Space Ambitions: Strategy and Policy," *Space Policy Review*, American Foreign Policy Council, April 2023, https://afpc.org/uploads/documents/China_Space_Ambitions_FINAL_FINAL_–_April_2023_.pdf

[32] Wuthnow, "A New Step in China's Military Reform"; Nakamura "China's Military Firms Struggle as Corruption Purge Bites"; Goswami, "China's Space Ambitions: Strategy and Policy."

[33] Nakamura "China's Military Firms Struggle as Corruption Purge Bites"; Goswami, "China's Space Ambitions: Strategy and Policy."

[34] Torode, "China's Military Firms Struggle as Corruption Purge Bites, Report Says"; Nakamura "China's Military Firms Struggle as Corruption Purge Bites."

[35] Nakamura "China's Military Firms Struggle as Corruption Purge Bites."

[36] Goswami, "China's Space Ambitions: Strategy and Policy."

[37] "China's Private Rocket Firm Galactic Energy Completes First Launch Mission in 2025," *Global Times*, January 2025, https://web.archive.org/web/20250121080208/https://globaltimes.cn/page/202501/1327243.shtml; Azhar, "China's Landspace Launches Six Satellites with Upgraded Methane–Fueled Zhuque–2E Rocket," *Space FrontPage*, May 17, 2025, https://web.archive.org/web/20251209005528/https://spacefrontpage.com/2511698_china–s–landspace–launches–six–satellites–with–upgraded–methane–fueled–zhuque–2e–rocket; "A Profile of China's Commercial Space Sector in 2025," *New Space Economy*, September 5, 2025, https://web.archive.org/web/20250916200951/https://newspaceeconomy.ca/2025/09/05/a–profile–of–chinas–commercial–space–sector–in–2025/; "Chinese Satellite Enterprises Provide Expanded, Improved Global Services," *China Daily*, updated January 30, 2025, https://web.archive.org/web/20250131024623/https://chinadaily.com.cn/a/202501/30/WS679ab5dfa310a2ab06ea9bb8.html; Goswami, "China's Space Ambitions: Strategy and Policy."

[38] Goswami, "China's Space Ambitions: Strategy and Policy."

[39] "China's Landspace Launches Six Satellites with Upgraded Methane-Fueled Zhuque-2E Rocket."

[40] "China's Private Rocket Firm Galactic Energy Completes First Launch from New Facility."

[41] "A Profile of China's Commercial Space Sector in 2025"; Shi Daijun [史岱君], "'吉林一号'在轨卫星达 117 颗：全球每年 6 次覆盖，最高精度 0.5 米 ['Jilin–1' Satellite Constellation Reaches 117 Satellites: Global Coverage 6 Times a Year, Maximum Resolution of 0.5 Meters]," 观察者网 [*The Observer Online*], December 12, 2024, https://web.archive.org/web/20250508071200/https://guancha.cn/economy/2024_12_12_758559.shtml.

[42] "A Profile of China's Commercial Space Sector in 2025."

[43] "Chinese Satellite Enterprises Provide Expanded, Improved Global Services"; "CGWIC Successfully Launches IRSS–1," *China Great Wall Industry Corporation*, November 11, 2024, https://web.archive.org/web/20260122064355/https://cgwic.com/News/2024/20241111.html.

[44] "Chinese Satellite Enterprises Provide Expanded, Improved Global Services"; "China's Commercial Space Industry Thrives as Enterprises Unveil Blueprints," *China Daily*, updated November 13, 2024, https://web.archive.org/web/20250729074956/https://global.chinadaily.com.cn/a/202411/13/WS67347519a310f1265a1cd2de.html.

[45] Mulvaney, "The PLA's New Information Support Force"; Al–Deeb "Joint Egyptian–Chinese Air Exercise 'Eagles of Civilization–2025'"; Satam, "China and Egypt Kick Off First Joint Aerial Drills"; "Shenzhou XVIII"; "ВКС России и ВВС НОАК провели совместное воздушное патрулирование над Восточно–Китайским морем [Russian Aerospace Forces and PLA Air Force Conduct Joint Air Patrol over the East China Sea]," *Вести.ru*, December 9, 2025, https://web.archive.org/web/20251209170942/https://vesti.ru/article/4820112.

[46] Al–Deeb, "Joint Egyptian–Chinese Air Exercise 'Eagles of Civilization–2025'"; Satam, "China and Egypt Kick Off First Joint Aerial Drills"; "Chinese Satellite Enterprises Provide Expanded, Improved Global Services."

[47] Mulvaney, "The PLA's New Information Support Force"; Al–Deeb, "Joint Egyptian–Chinese Air Exercise 'Eagles of Civilization–2025'"; "Shenzhou XVIII"; "انطلاق مناورات 'الحزام الأمني البحري 2025' بين روسيا وإيران والصين [The "Maritime Security Belt 2025" Exercises between Russia, Iran, and China have Begun]," *RT Arabic*, March 9, 2025, https://web.archive.org/web/20250313150715/https://arabic.rt.com/world/1653488-انطلاق مناورات "الحزام الأمني البحري 2025" بين روسيا وإيران والصين/; "中伊俄"安全纽带–2025"联合演习开幕 [The China–Iran–Russia "Security Link–2025" Joint Exercise Opens]," 人民海军微信公众号 [*People's Navy WeChat Official Account*], March 10, 2025, https://web.archive.org/web/20260321175520/https://cn.chinadiplomacy.org.cn/2025–03/10/content_117758391.shtml.; Gao Dezheng [高德政] and Ren Ke [任科], "中伊俄举行'安全纽带–2025'联合海军演习圆满结束 [China, Iran, and Russia Hold "Security Bond–2025" Joint Exercise]," 中国军网 [*China Military Online*], March 13, 2025, https://web.archive.org/web/20250313022756/http://81.cn/yw_208727/16374617.html; Chu Mengqi [Чу Мэнци] and Deng Jie, Eds., "Военно–морские силы Китая, Ирана и России провели совместные морские учения [China, Iran, and Russia Conduct Joint Naval Exercise]," *Russian.people.cn*, March 28, 2025, https://web.archive.org/web/20250328031112/https://russian.people.com.cn/n3/2025/0328/c31521–20295132.html.

[48] Mulvaney, "The PLA's New Information Support Force"; Al–Deeb, "Joint Egyptian–Chinese Air Exercise 'Eagles of Civilization–2025'"; "Shenzhou XVIII."

[49] Pollpeter et al., "PLA Update: Issue 20"; Satam, "China and Egypt Kick Off First Joint Aerial Drills"; Torode, "China's Military Firms Struggle as Corruption Purge Bites, Report Says."

[50] Pollpeter et al., "PLA Update: Issue 20"; Satam, "China and Egypt Kick Off First Joint Aerial Drills"; Torode, "China's Military Firms Struggle as Corruption Purge Bites, Report Says"; Wang Jinzhi [王金志], Ed., "携手练兵！来看中沙'蓝剑–2025'海军联合训练现场 [Take a Look at the China–Saudi Arabia 'Blue Sword 2025' Joint Naval Exercise]," *Xinhua*, November 6, 2025, https://web.archive.org/web/20251111074958/http://news.cn/milpro/20251106/d7ab4959b48d4e81a8cb60bde04a1ea5/c.html; "Saudi, Chinese Naval Forces Conclude 'Blue Sword–4' Exercise in Jubail," *Saudi Press Agency*, October 25, 2026, https://web.archive.org/web/20251202233113/https://spa.gov.sa/en/w2428391.

[51] "中埃空军首次联训 学者：中国初步具备向中东快速战略投送能力 [First Joint Exercise Between Chinese and Egyptian Air Forces: Scholars Say China Now Has the Initial Capability for Rapid Strategic Deployment to the Middle East]," *United Morning Post*, April 24, 2025, https://web.archive.org/web/20260408120559/https://zaobao.com.sg/news/china/story20250424-6240357.

[52] Christopher D. Mihal, "Understanding the People's Liberation Army Rocket Force," *Military Review*, July–August 2021, Army University Press, https://armyupress.army.mil/Journals/Military–Review/English–Edition–Archives/July–August–2021/Mihal–PLA–Rocket–Force/; Mihal adapted the original map "Addendum I: PLA Theater Commands," in U.S.–China Economic and Security Review Commission, *2017 Annual Report to Congress* (Washington, DC: U.S. Government Printing Office, November 2017) 217, https://uscc.gov/annual–report/2017–annual–report–congress.

[53] U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2024* (Washington, DC: Department of Defense, December 18, 2024) 112, https://media.defense.gov/2024/Dec/18/2003615520/–1/–1/0/MILITARY–AND–SECURITY–DEVELOPMENTS–INVOLVING–THE–PEOPLES–REPUBLIC–OF–CHINA–2024.PDF. Hereafter 2024 DoD CMSD.

[54] Strategy Research Department, Academy of Military Science Military, *The Science of Military Strategy* [战略学], (Beijing: Academy of Military Science Press, December 2013), translated in CASI, *ITOW: Foreign Military Thought Science of Military Strategy (2013)* (Maxwell AFB, AL: CASI, February 2021) https://airuniversity.af.edu/CASI/Display/Article/2485204/plas–science–of–military–strategy–2013/. Hereafter cited as SMS 2013.

[55] Janes INTEL, post on X (Twitter), April 12, 2023, https://x.com/JanesINTEL/status/1646065385064595458/photo/1.

[56] Joint Staff Office of the Japanese Ministry of Defense, [防衛省統合幕僚監部], "中国軍機及びロシア軍機の動向について [Regarding the Activities of Chinese and Russian Military Aircraft]," November 30, 2024, https://web.archive.org/web/20251228102307/https://mod.go.jp/js/pdf/2024/p20241130_01.pdf.

[57] Derek Solen, "The Truth about the Sino–Russian Combined Patrols," JASDF Air & Space Studies Institute, July 6, 2025, 8–9, https://web.archive.org/web/20260216234020/https://mod.go.jp/asdf/meguro/center/Eimg/EJASIreport20250630.pdf.

[58] CCTV, "预警指挥机梯队探访空警–600 预警机・预警探测方队'千里眼'踏… [Airborne Early Warning Formation Visits the KJ–600 AEW Aircraft]," YouTube video, posted September 6, 2025, https://preservetube.com/watch?v=9vLQuMLAH0w.

[59] U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2025* (Washington, DC: Department of Defense, December 23, 2025) 15, https://media.defense.gov/2025/Dec/23/2003849070/–1/–1/1/ANNUAL–REPORT–TO–CONGRESS–MILITARY–AND–SECURITY–DEVELOPMENTS–INVOLVING–THE–PEOPLES–REPUBLIC–OF–CHINA–2025.PDF. Hereafter 2025 DoD CMSD.

[60] 2024 DoD CMSD, 62.

[61] Roderick Lee, "PLA Naval Aviation Reorganization 2023," July 31, 2023, https://airuniversity.af.edu/CASI/Display/Article/3475163/pla–naval–aviation–reorganization–2023/.

[62] Rob Schleiffert, "Two F7s (Chinese Version of the MiG–21F–13 'Fishbed') at Tirana Airport," April 26, 2007, Two F7s (Chinese version of the MiG–21F–13 'Fishbed') at Tirana Airport, https://commons.wikimedia.org/wiki/File:Two_F7s_(Chinese_version_of_the_MiG–21F–13_%27Fishbed%27)_at_Tirana_Airport_(11278465865).jpg.

[63] Yang Qingquang [杨庆广], "跟着战机去看空中加油 [Follow the Fighter Jets to See Air–to–Air Refueling]," 国防部网 [*Ministry of National Defense (MND) Net*], February 25, 2018, https://web.archive.org/web/20260325201633/http://mod.gov.cn/gfbw/tp_214132/kttd/4804749.html; Wikipedia contributors, "歼–11" [Shenyang J–11], *Wikipedia (Chinese)*, last modified March 9, 2022, https://web.archive.org/web/20250317130941/https://zh.wikipedia.org/zh–cn/%E6%AD%BC–11#/media/File:J–11BChel.jpg.

[64] Liu Chang and Liu Yinghua, "J–16 Fighter Jets Fly in Two–Ship Formation," *MND Net*, March 20, 2018, http://eng.mod.gov.cn/news/2018–03/20/content_4807412_4.htm; Liu Chuan [刘川] and Xi Bobo [席博博], "中国空军歼–10C 战机担负战斗值班任务 [Chinese J–10C Fighters Are on Combat Duty]," *MND Net*, April 16, 2018, http://mod.gov.cn/shouye/2018–04/16/content_4809586.htm; PRC Ministry of National Defense image archive.

[65] N509FZ, "J–20 at CCAS2022 (20220827103424).jpg," Wikimedia Commons, August 27, 2022, https://commons.wikimedia.org/wiki/File:J–20_at_CCAS2022_(20220827103424).jpg, licensed under Creative Commons Attribution–ShareAlike 4.0 International (CC BY–SA 4.0); Yu Jialin [余佳琳], Yan Siqi [闫斯期], Deng Rufei [邓如菲], Liu Yuxuan [刘宇轩], "首飞 14 年！歼–20 的含金量还在上升 [14 Years Since Its Maiden Flight! The J–20's Value Continues to Rise]," *China Military Online*, January 11, 2025, https://web.archive.org/web/20260215054234/http://81.cn/yw_208727/16363896.html.

[66] "冲天"飞豹"备战"航空飞镖 [Soaring "Flying Leopards" Prepare for the "Air Darts" Competition]," 新华图片 [*Xinhua Photos*], June 23, 2017, https://web.archive.org/web/20260325202211/https://finance.ifeng.com/c/7Zy3glgxUhu#p=1.

[67] Joint Staff Office of the Japanese Ministry of Defense [日本防衛省統合幕僚監部], image licensed under the Government of Japan Standard Terms of Use (Ver. 2.0).

[68] Liu Qiuli [刘秋丽], "思客讲堂丨空警–2000 总设计师来了，讲讲预警机的'精气神' [The Chief Designer of the KJ–2000 Talks about the 'Spirit' of Early Warning Aircraft]," *China Military Online*, July 7, 2021, https://web.archive.org/web/20210707032052/http://81.cn/kj/2021–07/07/content_10059151.htm; Wu Xingjian [伍行健], Zhang Shimeng [張詩夢], Yang Pan [楊盼], "來套組合拳! [Let's Unleash a Combo!]," *China Military Online*, September 20, 2020, https://web.archive.org/web/20260327152353/http://81.cn/tp_207717/9906031.html?big=fan; Ministry of National Defense (Republic of China), "PLAAF Y–20 – 1.jpg," Wikimedia Commons, accessed March 27, 2026, https://commons.wikimedia.org/wiki/File:PLAAF_Y–20_–_1.jpg, licensed under Government Website Open Information Announcement (Republic of China Ministry of National Defense).

[69] Kang Jian, "photograph of HQ–9 launcher," Wikimedia Commons, CC BY 3.0 license, https://upload.wikimedia.org/wikipedia/commons/d/d0/Chinese_HQ–9_launcher.jpg.

[70] "Recruits Conduct Parachuting Training," *China Military Online (English)*, January 29, 2023, https://web.archive.org/web/20230205171926/https://en.people.cn/n3/2023/0129/c90000–10200329.html

[71] Yang Xiaolin [杨晓霖], Shang Zongchang [尚宗昌], Du Mingjiang [杜明江], "一批初级军士的高原淬火之旅——西部战区空军雷达某旅高原雷达站探索选人用人模式掠影 [A Group of Junior Non–Commissioned Officers' High–Altitude Training Journey: A Glimpse into a Radar Brigade of the Western Theater Command Air Force's Model for Selecting and Appointing Personnel at High–Altitude Radar Stations]," *China Military Online*, August 15, 2023, https://web.archive.org/web/20230902114305/http://81.cn/zq_208553/jdt_208554/16245378.html.

[72] "Ông Tập Cận Bình 'phá lệ', bổ nhiệm hàng loạt tướng trẻ [Xi Jinping 'Breaks Tradition' by Appointing a Series of Young Generals]," *VietnameNet* (Ministry of Information and Communications, Vietnam), August 24, 2018,

https://web.archive.org/web/20251017010345/https://vietnamnet.vn/ong–tap–can–binh–pha–le–bo–nhiem–hang–loat–tuong–tre–472972.html

[73] Derek Solen, "Modernization of Fighter Pilot Training in the PLA Air Force Proceeds Apace," November 18, 2024, https://airuniversity.af.edu/CASI/Display/Article/3967559/modernization–of–fighter–pilot–training–in–the–pla–air–force–proceeds–apace/; Derek Solen, "Intermediate Flight Training Shifting to Aviation University," December 8, 2025, https://airuniversity.af.edu/CASI/Articles/Article–Display/Article/4344509/intermediate–flight–training–shifting–to–aviation–university/.

[74] Office of Naval Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century* (Suitland, MD: Office of Naval Intelligence, April 9, 2015).

[75] Kenneth W. Allen and Lyle J. Morris, *PLA Naval Aviation Training and Operations: Missions, Organizational Structures, and Training (2013–15)* (Montgomery, AL: CASI, December 20, 2017) https://airuniversity.af.edu/CASI/Display/Article/1400987/pla–naval–aviation–training–and–operations/.

[76] Dale C. Rielage, "The Chinese Navy's Missing Years," *Naval History Magazine* 32, no. 6 (December 2018), https://usni.org/magazines/naval–history–magazine/2018/december/chinese–navys–missing–years.

[77] Rielage, "The Chinese Navy's Missing Years."

[78] Office of Naval Intelligence, The PLA Navy: New Capabilities and Missions for the 21st Century.

[79] Kenneth W. Allen and Cristina L. Garafola, *70 Years of the PLA Air Force* (Montgomery, AL: CASI, April 12, 2021).

[80] Defense Intelligence Agency, *China Military Power: Modernizing a Force to Fight and Win* (Washington, DC: Defense Intelligence Agency, November 2018). Hereafter CMP 2019.

[81] "How Advanced Is China's Third Aircraft Carrier?" *China Power*, Last updated November 8, 2023, https://chinapower.csis.org/china–type–003–fujian–aircraft–carrier/.

[82] Lee, "PLA Naval Aviation Reorganization 2023."

[83] "中国海军'航空兵'部队 [PLA Navy 'Aviation Forces']," 解放军报社海军分社 [*PLA Daily Naval Branch*], 2012, https://web.archive.org/web/20130812114101/http://navy.81.cn/hkb.htm.

[84] SMS 2013.

[85] Andrew Erickson et al., "Study No. 8, Chinese Amphibious Warfare: Prospects for a Cross-Strait Invasion," *CMSI Studies in Chinese Maritime Development*, November 8, 2024, pg. 474, https://digital-commons.usnwc.edu/cmsi-studies/8.

[86] Congressional Research Service, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, CRS Report RL33153, updated January 30, 2024, https://crsreports.congress.gov/product/pdf/RL/RL33153/277.

[87] Matthew Funaiole, Joseph Bermudez, and Brian Hart, "Signs Point to China's Third Aircraft Carrier Launching Soon," Center for Strategic and International Studies, November 9, 2021, https://csis.org/analysis/signs–point–chinas–third–aircraft–carrier–launching–soon; 2024 DoD CMSD, 50.

[88] Li Wei [李玮] and Wang Xinju [王昕娟], "福建舰入列! 向深蓝! [The Fujian Aircraft Carrier Has Been Commissioned! Heading toward the Deep Blue Sea!]," *China Military Online*, December 18, 2025, https://web.archive.org/web/20251218071933/http://mod.gov.cn/gfbw/spbb_214126/16420458.html.

[89] U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2023*, Annual Report to Congress (Washington, DC: Department of Defense, October 19, 2023) 55, https://media.defense.gov/2023/Oct/19/2003323409/-1/-1/1/2023-MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUBLIC-OF-CHINA.PDF. Hereafter 2023 DoD CMSD.

[90] U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2021*, Annual Report to Congress (Washington, DC: Department of Defense, November 3, 2021) 173, https://media.defense.gov/2021/nov/03/2002885874/-1/-1/0/2021-cmpr-final.pdf. Hereafter 2021 DoD CMSD.

[91] Alcott Wei, "Has China's GJ–21 Stealth Attack Drone Joined Sea Trials for Type 076 Sichuan?" *South China Morning Post*, February 4, 2026, https://web.archive.org/web/20260204022134/https://scmp.com/news/china/military/article/3342208/has–chinas–gj–21–stealth–attack–drone–joined–sea–trials–type–076–sichuan.

[92] CMP 2019.

[93] Lee, "PLA Naval Aviation Reorganization 2023."

[94] Lee, "PLA Naval Aviation Reorganization 2023"; "PLA Naval Aviation" in *PLA Aerospace Power: A Primer on Trends in China's Military Air, Space, and Missile Forces,* 4th ed. (Montgomery, AL: China Aerospace Studies Institute, Air University, July 2024) 27-36 https://airuniversity.af.edu/CASI/Display/Article/3840174/pla-aerospace-power-a-primer-on-trends-in-chinas-military-air-space-and-missile/; Andreas Rupprecht, *PLAN Naval Aviation: An All Carrier-borne Force* (Harpia Publishing, November 2025) https://harpia-publishing.com/2402.

[95] CMP 2019.

[96] Olli Pekka Suorsa, "The Anti–Submarine Warfare Component of China's Sorties in Taiwan's ADIZ," *The Diplomat*, November 4, 2021, https://thediplomat.com/2021/11/the–anti–submarine–warfare–component–of–chinas–sorties–in–taiwans–adiz/.

[97] J. Michael Dahm, *Special Mission Aircraft and Unmanned Systems*, South China Sea Military Capability Series, A Survey of Technologies and Capabilities on China's Military Outposts in the South China Sea, NSAD-R-20-090 (Laural, MD: Johns Hopkins University Applied Physics Laboratory, October 2020) 12, https://apps.dtic.mil/sti/pdfs/AD1128646.pdf.

[98] "Surveillance Aircraft I," *Chinese Military Aviation*, updated March 9, 2023, https://web.archive.org/web/20240229200627/https://chinese–military–aviation.blogspot.com/p/surveillance–aircraft–i.html.

[99] Wu Fang [吴芳] et al., "反潜机磁探仪跟踪航路规划建模与仿真 [Modeling and Simulating ASW Aircraft MAD Tracking Route Planning]," 火力与指挥控制 [*Fire Control and Command Control*] 45, no. 11 (2020): 14; Pan Lei [潘磊] and Pan Xuanhong [潘宣宏], "反潜巡逻机与无人艇应召反潜中协同声纳搜潜研究 [Coordinating Sonar Search between ASW Aircraft and Unmanned Surface Vehicles]," 火力与指挥控制 [*Firepower and Command and Control*] 46, no. 8 (2021): 84; Dahm, "Special Mission Aircraft," 29.

[100] Military Fan Realm [军迷天下], "直击演训场：超低空飞行 揭秘解放军'海天猎鲨人'的必杀技！反潜利器," YouTube video, 8:37, April 25, 2021, https://youtube.com/watch?v=cy6KTnQku_s.

[101] Peter Wood and Roger Cliff, *Chinese Airborne C4ISR* (Montgomery, AL: CASI, 2020) 6, https://airuniversity.af.edu/CASI/Display/Article/2450727/chinese–airborne–c4isr/.

[102] Dahm, "Special Mission Aircraft," 10.

[103] Gabriel Dominguez, "Image Suggests KJ–500 Variant with IFR Probe Still Undergoing Testing," *Janes*, September 9, 2020, https://janes.com/defence–news/news–detail/image–suggests–kj–500–variant–with–ifr–probe–still–undergoing–testing.

[104] 2023 DoD CMSD.

[105] Elsa Kania, *The PLA's Unmanned Aerial Systems: New Capabilities for a 'New Era' of Chinese Military Power* (Montgomery, AL: CASI, 2019) 15–17, https://apps.dtic.mil/sti/citations/AD1082743.

[106] Dahm, "Special Mission Aircraft," 20–24.

[107] CMP 2019.

[108] Bird's Next [窍雀], "福建舰能否在国庆节前服役 海试进展引发期待 [Will the Fujian Enter Service before National Day?]," 中华网军事 [*China Military Online*], September 12, 2025, https://web.archive.org/web/20251118133355/https://military.china.com/news/13004177/20250912/48817507_1.html.

[109] CMP 2019.

[110] Thomas Newdick, "New Images of China's Elusive Catapult–Capable J–15T Carrier Fighter Emerge," *The Drive*, November 18, 2020, https://thedrive.com/the–war–zone/37709/new–images–of–chinas–elusive–catapult–capable–j–15t–carrier–fighter–emerge; Andreas Rupprecht, Jon Grevatt, and Alessandra Giovanzanti, "Shenyang Produces First Catapult–Capable J–15," *Janes*, December 16, 2021, https://janes.com/defence–news/shenyang–produces–first–catapult–capable–j–15/; U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2021: Annual Report to Congress*.

[111] 2021 DoD CMSD.

[112] Ministry of National Defense of the People's Republic of China, "新型舰载机在福建舰上开展起降训练 [New–Type Carrier–Based Aircraft Conduct Takeoff and Landing Training on the Fujian]," September 2025, https://web.archive.org/web/20250924153129/http://mod.gov.cn/gfbw/wzll/16411336.html.

[113] CMP 2019.

[114] U.S. Army Training and Doctrine Command, *Worldwide Equipment Guide (WEG)*, accessed April 9, 2022, https://odin.tradoc.army.mil/WEG/Asset/Z–18_(White_Heron)_Chinese_Medium_Transport_Helicopter.

[115] Sun Mingtai [孙明太], ed., 航空反潜装备 *[Aviation Antisubmarine Equipment]* (Beijing: National Defense Industry Press, 2012) 236.

[116] 2023 DoD CMSD

[117] Robert Farley, "China's First Type 075 Amphibious Assault Ship Begins Sea Trials," *The Diplomat*, August 11, 2020, https://thediplomat.com/2020/08/chinas–first–type–075–amphibious–assault–ship–begins–sea–trials/.

[118] 2023 DoD CMSD

[119] CMP 2019.

[120] Wang Haitao [王海涛], "南部战区海军某电子对抗旅：瞄准战场制信息权专攻精练," *China Military Online*, January 18, 2022, https://web.archive.org/web/20221102150353/http://js7tv.cn/video/202201_268229.html.

[121] Suorsa, "The Anti–Submarine Warfare Component of China's Sorties in Taiwan's ADIZ."

[122] Dzirhan Mahadzir, "Chinese Carrier Strike Group Liaoning Returns from Deployment," *USNI News*, December 31, 2021, https://news.usni.org/2021/12/31/chinese–carrier–strike–group–liaoning–returns–from–deployment.

[123] Mahadzir, "Chinese Carrier Shandong Deploys, Operating near Taiwan"; 2023 DoD CMSD.

[124] Jennifer Rice and Erik Robb, "The Origins of 'Near Seas Defense and Far Seas Protection'," *China Maritime Report* no. 13*:* CMSI China Maritime Reports 2-201 (Newport, RI: China Maritime Studies Institute, U.S. Naval War College, February 2021) https://digital–commons.usnwc.edu/cgi/viewcontent.cgi?article=1012&context=cmsi–maritime–reports.

[125] Thomas Newdick, "China's PLA Navy Conducts First Dual–Carrier Exercise in the South China Sea," *Naval News*, October 31, 2024, https://navalnews.com/naval–news/2024/10/china–shows–off–elaborate–first–dual–aircraft–carrier–photo–op.

[126] Yu–cheng Chen and K. Tristan Tang, "PLA Navy Shifts Training Focus from Near–Shore to Blue–Water Operations," *China Brief* 25, no. 14 (July 25, 2025), Jamestown Foundation, https://jamestown.org/pla–navy–shifts–training–focus–from–near–shore–to–blue–water–operations/.

[127] "Chinese Navy Conducts Dual Aircraft Carrier Formation Exercise for First Time," *Xinhua*, October 31, 2024, https://web.archive.org/web/20250421180922/http://english.news.cn/20241031/50fbbabe265f4d9f88ce4cb8412fc3e8/c.html

[128] International Institute for Strategic Studies (IISS)*, The Military Balance 2021* (London: Routledge, 2020).

[129] Conor M. Kennedy, "The New Chinese Marine Corps: A 'Strategic Dagger' in a Cross–Strait Invasion," *China Maritime Report* no. 15 (Newport, RI: U.S. Naval War College, China Maritime Studies Institute, October 2021).

[130] 2021 DoD CMSD.

[131] Kenneth W. Allen, *PLA Air Force, Naval Aviation, and Army Aviation Aviator Recruitment, Education, and Training* (Washington, DC: Jamestown Foundation, April 8, 2016) https://jamestown.org/report/pla–air–force–naval–aviation–and–army–aviation–aviator–recruitment–education–and–training/.

[132] Marcus Clay, *China's "Little Eagles": People's Liberation Army Developing Its Next–Generation Pilots* (Montgomery, AL: CASI, March 30, 2019). Hereafter Clay, *Little Eagles*.

[133] Chen Zhuo, "Regular Press Conference of the Ministry of National Defense on August 26," *China Military Online*, August 30, 2021, https://web.archive.org/web/20210923061831/http://eng.mod.gov.cn/news/2021–08/30/content_4893499.htm.

[134] Clay, *Little Eagles*.

[135] Huang Zuochun [黄佐春] Liu Liang [刘亮], "首次! 2023 年度海军面向地方大学生选拔飞行学员 [A First! The Navy's 2023 Pilot Recruitment Drive for Local College Students]," *CCTV*, February 20, 2023, https://web.archive.org/web/20240817061803/https://military.cctv.com/2023/02/20/ARTIvRkXwGRwQeYEAHNYAoQT230220.shtml.

[136] Chen, "Regular Press Conference of the Ministry of National Defense on August 26."

[137] Allen and Morris, *PLA Naval Aviation Training and Operations*.

[138] Gao Zeming [高泽明], "海军航空大学某基地舰载机飞行教官群体先进事迹报告会 [Report on the Exemplary Deeds of a Group of Carrier–Based Aircraft Flight Instructors at a Certain Base of the Naval Aviation University]," 中国军网八一视频 [*China Military Online's August 1st Video*], March 9, 2022, https://web.archive.org/web/20221102150352/http://81.cn/hj/2022–03/09/content_10139132.htm.

[139] "New Curriculum Improves Combat Readiness of Navy's Rotary–Wing Units," CASI, April 22, 2020, https://airuniversity.af.edu/CASI/Display/Article/2160371/new–curriculum–improves–combat–readiness–of–navys–rotary–wing–units/.

[140] National Archives of India, Ministry of External Affairs, File No. HI/1012(14)/64–I & II, "Monthly Political Report from Peking," obtained by Vivek Prahladan, https://digitalarchive.wilsoncenter.org/document/js–mehta–chinas–bomb–and–its–consequences–her–nuclear–and–political–strategy; Hongjung Shin Sheen and Seong–ho, "The Evolution of China's Assured Retaliation: An Analysis Focusing on the Development of China's Strategic Nuclear Submarines," *The Korean Journal of International Studies* 23, no. 1 (April 2025): 61–98, https://doi.org/10.14731/kjis.2025.04.23.1.61.

[141] Ministry of Foreign Affairs (PRC), "Chinese Government Statement on the Complete Prohibition and Total Destruction of Nuclear Weapons," *Diplomatic History | Events and Issues*, May 31, 2024, https://web.archive.org/web/20260130154607/https://fmprc.gov.cn/eng/zy/wjls/3604_665547/202405/t20240531_11367578.html; U.S. Department of State, Communist China's Advanced Weapons Program Conclusions, INR/EAP Files: Lot 90 D 110, NIE 13–2–65 (Washington, DC: U.S. Department of State, February 10, 1965) https://cia.gov/readingroom/docs/DOC_0001207228.pdf.

[142] Du Wenwen [杜汶纹], ed., "历史今日 10 月 27 日：中国首次发射导弹核武器试验成功 [Today in History October 27: China Successfully Conducts First Missile Nuclear Weapons Test]," *China Military Online*, October 27, 2020, https://web.archive.org/web/20260209192619/http://81.cn/js_208592/9925660.html.

[143] "中国氢弹试爆 50 年 [50 Years Since China's Hydrogen Bomb Test]," 新闻专题 [*News Feature*], 科学网 [*Science Net*], June 17, 2017, https://web.archive.org/web/20170619073048/https://news.sciencenet.cn/news/sub24.aspx?id=3012.

[144] "中国氢弹试爆 50 年 [50 Years Since China's Hydrogen Bomb Test]."

[145] Peter Wood, Alex Stone, and Thomas Corbett, *Chinese Nuclear Command, Control, and Communications* (Montgomery, AL: CASI, 2024) https://airuniversity.af.edu/CASI/Display/Article/3688852/chinese–nuclear–command–control–and–communications.

[146] Missile Defense Project, "DF–5 (Dong Feng–5 / CSS–4)," *Missile Threat*, Center for Strategic and International Studies, last modified April 23, 2024, https://missilethreat.csis.org/missile/df–5–ab/.

[147] David C. Logan, "Making Sense of China's Missile Forces," in *Chairman Xi Remakes the PLA*, ed. Phillip C. Saunders, Arthur S. Ding, Andrew Scobell, Andrew N. D. Yang, and Joel Wuthnow (Washington, DC: National Defense University Press, 2019) https://ndupress.ndu.edu/Media/News/News–Article–View/Article/1748530/making–sense–of–chinas–missile–forces.

[148] U.S. Army Training and Doctrine Command (TRADOC), "DF–3 (Dongfeng 3) Chinese Intermediate–Range Ballistic Missile," *ODIN: OE Data Integration Network (Worldwide Equipment Guide)*, last modified June 9, 2024, https://odin.tradoc.army.mil/WEG/Asset/DF–3_(Dongfeng_3)_Chinese_Intermediate–Range_Ballistic_Missile.

[149] Missile Defense Project, "DF–21 (CSS–5)" *Missile Threat*, Center for Strategic and International Studies, last modified April 23, 2024, https://missilethreat.csis.org/missile/df–21/; "Dongfeng (DF) Ballistic Missiles, China," *Army Technology*, last modified August 15, 2022, https://army–technology.com/projects/dongfeng–df–ballistic–missiles–china/.

[150] Logan, "Making Sense of China's Missile Forces."

[151] Decker Eveleth, *People's Liberation Army Rocket Force Order of Battle 2023* (Monterey, CA: James Martin Center for Nonproliferation Studies, Middlebury Institute of International Studies at Monterey, July 2023) https://nonproliferation.org/wp–content/uploads/2023/07/web_peoples_liberation_army_rocket_force_order_of_battle_07102023.

[152] U.S. Army Training and Doctrine Command (TRADOC), "CJ–10A (DF–10A) Chinese Long–Range Cruise Missile," *ODIN: OE Data Integration Network (Worldwide Equipment Guide)*, last modified November 20, 2024; "DF–31 (Dong Feng–31 / CSS–10)," *Missile Threat*, Center for Strategic and International Studies (CSIS) Missile Defense Project, last modified April 23, 2024, https://missilethreat.csis.org/missile/df-31/.

153 Mihal, "Understanding the People's Liberation Army Rocket Force."

154 Eamon Passey, "Assessment of the PLA Rocket Force's Deterrence Capabilities," *Defense Technology Program Brief* no. 25 (American Foreign Policy Council, December 2024) 2, https://afpc.org/uploads/documents/ Defense_Technology_Briefing_–_Issue_25_–_final_1.pdf; Office of the Secretary of Defense, 2024 DoD CMSD, 106–7.

155 2025 DoD CMSD, 23-24.

156 2025 DoD CMSD, 23-24; Matt Korda, "The Pentagon's (Slimmed Down) 2025 China Military Power Report," *Federation of American Scientists*, January 9, 2026, https://fas.org/publication/the-pentagons-slimmed-down-2025-china-military-power-report/

157 2024 DoD CMSD, 63–64.

158 Fiona Cunningham and M. Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Posture and US–China Strategic Stability," *International Security* 40, no. 2 (2015), https://jstor.org/stable/43828294.

159 Mihal, "Understanding the People's Liberation Army Rocket Force."

160 Wang Weidong [王卫东] and Deng Dongrui [邓东睿], "火箭军常规导弹第一旅锤炼部队快反能力 [The PLARF First Conventional Missile Brigade Drills Rapid Response Capabilities]," *PLA Daily*, December 14, 2017, https://web.archive.org/web/20171224000657/http://military.china.com.cn/2017–12/14/content_41988387.htm.

161 Ankit Panda, "A Closer Look at the PLARF's DF–26," *The Diplomat*, May 19, 2020, https://thediplomat.com/2020/05/a–closer–look–at–the–plarfs–df–26.

162 2024 DoD CMSD, 65.

163 2024 DoD CMSD, 65.

164 Mihal, "Understanding the People's Liberation Army Rocket Force."

165 International Institute for Strategic Studies, *The Military Balance 2024* (London: Routledge, 2024) 238, https://doi.org/10.4324/9781003485834.

166 2024 DoD CMSD, 65.

167 2024 DoD CMSD, 104–9.

168 Josh Baughman, "An Assessment of People's Liberation Army Rocket Force Survivability Training," August 15, 2022, https://airuniversity.af.edu/CASI/Display/Article/3126833/an–assessment–of–peoples–liberation–army–rocket–force–survivability–training.

169 Hans M. Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight, "Chinese Nuclear Weapons, 2024," *Bulletin of the Atomic Scientists* 80, no. 1 (2024): 49–72, https://doi.org/10.1080/00963402.2023.2295206.

170 "一文揭秘长剑-1000、巨浪-3、东风-61 等军队装备 [One Article Reveals Military Equipment Such as the CJ-1000, JL-3, and DF-61]," *CCTV*, https://web.archive.org/web/20250903205133/https://xhby.net/content/s68b8452ae4b063f4f54f7086.html; Liu Zhen, "How China Overtook the US in Hypersonic Arms and May Leave Air Defences 'Powerless'," *South China Morning Post*, February 19, 2026, https://web.archive.org/web/20260218224140/https://scmp.com/news/china/military/article/3343917/how-china-overtook-us-hypersonic-arms-and-may-leave-air-defences-powerless.

171 Kristin Burke, *PLA Counterspace Command and Control* (Maxwell Air Force Base, AL: CASI, 2023) https://airuniversity.af.edu/CASI/Articles/Article–Display/Article/3612979/pla–counterspace–command–and–control/.

172 Data compiled from 2024 DoD CMSD, 64–67, 109–10; IISS, "Chapter Five: Asia: Regional Trends in 2024," in *The Military Balance 2025* (London: Routledge, 2025) 240; Bates Gill, "Organization of China's Strategic Forces," in *China's Strategic Arsenal: Worldview, Doctrine, and Systems*, eds. James M. Smith and Paul J. Bolt (Washington, DC: Georgetown University Press, 2021) https://doi.org/10.2307/j.ctv1htpdvw.7.

173 U.S. House of Representatives, *Examining the Office of Insular Affairs' Role in Fostering Prosperity in the Pacific Territories and Addressing External Threats to Peace and Security*, oversight hearing before the Subcommittee on Indian and Insular Affairs, Committee on Natural Resources, 119th Cong., 1st sess., March 5, 2025, https://congress.gov/event/119th–congress/house–event/LC74870/text.

174 Gill, "Organization of China's Strategic Forces,"; Christopher P. Twomey, "China's Nuclear Doctrine and Deterrence Concept," in *China's Strategic Arsenal: Worldview, Doctrine, and Systems*; Phillip C. Saunders and David C. Logan, "China's Regional Nuclear Capability, Nonnuclear Strategic Systems, and Integration of Concepts and Operations," in *China's Strategic Arsenal: Worldview, Doctrine, and Systems*; David C. Logan, "Rocket Force Personnel in the Age of Xi Jinping," in *The People of the PLA 2.0* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2021) https://jstor.org/stable/resrep38504.6.

175 Passey, "Assessment of The Pla Rocket Force's Deterrence Capabilities," 4.

176 2024 DoD CMSD, 65–67; Passey, "Assessment of the PLA Rocket Force's Deterrence Capabilities," 3–5.

177 Passey, "Assessment of The Pla Rocket Force's Deterrence Capabilities," 3–6.

178 China National Space Administration [国家航天局], "关于加强商业航天项目质量监督管理工作的通知 [Notice on Strengthening the Quality Supervision and Management of Commercial Aerospace Projects]," July 16, 2025, https://web.archive.org/web/20250721184724/https://cnsa.gov.cn/n6758823/n6758839/c10690058/content.html.

179 Ministry of National Defense (PRC) [中华人民共和国国防部], "国防部: 中方坚持和平利用太空 [Ministry of National Defense: China Upholds Peaceful Utilization of Space]," April 19, 2024, https://web.archive.org/web/20240621104617/http://mod.gov.cn/gfbw/xwfyr/ztjzh/16302060.html.

180 PRC State Council Information Office, "China Releases White Paper on National Security," May 12, 2025, https://web.archive.org/web/20250513002604/http://english.scio.gov.cn/whitepapers/2025–05/12/content_117870467.html; Han Lin [韩

林], Wei Bing [魏兵], and Liu Jianwei [刘建伟], "'中国人民解放军联合作战纲要(试行)' 施行一周年综述 [Summary of the First Anniversary of the Implementation of the 'Joint Operations Outline of the Chinese People's Liberation Army (Trial)'']," *PLA Daily*, January 5, 2022, https://web.archive.org/web/20230925124736/http://mod.gov.cn/gfbw/qwfb/4902340.html; Xiao Tianliang et al., *The Science of Military Strategy* (Beijing: National Defense University Press, 2020), translated in CASI, *In Their Own Words: Science of Military Strategy 2020* (Maxwell AFB, AL: CASI, January 26, 2022) https://airuniversity.af.edu/CASI/Display/Article/2913216/in–their–own–words–2020–science–of–military–strategy/. Hereafter SMS 2020.

181 Jiang Lianju[姜连举], 太空作战概论 [*Introduction to Space Operations*] (上海 [Shanghai]：上海社会科学院出版社 [Shanghai Social Science Academy Press], 2024) 97-143.

182 Kevin Pollpeter, *Coercive Space Activities: The View from PRC Sources* (Maxwell AFB, AL: CASI, February 26, 2024) https://airuniversity.af.edu/CASI/Display/Article/3674437/coercive–space–activities–the–view–from–prc–sources/.

183 Peter Wood, Alex Stone, and Taylor Lee, *China's Ground Segment: Building the Pillars of a Great Space Power* (Maxwell AFB, AL: CASI, March 1, 2021) https://airuniversity.af.edu/CASI/Display/Article/2517757/chinas–ground–segment–building–the–pillars–of–a–great–space–power/; Devon Johannessen, *The Oriental Maritime Space Port: China's Sea–Based Expansion* (Maxwell AFB, AL: CASI, June 16, 2025) https://airuniversity.af.edu/CASI/Display/Article/4196865/the–oriental–maritime–space–port–chinas–sea–based–expansion/.

184 Burke, PLA Counterspace Command and Control.

185 Burke, PLA Counterspace Command and Control.

186 Kristin Burke, "The PLA's New Base for Space Situational Awareness— Opportunities and Challenges for the U.S.," CASI, September 11, 2023, https://airuniversity.af.edu/CASI/Articles/Article–Display/Article/3498588/the–plas–new–base–for–space–situational–awarenessopportunities–and–challenges–f/.

187 China News Agency [中国新闻社], "习近平春节前夕视察慰问部队 向全体人民解放军指战员武警部队官兵军队文职人员预备役人员和民兵致以新春祝福 [Xi Jinping Inspected and Extended New Year Greetings to PLA Personnel Ahead of the Spring Festival]," YouTube video, January 25, 2025, 2:45–3:11, https://youtube.com/watch?v=PaJevHfb9Ik..

188 CCTV, "庆祝中华人民共和国成立 70 周年大会 阅兵式 群众游行特别报道 [70th Anniversary of the Founding of the PRC: Parade and Mass Procession Special Report]," YouTube video, October 1, 2019, 1:17:07–1:17:43, https://youtube.com/watch?v=TypEKtdYN6w; Military Fans Conquer the World [军迷天下], "国产地面装备大量信息披露：PHL–03 与 PHL–191 协作配合 展现远程火箭炮实战威能！红旗–17A 试射画面曝光 能拐弯还能掉头! [Extensive Details on Domestic Ground Equipment Revealed: PHL–03 and PHL–191 Demonstrate Long–Range Rocket Artillery Capability; HQ–17A Test Footage Released]," YouTube video, January 28, 2023, 23:00–24:00, https://youtube.com/watch?v=mlziVuHfgiQ; Xiaoke Qi, "PLA's New–Quality Forces: The Information Operations Group at the 2025 Military Parade," China Aerospace Studies Institute, September 2025, https://airuniversity.af.edu/CASI/Display/Article/4306561/plas–new–quality–forces–the–information–operations–group–at–the–2025–military–p/.

189 Qi, "PLA's New–Quality Forces."

190 Kristin Burke, "PLA On–Orbit Satellite Logistics," CASI, March 18, 2024, https://airuniversity.af.edu/CASI/Display/Article/3712146/pla–on–orbit–satellite–logistics/; Burke, *PLA Counterspace Command and Control.*

191 Liu Bingyan [刘冰雁] et al., 在轨服务任务智能规划研究 [*Research on Intelligent Planning of On–Orbit Servicing Tasks*] (Beijing: China Astronautic Publishing House [中国宇航出版社], 2021), translated in CASI, *ITOW: Research on Intelligent Planning of On–Orbit Servicing Tasks* (Maxwell AFB, AL: CASI, April 7, 2025) https://airuniversity.af.edu/CASI/Display/Article/4145584/itow–research–on–intelligent–planning–of–on–orbit–servicing–tasks/.

192 Liu et al., 在轨服务任务智能规划研究 [Research on Intelligent Planning of On–Orbit Servicing Tasks].

193 U.S. Office of the Director of National Intelligence, *Annual Threat Assessment of the U.S. Intelligence Community*, March 2025, https://dni.gov/files/ODNI/documents/assessments/ATA–2025–Unclassified–Report.pdf.

194 Wang Feng [王凤], ed., "航天工程大学 2023 年硕士研究生招生简章 [2023 Master's Degree Program Admission Brochure of Aerospace Engineering University]," 中国军网 [*China Military Online*], October 18, 2022, https://web.archive.org/web/20250812151443/http://81.cn/jx_208569/10193239.html.

195 An Puzhong [安普忠] and Zhang Liang [张良], "战略支援部队航天工程大学: '思政元素''融入专业课教学' [Strategic Support Force Aerospace Engineering University: 'Ideological and Political Education Elements Integrated into Professional Course Teaching'], *PLA Daily*, June 4, 2022, https://web.archive.org/web/20260408135153/http://mod.gov.cn/gfbw/gfjy_index/jsyxgfs/4912207.html.

196 "军校录取通知书来了！ 哪个最让你心动? [Military Academy Acceptance Letters are Here! Which One Excites You the Most?]," 新华网 (*Xinhua*), July 19, 2024, https://web.archive.org/web/20240814005049/https://www.news.cn/milpro/20240719/1cb89edb8e3743a4b3926cb6c460293a/c.html.

197 Wang, "航天工程大学 2023 年硕士研究生招生简章 [2023 Master's Degree Program Admission Brochure of Aerospace Engineering University]."

198 John Costello, "The Cyberspace Force: A Bellwether for Conflict," *China Brief* 25, no. 8 (April 25, 2025): https://jamestown.org/program/the–cyberspace–force–a–bellwether–for–conflict/.

199 Wang Xinjuan, ed., "Information Support Force: A Brand–New Strategic Arm of the PLA," *Ministry of National Defense*, April 19, 2024, https://web.archive.org/web/20240419122944/http://eng.mod.gov.cn/xb/News_213114/TopStories/16302051.html.

[200] 中国人民解放军改革发展 30 年 [*Thirty Years of Reform and Development of the Chinese People's Liberation Army*], 军事科学院军事历史研究所 [Military History Research Institute of the Academy of Military Science], (Beijing: 军事科学出版社 [Military Science Publishing House], 2008) 95–96.

[201] Lai Wenyong [赖文湧] and Shi Zhipeng [石芝鹏], "雷达 '蓝军' 检验突防能力 [Radar 'Blue Force' Tests Penetration Capability]," 解放军报 [*Liberation Army News*], January 10, 2021, accessed January 11, 2021, https://web.archive.org/web/20250924191833/http://81.cn/jfjbmap/content/2021–01/10/content_280122.htm.

[202] Yuan Qiaosi [袁侨偲], "重庆市 2020 年烈士光荣证颁授仪式在沙坪坝区举行 [Ceremony to Award Chongqing City's 2020 Martyrs' Honor Certificates Held in Shapingba District]," 重庆市沙坪坝区人民政府 [*People's Government of Shapingba District of Chongqing City*], October 1, 2020, https://web.archive.org/web/20221102150400/http://cqspb.gov.cn/zwyw/zwxw/dtxw/yw/202010/t20201010_7946047_wap.html; Chen Jie [陈杰], "情系学子 敬业正直——2017 年应征入伍学生及家长给学校武装部赠送锦旗 [Students for Life, Upright and Devoted to Work: Students Enlisting in 2017 and the Heads of their Families Present School Military Department with Silk Banner]," 成信新闻网 [*CUIT News*], September 14, 2017, https://web.archive.org/web/20201117234846/https://cuit.edu.cn/ShowNews?id=6245.

[203] "2022 年直招军官！陆军工程大学发布最新公告 [2022 Direct Recruitment of Officers! The Army Engineering University Releases its Latest Public Announcement]," 陆工大微信公众号 [*Official WeChat account of the Army Engineering University*], 中华人民共和国国防部网 [*Website of the Ministry of National Defense of the Chinese People's Republic*], March 4, 2022, https://web.archive.org/web/20220320022838/http://mod.gov.cn/education/2022–03/04/content_4906147.htm; Li Bo [李波] et al., "陆军航空兵学院：空地融合 教研训一体 [Army Aviation Academy: Air–Land Integration with Teaching, Research, and Training in One]," 军事报道 [*Military Report*], aired April 26, 2022, on CCTV–7, https://web.archive.org/web/20221102150404/http://js7tv.cn/video/202204_276256.html.

[204] Li et al., "陆军航空兵学院：空地融合 教研训一体 [Army Aviation Academy: Air–Land Integration with Teaching, Research, and Training in One]"; Ceng Da [曾炟], "又美又飒！陆军首批直–20 女飞行员公开亮相，来自南部战区某空突旅 [Beautiful and Valiant! The First Group of Female Z–20 Pilots Makes its Public Debut, Coming from a Certain Air Assault Brigade of the Southern Theater Command]," 东方网 [*Eastday.com*], November 15, 2021, https://web.archive.org/web/20220201192856/https://j.021east.com/p/1636977668030120.

[205] Li et al., "陆军航空兵学院：空地融合 教研训一体 [Army Aviation Academy: Air–Land Integration with Teaching, Research, and Training in One]."

[206] Chi Pengjun [赤鹏军] and Yang Lei [杨磊], "直–10 型武装直升机列装院校首飞开训 [Z–10 Attack Helicopter Introduced to Academy, First Flight Training Begins]," *PLA Daily*, January 17, 2020, https://web.archive.org/web/20221102150402/http://81.cn/jfjbmap/content/2020–01/17/content_252376.htm; Wang Zhifei [王志飞], Cui Rentao [崔仁韬], and Li Jingsong [李劲松], "陆军航空兵学院：直–19 武装直升机列装展开首飞 [Army Aviation Academy: Z–19 Conducts First Flight Training after being Introduced], *Military Report*, aired March 9, 2020, on CCTV–7, https://web.archive.org/web/20221102150408/https://js7tv.cn/video/202003_209489.html.

[207] "直–11WB 或将入役 特战队员有了'黄金搭档' [The Z–11WB May Enter Service in the Future, Members of the Special Operations Forces Now Have a 'Golden Partner']," *CCTV Online*, December 30, 2020, https://web.archive.org/web/20221102150511/https://v.cctv.com/2020/12/30/VIDE9ik9LeCN7PV3HbqrG4JC201230.shtml; Zhang Yixiao [张艺潇] et al., "陆军航空兵学院首批'实装两级'飞行学员毕业 [First Group of 'Two–Levels–with–Operational–Aircraft' Pilot Candidates Graduates from the Army Aviation Academy]," 正午国防军事 [*National Defense and Military Affairs at Noon*], aired June 20, 2022, on CCTV–7, https://web.archive.org/web/20250924191829/https://tv.cctv.com/2022/06/20/VIDEyMRZ8bzF4Apnd7I1PqDM220620.shtml.

[208] Zhang Yixiao [张艺潇] et al., "陆军航空兵学院创新人才培养模式 [The Army Aviation Academy Innovates its Human Resources Cultivation Model]," 正午国防军事 [*National Defense and Military Affairs at Noon*], aired June 20, 2022, on CCTV–7, https://web.archive.org/web/20221102150409/https://tv.cctv.com/2022/06/20/VIDE8xJEpneLYlGtsG70Creg220620.shtml.

[209] Zhang et al., "陆军航空兵学院首批'实装两级'飞行学员毕业 [First Group of 'Two–Levels–with–Operational–Aircraft' Pilot Candidates Graduates from the Army Aviation Academy]."

[210] Yuan Zhichao [袁智超] et al., "陆军第 71 集团军某旅：创新驱动 换羽奋飞新航迹 [A Certain Brigade of the Army's 71st Group Army: Innovating and Driving, Molting and Flying Vigorously along a New Flight Path]," *Military Report*, aired May 11, 2023, on CCTV–7, https://web.archive.org/web/20260327173144/https://bilibili.com/video/BV1LP411R7oX/; Jia Kekuan [贾可宽] et al., "为战育人 托举战鹰翱翔蓝天 [Cultivating People for War: Upholding Warbirds to Soar in the Azure Sky]," 国防军事早报 [*Morning Report on National Defense and Military Affairs*], aired April 24, 2023, on CCTV–7, https://web.archive.org/web/20260327174325/https://tv.cctv.com/2023/04/24/VIDEvqWcmxjbKcM2j2VGBXnl230424.shtml; Wu Xusheng [吴旭升] et al., "科尔沁草原，直升机跨昼夜实弹射击 [Day–to–Night Live–Fire Training in Helicopters over the Horqin Grassland], *Morning Report on National Defense and Military Affairs*, aired June 20, 2021, on CCTV–7, https://web.archive.org/web/20260327174443/https://tv.cctv.com/2021/06/20/VIDEyLdv7NjDYNXLkG48GD7b210620.shtml; Li Jianjun [李建军] et al., "北部战区陆军：向战为战，锻造过硬'刀尖铁拳' [Northern Theater Army: Towards War, for War, Forging a Skilled 'Blade Iron Fist']," *Military Report*, aired August 28, 2022, on CCTV–7, https://web.archive.org/web/20260327175317/https://tv.cctv.com/2022/08/29/VIDECOaCMrByRvCxa3teK68X220829.shtml?spm=C53074552346.PLgREq4pd4yq.0.0; Yu Dashuang [于大双] et al., "实战实训锻造陆航精兵 [Realistic Training for Real War Forges Crack Troops for the Army Aviation Branch]," *National Defense and Military Affairs at Noon*, aired December 15, 2021, on CCTV–7, https://web.archive.org/web/20260327175425/https://tv.cctv.com/2021/12/15/VIDEPxjs33LSxPyIWIIOCZQ8211215.shtml; Wang Yu [王宇] et al., "陆军第 77 集团军某陆航旅：新年首飞 稳扎稳打强基础 [A Certain Army Aviation Brigade of the 77th Group Army: First Flight of the New Year, Steadily and Surely Strengthening its Foundation]," 中国军视网 [*China Military Television Online*], January 6, 2021; Li Bo [李波] et al., "勇往直前祖国至上 百折不挠锻造'铁拳' [Bravely Moving Straight Ahead with the Fatherland

above all Else, Relentlessly Forging an 'Iron Fist'']," *Military Report*, aired March 29, 2022, on CCTV－7, https://web.archive.org/web/20260327180113/https://tv.cctv.com/2022/03/29/VIDE0Ry0a7E0vHv9eZgb5StG220329.shtml?spm=C53074552346.PLgREq4pd4yq.0.0.

211 Yefim Gordon and Dmitriy Komissarov, *Chinese Air Power* (Manchester, UK: Hikoki Publications, 2021) 257–67.

212 Yefim Gordon and Dmitriy Komissarov, *Chinese Air Power: Current Organisation and Aircraft of all Chinese Air Forces* (Hersham, UK: Midland Publishing, 2010) 269.

213 中国人民解放军改革发展 30 年 [Thirty years of reform and development of the Chinese People's Liberation Army], 97.

214 中国人民解放军改革发展 30 年 [Thirty years of reform and development of the Chinese People's Liberation Army], 97.

215 Wan Jiaqing [万佳庆], Wang Pengfei [王鹏飞], and Tang Junlin [唐俊林], "基于多武器平台的要地防空混合部署策略与模型研究 [Research on Mixed Deployment Strategy and Model of Air Defense in Important Places Based on Multi–Weapon Platforms]," 系统仿真学报 [*Journal of System Simulation*] 33, no. 8 (2021): 1754–1765, https://web.archive.org/web/20260322132846/https://china–simulation.com/EN/article/downloadArticleFile.do?attachType=PDF&id=2670; Pei Yixuan [裴益轩], Li Bin [李斌], and Wang Feng [王峰], "陆军机动伴随防空作战装备体系探讨 [Discussion on Army Mobile Accompanying Air Defense Combat Equipment Systems]," 火炮发射与控制学报 [*Journal of Gun Launch and Control*] 42, no. 3 (2021): 106–110.

216 Zheng Dongyuan [鄭棟元] and Lin Mujin [林睦謹], "中共陆军中型合成旅防空营之探讨 [Discussion on Air Defense Battalions of PLA Army Medium Combined Arms Brigades]," 陆军炮兵季刊 [*Army Artillery Quarterly*] 49, no. 198 (2022): 76–97; Gao Minsheng [高旻生], "中共陆军合成旅、营兵力编组模式之研究 [Study on the Force Formation of PLA Army Combined Arms Brigades and Battalions]," 步兵季刊 [*Infantry Quarterly*] 68, no. 274 (2025).

217 Derek Solen, "PLA Army Air Defense Units Improve Effectiveness, Resiliency, and Jointness," CASI, March 8, 2021, https://airuniversity.af.edu/CASI/Display/Article/2528161/pla–army–air–defense–units–improve–effectiveness–resiliency–and–jointness; Guan Jing [官竞] and Zheng Ye [郑烨], "第 74 集团军某防空旅打通指挥控制链路融入联合防空体系 [An Air Defense Brigade of the 74th Group Army Established Command and Control Links and Integrated into the Joint Air Defense System]," 解放军报–中国军网 [*PLA Daily–China Military Online*], June 19, 2018, https://web.archive.org/web/20260322134011/http://81.cn/jfjbmap/content/2018–06/19/content_208860.htm; Wei Qiaoqiao [危乔巧], "陆军某部携手空军友邻部队组训，提升协同作战和防空反导能力 [A PLA Army Unit Conducted Joint Training with Air Force Counterparts to Enhance Coordinated Combat and Air and Missile Defense Capabilities]," 解放军报–新华网 [*PLA Daily–Xinhua*], March 28, 2025, https://web.archive.org/web/20260322134440/https://news.cn/milpro/20250328/ef4968b9bd774831982b18201917525a/c.html.

218 Chen Dianhong [陈典宏] and Zheng Ye [郑烨], "第 74 集团军某旅电子防空营融入体系练兵新闻观察 [News Observation: An Electronic Air Defense Battalion of a 74th Group Army Brigade Integrated into System–Based Training]," *PLA Daily–China Military Online*, June 1, 2022, https://web.archive.org/web/20260322134859/http://81.cn/xxqj_207719/tsysb_207739/qjcjd_207746/10159322.html; Pei, et al.,"陆军机动伴随防空作战装备体系探讨 [Discussion on Army Mobile Accompanying Air Defense Combat Equipment Systems]," 106–110.

219 Wei Qiaoqiao [危乔巧] and Xue Weigao [薛维高], "陆军某部携手空军友邻部队训练野外陌生条件下协同作战和防空反导能力 [An Army Unit Conducted Training with Air Force Counterparts in Unfamiliar Field Conditions to Enhance Joint Combat and Air and Missile Defense Capabilities]," *China Military Online–PLA Daily*, March 28, 2025, https://web.archive.org/web/20260322135935/http://81.cn/jwtt/16377426.html; Lai Wenyong [赖文湧], Zhu Yisen [朱艺森], and Liao Xiaobin [廖晓彬], "东部战区陆军某防空旅奋勇创新 探索转型升级新路 [An Eastern Theater Command Army Air Defense Brigade Innovates and Explores New Paths for Transformation]," 解放军报–中华人民共和国国防部 [*PLA Daily*–Ministry of National Defense of the PRC], January 7, 2023, https://web.archive.org/web/20230322193731/http://mod.gov.cn/gfbw/wzll/4930148.html.

220 Dong Enzhi [董恩志], Cheng Zhonghua [程中华], and Du Min [杜敏], "基于毁伤效能的防空旅装备编配数量优化研究 [Optimization of Equipment Allocation in Air Defense Brigades Based on Damage Effectiveness]," 兵器装备工程学报 [*Journal of Ordnance Equipment Engineering*] 43, no. 11 (2022): 173–179.

221 Chen Dianhong [陈典宏], Chen Xiaopeng [陈晓鹏], Zhang Yongyue [张永岳], and Li Jianwen [李建文], "第 74 集团军某旅携手空军某部锤炼联合防空能力：陆空联训、空地较量、跨兵种对抗演练砥砺实战能力 [A 74th Group Army Brigade Conducted Joint Air Defense Training with an Air Force Unit through Cross–Service Exercises]," *China Military Online–PLA Daily*, November 16, 2020, https://web.archive.org/web/20260322140630/http://81.cn/kj_208559/9936424.html.

222 U.S. Department of the Army, "China: Combined Arms Brigades Air Defense Operations," in ATP 7–100.3 *Chinese Tactics* (August 2021), https://g2webcontent.z2.web.core.usgovcloudapi.net/OEE/China Landing Zone/PLAA–Combined–Arms–Brigade–Air–Defense–Operations.pdf.

223 Zheng and Lin "中共陸軍中型合成旅防空營之探討 [Discussion on Air Defense Battalions of PLA Army's Medium–Size Combined Arms Brigade]," 76–97.

224 Hai Yang [海洋], "沈阳军区新型防空导弹首次实射两发两中 [New Air Defense Missile in Shenyang Military Region Successfully Hits Target Twice]," 解放军网–新浪军事 [*PLA Online–Sina Military*], October 12, 2011, https://web.archive.org/web/20111221084127/https://mil.news.sina.com.cn/2011–10–12/0751669031.html; "红旗–16 地空导弹承担着战场区域防空的职责 [HQ–16 Surface–to–Air Missile Responsible for Battlefield Air Defense]," *CCTV*, August 22, 2024, https://web.archive.org/web/20260322141434/https://tv.cctv.com/2024/08/22/VIDEBXKhKZqG7rjOwLZuXZJe240822.shtml.

225 Wu Yuhong [吴雨洪], ed., "对台主力防空导弹换新 '老' 装备才用了 8 年 [Main Anti–Aircraft Missiles for Taiwan Deployment to Be Replaced; 'Old' Equipment Was in Service for Only 8 Years]," 解放军报–凤凰军事 [*PLA Daily–Phoenix Military*], July 29, 2016, https://web.archive.org/web/20160730173758/https://news.ifeng.com/a/20160729/49685218_0.shtml

226 Gao "中共陆军合成旅、营兵力编组模式之研究 [Study on PLA Army Combined Arms Brigade and Battalion Force Structures].

227 Ou Xifu [欧锡富], "解放军三种合成旅 [Three Types of PLA Combined Arms Brigades]," 国家安全双周报 [*National Security Bi–Weekly Report*] 2, no. 71 (2023): 43–48; Zheng and Lin, "中共陆军中型合成旅防空营之探讨 [Discussion on Air Defense Battalions of PLA Army's Medium–Size Combined Arms Brigade]," 76–97.

228 Lu Qilong [卢其龙], ed., "红旗 13 导弹首次曝光有何意味, 轻型合成旅的"防空革命 [What does the First Public Appearance of the HQ–13 Missile Signify? A 'Revolution in Air Defense' for Light Combine Arms Brigades]," *China Military Online*, October 27, 2025, https://web.archive.org/web/20260322143430/https://military.china.com/news/13004177/20251027/48940303_all.html#page_2.

229 Cai Ziheng [蔡子衡], ed., "百变 8x8 车型装备快反部队 [Vehicles in the 8 x 8 Type are Equipped for Fast Air Defense Forces]," *China Military Online*, March 12, 2014, https://web.archive.org/web/20250123101708/http://81.cn/jmtt/2014–03/12/content_5806556_5.htm.

230 Li Sainan [李赛楠], Lin Zhiwei [林智伟], and Fan Tianfeng [范天峰], "防空利刃——国产 SWS3 型 35 毫米弹炮结合武器系统 [Air Defense Blade: Domestic SWS3 35mm Gun–Missile System]," 兵器知识 [*Ordnance Knowledge*] 2, no. 12 (2024): 24–26.

231 "前卫–2 单兵便携式防空导弹 [QW–2 Man–Portable Air Defense Missile]," 兵器面面观–央视 7 套 [*Weaponry Overview–CCTV–7*], September 17, 2021, https://web.archive.org/web/20220215141759/https://tv.cctv.com/2021/09/17/VIDE9U1GIunXYiHgCoo1Ycgq210917.shtml; Zhao Haiyan [赵海彦], Zhang Jin [张劲], and Zheng Ye [郑烨], "陆海空三军同台竞技, 上士班长以快制胜 [Army, Navy, and Air Force Compete Jointly; Sergeants and Squad Leaders Win through Speed]," *PLA Daily–China Military Online*, October 10, 2018, https://web.archive.org/web/20250116222943/http://81.cn/2018hymzjs/2018–10/10/content_9307296.htm.

232 "SIPRI Military Expenditure Database," SIPRI, accessed March 25, 2026, milex.sipri.org/sipri.

233 "关于 2025 年中央和地方预算执行情况与 2026 年中央和地方预算草案的报告" [Report on the Implementation of the Central and Local Budgets for 2025 and Draft Central and Local 2026 Budgets], *Xinhua*, March 16, 2026, https://web.archive.org/web/20260325133139/https://mof.gov.cn/zhengwuxinxi/caizhengxinwen/202603/t20260316_3985331.htm.

234 U.S. Bureau of Economic Analysis, "Gross Domestic Product [GDP]," retrieved from FRED, Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/series/GDP; "China's GDP surpasses 140t yuan for the first time," *China Daily (English)*, February 28, 2026, https://web.archive.org/web/20260317203452/https://english.gov.cn/archive/statistics/202602/28/content_WS69a2dfc9c6d00ca5f9a09662.html.

235 Scott Kennedy, "China's COMAC: An Aerospace Minor Leaguer," CSIS, December 7, 2020, https://csis.org/blogs/trustee–china–hand/chinas–comac–aerospace–minor–leaguer.

236 *Notice of Availability of Designation of Chinese Military Companies*, "A Notice by the Defense Department on 01/07/2025," The Deputy Secretary of Defense has determined that the entities listed in the SUPPLEMENTARY INFORMATION section of this notice qualify as "Chinese military companies" in accordance with the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, https://federalregister.gov/documents/2025/01/07/2025-00070/notice-of-availability-of-designation-of-chinese-military-companies.

237 "Major Events in 1999" [1999 年大事记], China Aerospace Science and Technology Corporation [中国航天科技集团有限公司], accessed May 27, 2025, https://spacechina.com/n25/n142/n152/n176/c13353/content.html.

238 J.J. Long, Thomas Corbett, and Dan Shats, *Organization and Structure of the Aviation Industry Corporation of China (AVIC)* (Montgomery, AL: China Aerospace Studies Institute, 2020) https://airuniversity.af.edu/CASI/Display/Article/3643494/organization-of-the-aviation-industry-corporation-of-china-avic/.

239 "央企名录" [List of Central State–Owned Enterprises], SASAC [国务院国有资产监督管理委员会], July 29, 2026, https://web.archive.org/web/20260226103627/http://wap.sasac.gov.cn/n2588045/n27271785/n27271792/c14159097/content.html.

240 "关于我们" [About Us], SASTIND [国家国防科技工业局], accessed March 25, 2026, https://web.archive.org/web/20260324024801/https://sastind.gov.cn/.

241 Tai Ming Cheung, "Keeping Up with the Jundui: Reforming the Chinese Defense Acquisition, Technology, and Industrial System," in *Chairman Xi Remakes the PLA*, https://ndupress.ndu.edu/Media/News/News-Article-View/Article/1748736/keeping-up-with-the-jundui-reforming-the-chinese-defense-acquisition-technology/.

242 Alex Stone and Peter Wood, *China's Military–Civil Fusion Strategy* (Montgomery, AL: China Aerospace Studies Institute, 2020) 28, https://airuniversity.af.edu/CASI/Display/Article/2217101/chinas-military-civil-fusion-strategy/.

242 Matthew George, et al., "Trends in International Arms Transfers, 2025," SIPRI, March 9, 2026, https://sipri.org/publications/2026/sipri–fact–sheets/trends–international–arms–transfers–2025; 2025 DoD CMSD.

243 武器装备科研生产许可管理条例 [*Regulations on the Administration of Scientific Research and Production Licenses for Weapons and Equipment*], 国家原子能机构 [China Atomic Energy Agency], March 6, 2008, https://web.archive.org/web/20250514095811/https://caea.gov.cn/n6760401/n6760402/c6827747/content.html; "二○一八年版武器装备科研生产许可目录发布 [2018 Edition of Weapons and Equipment Scientific Research and Production License Catalogue Released]," *PLA Daily* [解放军报], December 28, 2018, https://web.archive.org/web/20251106120656/http://mod.gov.cn/gfbw/qwfb/jwzbfzb/4833114.html.

244 "三部门：优化调整无人机出口管制措施 [Three departments: Optimize and adjust drone export control measures]," *CCTV.com*, July 31, 2024, https://web.archive.org/web/20250514114827/https://news.cctv.com/2024/07/31/ARTIcb7jroK3cUQAxEeVcmvo240731.shtml.

245 Alex Stone and Ma Xiu, *The PRC State & Defense Laboratory System: An Overview*, (Montgomery, AL: CASI, 2022) https://airuniversity.af.edu/CASI/Display/Article/2987660/the-prc-state-defense-laboratory-system/.

[246] Ma Xiu, *The PRC State & Defense Laboratory System Part Two: Defense S&T Key Lab Directory*, (Montgomery, AL: China Aerospace Studies Institute, 2023) 137, https://airuniversity.af.edu/CASI/Articles/Article-Display/Article/4255775/chinas-defense-st-key-lab-system-2025-update/.

[247] Stone and Wood, China's Military–Civil Fusion Strategy, 28.

[248] Zhong Xin [钟新], "深入实施军民融合发展战略 [Deepen the Implementation of the Military–Civil Fusion Strategy]," 中国共产党新闻 [*CCP News*], November 16, 2017, https://web.archive.org/web/20180727204013/http://theory.people.com.cn/n1/2017/1116/c40531-29649330.html.

[249] Stone and Wood, China's Military–Civil Fusion Strategy, 28.

[250] Lorenzo Scarazzato, et al., "The SIPRI Top 100 Arms–Producing and Military Services Companies in the World, 2024," SIPRI, December 2025, https://sipri.org/visualizations/2025/sipri–top–100–arms–producing–and–military–services–companies–world–2024; 2023 DOD CMSD.

[251] "2018 年以来近 60 个机场实行军民合用 [Nearly 60 Airports Have Implemented Joint Military-Civilian Use Since 2018]," *PLA Daily*, August 2, 2019, https://web.archive.org/web/20190802053935/http://military.people.com.cn/n1/2019/0802/c1011-31272268.html.

[252] Scarazzato, et al., "The SIPRI Top 100 Arms–Producing and Military Services Companies in the World, 2024."

[253] 中国军工行业现状报告 [*Report on the Current Situation of China's Military Industry*], 上海嘉世营销咨询有限公司 [Shanghai Jiashi Marketing Consulting Co., Ltd.], September 7, 2025, https://web.archive.org/web/20260408151011/https://pdf.dfcfw.com/pdf/H3_AP202509071739927735_1.pdf?1757256455000.pdf.

[254] "审核通过! '歼–20'有望'入 A 股' [Approved! 'J–20' is expected to be listed on the A–share market"], *The Observer* [环球时报], July 12, 2024, https://web.archive.org/web/20260408151627/https://guancha.cn/economy/2024_07_12_741305.shtml.

[255] 2023 DoD CMSD.

[256] Eli Tirk, "Sichuan Tengden Technology Develops UAVs for Possible ASW Mission and Expands Production," CASI, December 16, 2024, https://airuniversity.af.edu/CASI/Display/Article/3980293/sichuan-tengden-technology-develops-uavs-for-possible-asw-mission-and-expands-p/; Eli Tirk, "Sichuan Tengden Technology: Privately Owned, State Sponsored," CASI, November 7, 2022, https://airuniversity.af.edu/CASI/Display/Article/3209923/sichuan-tengden-technology-privately-owned-state-sponsored/.

[257] John Van Oudenaren, *Taking Flight: China's Military Unmanned Aerial Vehicle (UAV) Industry* (Montgomery, AL: CASI, May 2025) https://airuniversity.af.edu/CASI/Display/Article/4147816/taking-flight-chinas-military-unmanned-aerial-vehicle-uav-industry/.

[258] Matthew Bruzzese, "Chang Guang Satellite Technology," CASI, March 2024, https://airuniversity.af.edu/CASI/Articles/Article-Display/Article/3727764/chang-guang-satellite-technology-company-overview/.