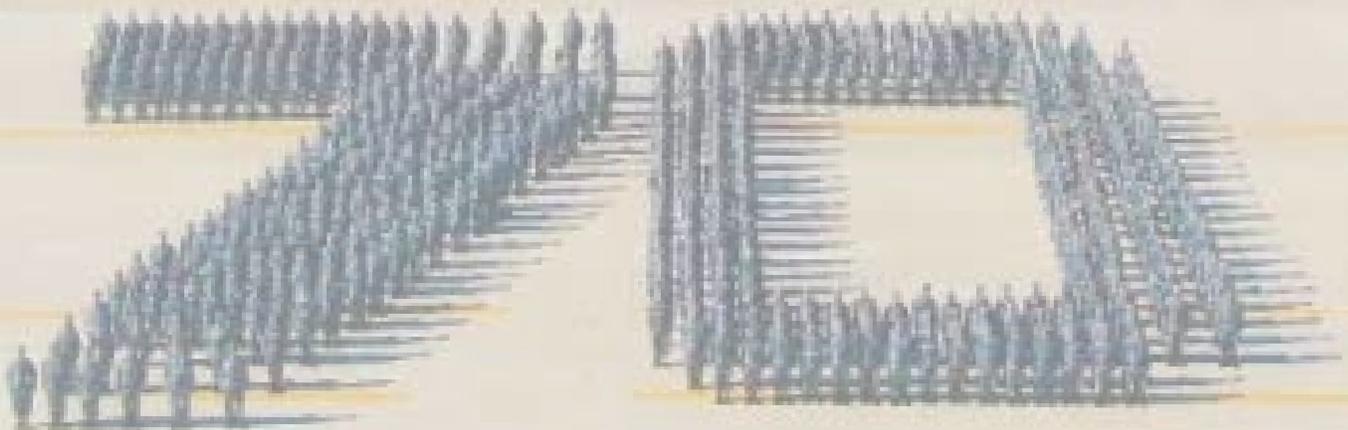




C H I N A A E R O S P A C E
S T U D I E S I N S T I T U T E

70 Years *of the* PLA Air Force



Kenneth W. Allen and Cristina L. Garafola

Printed in the United States of America
by the China Aerospace Studies Institute

ISBN 979-8-724860-88-8

To request additional copies, please direct inquiries to
Director, China Aerospace Studies Institute,
Air University, 55 Lemay Plaza, Montgomery, AL 36112

Design by Heisey-Grove Design

All photos licensed under the Creative Commons Attribution-Share Alike 4.0 International license, or under the Fair Use Doctrine under Section 107 of the Copyright Act for nonprofit educational and noncommercial use.

All other graphics created by or for China Aerospace Studies Institute

E-mail: Director@CASI-Research.org

Web: <http://www.airuniversity.af.mil/CASI>

Twitter: https://twitter.com/CASI_Research | @CASI_Research

Facebook: <https://www.facebook.com/CASI.Research.Org>

LinkedIn: <https://www.linkedin.com/company/11049011>

Disclaimer

The views expressed in this academic research paper are those of the authors and do not necessarily reflect the official policy or position of the U.S. Government or the Department of Defense. In accordance with Air Force Instruction 51-303, *Intellectual Property, Patents, Patent Related Matters, Trademarks and Copyrights*; this work is the property of the U.S. Government.

Limited Print and Electronic Distribution Rights

Reproduction and printing is subject to the Copyright Act of 1976 and applicable treaties of the United States. This document and trademark(s) contained herein are protected by law. This publication is provided for noncommercial use only. Unauthorized posting of this publication online is prohibited. Permission is given to duplicate this document for personal, academic, or governmental use only, as long as it is unaltered and complete however, it is requested that reproductions credit the author and China Aerospace Studies Institute (CASI). Permission is required from the China Aerospace Studies Institute to reproduce, or reuse in another form, any of its research documents for commercial use. For information on reprint and linking permissions, please contact the China Aerospace Studies Institute.

CASI would like to thank the CASI Associates and all those that contributed to the compilation of data, research, and writing, of this volume, particularly

China Aerospace Studies Institute

CASI's mission is to advance understanding of the capabilities, development, operating concepts, strategy, doctrine, personnel, organization, and limitations of China's aerospace forces, which include: the PLA Air Force (PLAAF); PLA Naval Aviation (PLAN Aviation); PLA Rocket Force (PLARF); PLA Army (PLAA) Aviation; the PLA Strategic Support Force (PLASSF), primarily space and cyber; and the civilian and commercial infrastructure that supports the above.

CASI supports the Secretary, Chief of Staff of the Air Force, the Chief of Space operations, and other senior Air and Space leaders. CASI provides expert research and analysis supporting decision and policy makers in the Department of Defense and across the U.S. government. CASI can support the full range of units and organizations across the USAF, USSF, and the DoD. CASI accomplishes its mission through conducting the following activities:

- CASI primarily conducts open-source native-language research supporting its five main topic areas.
- CASI conducts conferences, workshops, roundtables, subject matter expert panels, and senior leader discussions to further its mission. CASI personnel attend such events, government, academic, and public, in support of its research and outreach efforts.
- CASI publishes research findings and papers, journal articles, monographs, and edited volumes for both public and government-only distribution as appropriate.
- CASI establishes and maintains institutional relationships with organizations and institutions in the PLA, the PRC writ large, and with partners and allies involved in the region.
- CASI maintains the ability to support senior leaders and policy decision makers across the full spectrum of topics and projects at all levels, related to Chinese aerospace.

CASI supports the U.S. Defense Department and the China research community writ large by providing high quality, unclassified research on Chinese aerospace developments in the context of U.S. strategic imperatives in the Asia-Pacific region. Primarily focused on China's Military Air, Space, and Missile Forces, CASI capitalizes on publicly available native language resources to gain insights as to how the Chinese speak to and among one another on these topics.

Preface

For those of you who have the privilege of knowing the great Ken Allen, this book will come as no surprise. For those of you who don't know Ken personally, trust me when I say he has dedicated his life to the study of the People's Liberation Army's Air Force (PLAAF). In many cases, such a statement would be hyperbole, in this case it is the flat honest truth. And if you have any doubt at all, just ask someone who knows him. He spends nights and weekends pouring over material in Mandarin, he spends his waking hours working on all manner of projects, and I can't tell you how many times he has woken up in the middle of the night with an idea or a way to improve a report because, and I kid you not, he works on the PLAAF in his sleep. The China Aerospace Studies Institute (CASI) has the largest library of native language publications related to the PLAAF in the Department of Defense, and it is just part of the massive collection that Ken has personally amassed over six decades. Yes, more than half a century of reading PLA newspapers, countless hours in drab state bookstores thumbing through books to determine which ones were significant, and watching more hours of Chinese Central Television's military channel than most people in China. He is perhaps the only person in the entire world who has every copy of the PLA Air Force Journal, from day one. And he has read them all.

Ken's contribution to the study of the PLA Air Force, and to the PLA more generally, cannot be overstated. From his start as an enlisted airman in Taiwan, to serving in Beijing as an attaché during the Tiananmen Square incident, and through the decades that followed, Ken has stayed focused on learning all that he can about the PLA Air Force, and probably more importantly he has tried to teach countless others about them as well. This is the mark of a true professional, never one to play "I know something you don't know", he has taken scores of young officers and analysts under his wing, he has mentored mid- and senior-level leaders, and he single handedly started the China Attaché Roundtable to help our military attaches going to Beijing, Hong Kong, Taipei, and across Asia, learn about China and the PLA. Again, as evidenced by the endorsements, his contributions are broad and wide ranging, and he has done all of it as a selfless leader.

Originally, the book was to have the subtitle: "An Overview of Strategy, Organization, Personnel, Education, Training, Military Diplomacy, and Prospects for the Future", but that just seems unwieldy. Those who are familiar with Ken's work know full well that he doesn't "do" hardware, and true to form you will find very little about planes in this book. That is by design. There are plenty of other resources out there if you are interested in the hardware side of things, some even that CASI has published, but precious little out there on these topics. And while Ken has his feelings about 'doctrine', Cristina has picked up that ball and run with it. She does a great job complimenting Ken's work, and draws on her deep background to bring out the important topics that need further explanation. She has done a terrific job, not just on her specialty of doctrine and strategy, but throughout the book and throughout the process of adding depth and explanation as needed. All of the work is meticulously documented, almost exclusively from Mandarin language sources, as the two thousand endnotes will attest.

Throughout the book, you will come to understand the importance of the organizational structure of the PLA, and how and why it impacts their decision making, their command and control, their procurement, and likely how they will fight. Like no one else can, Ken concentrates on the details of the organization, and how each unit relates to others through the grade system, and then explains what the big picture implications of those relationships are. He also shows why it is important to understand the system, and what happens if and when it changes. His self-selected epitaph is: "He taught them Grades and Ranks".

This really is his Magnum Opus, a comprehensive look at the ‘software’ of the PLAAF across its full history. It isn’t meant to be read from cover to cover; each reader will find something for them, and something they will continue to come back and reference time and time again. Everyone who studies the PLA and its Air Force should keep a copy of this work on hand as a ready reference.

Dr. Brendan S. Mulvaney
Director, China Aerospace Studies Institute

Contents

Preface	2
Endorsements	7
Introduction	12
Photos	13
Acknowledgements and Dedications	25
Chapter 1: Laying the Foundation	30
The PLAAF's Early History	31
Details on the PLAAF's Combat Performance	53
The PLA's Officer Grade and Rank Structure	59
Chapter 2. The Evolution of PLAAF Strategy, Theory, and "Doctrine"	67
Introduction to PLA and PLAAF Strategy and "Doctrine"	70
Operationalizing Air Defense under Uncertainty: 1960-1989	79
The Drive to Become a Strategic Air Force: 1990-Present	87
Strategy Developments in the PLAAF: Conclusion	100
Chapter 3: PLAAF Organizational Structure	102
Party Congress and Party Committee Structure	102
Theater Command Headquarters Structure	111
PLAAF Headquarters Organizational Structure	111
MRAF and TCAF HQ Organizational Structure	120
The Shift from Air Corps to Bases and Command Posts	121
PLAAF Branches/Arms, Specialty Units, and Elements	127
Military Unit Cover Designators	148
PLAAF Research Academy	151
Chapter 4: PLAAF Personnel System	161
PLAAF Officer Corps Recruitment and Promotion	163
Enlisted Force Conscription, Recruitment, and Promotion	174
Civilian Cadre	190
Civilian Personnel	192
Reserves	194

Marriage, Family, Housing, and Benefits	196
PRC Ministry of Veterans Affairs	197
Mental Health Issues	198
Chapter 5: PLAAF Education System	199
History of the PLA’s Academic Institutions	207
Profiles of the PLAAF’s 10 Current Academic Institutions	212
The PLAAF’s Dual-Enrollment Program	227
Chapter 6: PLAAF Training System	230
Training Guidance and System	234
Training Cycle and Progression	240
Aviation Branch Training for New Pilot Cadets	243
Aviation Branch Unit Training	251
Airborne Corps Training	276
Surface-to-Air Missile Unit Training	278
Training in Other Branches/Arms and Specialty Units	281
The PLAAF’s Five Key Training Brands	283
Other Recent Trends in PLAAF Training and Operational Proficiency	298
Chapter 7: PLAAF Military Diplomacy, Exchanges, and Cooperation	308
PLAAF Military Diplomacy	317
PLAAF-USAF Relations	331
Chapter 8: Predictions for PLAAF Reforms from 2020-2029	340
PLAAF Strategy, Theory, and “Doctrine”	341
PLAAF Organizational Structure	343
PLAAF Personnel	343
PLAAF Education System	346
PLAAF Training System	347
PLAAF Military Diplomacy	351
Final Thoughts: The PLAAF’s 10 Questions	352

Appendix A: Abbreviations and Acronyms	354
Appendix B: PLAAF Generals and Lieutenant Generals	360
Appendix C: Academic Institutions	365
Appendix D: Citation Formatting	373
Appendix E: English Source Bibliography	374
Appendix F: Chinese Source Bibliography	382
Appendix G: PLAAF Commanders: 1949-2019	386
Appendix H: PLAAF Political Commissars: 1949-2019	392
Appendix I: PLAAF Deputy Commanders: 1949-2019	396
Authors' Notes	398
Endnotes	405

Endorsements

General Larry D. Welch, U.S. Air Force (Ret.)

*12th Chief of Staff, United States Air Force
Former President and CEO, Institute for Defense Analyses*

Ken Allen's almost 50 years of concentration on Asia, China, with much of that time specifically on the PLA and PLAAF gives him a level of insight that is invaluable in virtually every aspect of engagement with the PLA and PLAAF. Since my first experience with Ken during my PLAAF hosted visit to China in April 1989 until the current time, I have found the depth and breadth of his understanding of the PLA and the PLAAF to be invaluable. His ability to communicate that understanding is evident in a wide range of books, monographs, articles, and in conference and workshops. I relied on that understanding for help and advice in addressing relevant issues during the late years of my service with the Air Force and subsequent 20 years at the Institute for Defense Analyses. I strongly recommend this book to anyone engaging with the PLAAF.

Admiral Dennis C. Blair, U.S. Navy (Ret.)

*Former Commander-in-Chief, U.S. Pacific Command
Former Director of National Intelligence*

All of us who have had senior responsibilities for military relations with China have relied for many years on Ken Allen. He knows more about the People's Liberation Army Air Force than anyone outside China, and more than most Chinese airmen. His judgements of the development of the Chinese Air Force have always been based on facts, grounded in historical knowledge, practical and insightful. This book, bringing to bear all of Ken's decades of observing the PLAAF, reading its literature and thinking about it, is a tremendous service to the United States. It will have a prominent place on my shelf of books about the Chinese Armed Forces and will soon be dog-eared from constant reference.

Ambassador Charles W. (Chas) Freeman, (USFS, Ret.)

*Former Assistant Secretary of Defense for International Security, 1993-1994
Former Deputy Chief of Mission, Beijing, 1981-1984
Former Director, Chinese Affairs, U.S. State Department, 1979-1981*

知己知彼百战百胜, "By knowing yourself and knowing your adversary you can emerge victorious from every battle." So said Sunzi. There is no American more meticulous in the effort to know the People's Liberation Army Air Force (PLAAF) than Ken Allen. He and Cristina Garafola have now produced an English-language profile of the PLAAF that will not be bettered. Their book provides a key not just to possible U.S. conflict with China but also to future cooperation with its expanding air power, when and if that is appropriate. Those who need to know, now have an aid to knowing.

Lieutenant General James R. Clapper, U.S. Air Force (Ret.)

Former Director of National Intelligence

Former Undersecretary of Defense, Department of Defense

Former Director, National Geospatial-Intelligence Agency

Former Director, Defense Intelligence Agency

I have known Ken Allen for over three decades, and I consider him the premier authority on the subject of China and the PLA in general, and the PLA Air Force specifically. I once traveled in China with Ken and can attest to his extensive knowledge and insight of the history, organization, training, acquisition, operation, tactics and doctrine of the PLA and the PLA Air Force. His fluency in Mandarin afforded him a tremendous advantage in engaging with Chinese counterparts who would open up in ways they wouldn't otherwise do with someone less fluent. He has devoted a lifetime to this subject and has both unmatched subject matter expertise as well as a consuming passion for it. He is a noted author on the subject having published numerous papers, articles, and monographs, and a sought-after speaker on the topic. Ken is widely recognized in both intelligence and operational circles for his expertise, and his innate ability to impart his knowledge to the non-expert. I would consider his book a must-read for anyone who deals with the Chinese and its military components, and of great interest to anyone simply wanting to gain a better understanding of China and its military capabilities.

Lieutenant General Ralph J. Jodice II, U.S. Air Force (Ret.)

Former Defense Attaché, Beijing, 2004-2007

NATO Senior Mentor, 2015-2020

In 2003, I was designated as the next Defense Attaché in Beijing with a start date of November 2004. On his own initiative in the fall of 2003, Ken Allen started the attaché roundtable to ensure I, and my fellow attaché designates, would be better prepared to work in China and more importantly, to work with the PLA. Ken's dedication, commitment, and comprehensive understanding of the PLA and PLAAF allowed us to begin our attaché duties on day one at a much higher level. For 16 years until his retirement in late 2019, Ken continued to host the attaché roundtable and passed along his well-researched insights and analysis to over 100 attaché and liaison designates going to Beijing, Hong Kong, and Taipei. Ken's book is a MUST read for all attachés headed to China. Additionally, it should be at the fingertips of all attachés headed to the East Asian area as well as other diplomats. Ken's book serves as a legacy to his over 50 years of PLA and PLAAF expertise and will mentor both attachés and diplomats alike. Thank you Ken... as always, very well done!

Lieutenant General Charles W. "Hoop" Hooper, U.S. Army (Ret.)

Former Director, Defense Security Cooperation Agency

Former, Deputy Director for Strategy, Plans and Policy, U.S. INDOPACOM

Former Defense Attaché, Beijing, 2007-2009

Former, Senior Director for China, Taiwan and Mongolia, Office of the Secretary of Defense

I first met Ken Allen in Beijing in August 1989 when I was a young Army FAO language student. He was already a legendary military attaché; known widely within the greater "China Hands" government and academic community for his expertise on the People's Liberation Army Air Force (PLAAF). For over 30 years, Ken was the "go to" person,

for me and many others, for insight into the PLAAF. As U.S. Defense Attaché to Beijing, Deputy Director of Strategy for U.S. INDOPACOM and DSCA Director, when asked for information about the PLAAF, my answer was always the same; “Go talk to Ken Allen.” What sets Ken’s research apart from his peers is his holistic approach focused not only on aircraft but also PLAAF organization, education, institutional culture, and talent management. Kudos as well to Cristina Garafola for her significant and insightful contribution. This book will serve as the definitive source for information on the PLAAF for years to come.

Lieutenant General David A. Deptula, U.S. Air Force (Ret.)

Dean, Mitchell Institute for Aerospace Studies

Former Deputy Chief of Staff for ISR, HQ USAF

I have known Ken Allen since 2006 when I became the first chief of intelligence, surveillance, and reconnaissance (ISR) at HQ U.S. Air Force (USAF). He and I were key participants in the 2010 CAPS-RAND-NDU PLA conference in Taipei, which resulted in a book entitled *The Chinese Air Force: Evolving Concepts, Roles and Capabilities*. Ken wrote the chapter on “The Organizational Structure of the PLA Air Force.” It was used by the USAF Chief of Staff and Chief Master Sergeant of the USAF during their visit to China in 2013. Since the book was published, Ken has continued to write on the key themes in this book: strategy, organizational structure, personnel, education, training, and military diplomacy. The book yields real insight into what makes the PLA Air Force (PLAAF) tick, leaving weapon system details to others. This book is a “must read” as a foundation for understanding how the PLAAF got to where it is today and where it is going in the future.

Lieutenant General Wallace “Chip” Gregson, U.S. Marine Corps (Ret.)

Former Commander Marine Corps Forces Pacific

Former Assistant Secretary of Defense for Asian and Pacific Security Affairs

The character of a service formed by its heritage. The politics, economy, and the nature of its government reveal much about how it may be employed in peacetime competition and conflict. The PLAAF is not like other air forces. Chairman Xi’s pursuit of the great rejuvenation of the Chinese nation and his military transformation provide both the purpose and the means to enrich China’s power projection capability for gray zone coercion and conflict. The PLAAF is a key component of China’s power projection. Distinguished China analysts Ken Allen and Cristina Garafola provide a fulsome, detailed, and well-documented all-aspect analysis of the PLA Air Force on its 70th anniversary. They unlock the inner workings and hidden mechanisms that form its character and how it will operate. It will be a key reference for both security generalists and China specialists.

Brigadier General William B. Webb, U.S. Air Force (Ret.)

Former Defense and Air Attaché, Beijing, 1979-1982

Former President United Technologies China, Beijing 1986-1992

I have known and worked with Ken Allen for four decades. He was part of our initial cadre as attachés to China. He is a priceless asset as a professional analyst with direct contact to Chinese and interaction with them over many years. His fluency in the Mandarin language is exceptional as are his broad range of contacts in the Chinese Air Force and among China specialists. Through his analysis he has offered an understanding of the combat capabilities of the

PLAAF that goes far beyond equipment, maintenance, and logistics and which has benefited our senior leaders and policy makers. Those who seek a full understanding of the PLAAF operational capability should seek his counsel. I would choose him above all others for his deep analytical understanding on the subject.

Brigadier General David R. Stilwell, U.S. Air Force (Ret.)

*Assistant Secretary of State
Bureau of East Asia and Pacific Affairs
Former Defense Attaché, Beijing, 2011-2013*

Since 1988, I have been the beneficiary of Ken Allen’s friendship and comprehensive understanding of the PRC, the PLA, and particularly the PLAAF. I used his advice on engaging PLA officers to great effect during my time as Defense Attaché in the PRC and ever since. NOBODY has done more to advance American understanding of the PLA and the PLA Air Force than Ken Allen.

Brigadier General Neal Sealock, U.S. Army (Ret.)

Former Defense Attaché, Beijing, 2000-2002

Ken Allen and I first met on my initial trip to Beijing in 1988 as the China Country Officer for DIA. We have shared many thoughts, challenges, victories and failures, and after action reports, thereby establishing a kindred spirit of thought concerning how to look at the PLA and PLAAF in particular. Rather than look solely at equipment and metrics, Ken approaches the complex nature of the development and professionalization of the PLAAF in a most comprehensive manner. This book, written by the “oracle” of knowledge on the PLAAF, is the result of his steadfast commitment to “seeking truth through facts.” Ken Allen epitomizes the profession of the military attaché and offers his best insights to approach the responsibilities of the job in the best possible manner. A must read for all interested in China and the PLA!

Rear Admiral Thomas Henderschedt, U.S. Navy

*Senior Defense Official/Defense Attaché, Beijing, 2020-
Naval Attaché, Beijing, 2016-2020
Navy Liaison and Deputy Chief, Liaison Affairs Section, American Institute Taiwan, Taipei, 2014-2016
Assistant Naval Attaché, Beijing, 2006-2009*

Ken Allen is THE dean of the China attaché community. Having trained decades of China attachés, Ken’s mark on the Department of Defense, and every attaché assigned to Beijing for decades, is undeniable. Ken’s counsel on the workings of the People’s Liberation Army as well as how to engage our Chinese hosts is an invaluable resource, and has shaped every U.S. military officer assigned to the Embassy in Beijing. Ken’s encyclopedic knowledge of the PLA and the People’s Liberation Army Air Force also have ensured that his perspectives, analysis, and deep penetrating understanding remain the highest value to the U.S. Intelligence Community. There is not a person in the military China community in the United States who has not directly benefited from Ken’s work. Cristina Garafola is one of the many analysts Ken has mentored throughout the decades, and her writings on the PLAAF, informed by her time spent in OSD Policy over the past several years, are a valuable contribution to this book. In short, anything Ken produces becomes the seminal work on the subject!

Thomas J. Christensen

Professor and Director of the China and the World Programs, Columbia University
Former Deputy Assistant Secretary of State for East Asian and Pacific Affairs

Ken Allen has long been America's leading expert on the PLA Air Force (PLAAF). He and his co-author, Cristina Garafola, have produced a very valuable book that covers the entire history of the PLAAF, its sometimes tumultuous evolution as an organization under Chinese Communist Party (CCP) rule, and its more recent transformation into a modern fighting force that, alongside other military services, contributes to China's ability to project military power abroad. The book will be of great interest to those studying security affairs in East Asia as well as those studying the domestic political evolution of the People's Republic of China.

M. Taylor Fravel

Arthur and Ruth Sloan Professor of Political Science
Director, Security Studies Program, Massachusetts Institute of Technology

This book will quickly become the definitive guide to understanding China's Air Force. Allen and Garafola deftly survey the evolution of the PLAAF from strategy and organization to personnel and training. Anyone interested in China's military modernization should read this book. It is an instant classic.

Colonel Laurence W. Mitchell III, U.S. Air Force (Ret.)

Former Air Attaché, USDAO Beijing, 1988-1990

1988-1990 were years of intense activity for the officers, warrants, enlisted and civilian personnel serving in the U.S. Defense Attaché Office in Beijing, China (USDAO Beijing). Through mid-1989 this frenetic activity was focused on a constant stream of high level visits by senior U.S. and Chinese defense and military officials to and from China, and a blizzard of working level visits into and out of China attending to ongoing military exchange, technology transfer and Foreign Military Sales (FMS) programs. In the wake of the Chinese crackdown in Tiananmen Square in June 1989, the bilateral politico-military relationship did an abrupt about face and entered what could be described as a Cold War environment. During this two year period, USDAO Beijing had the great fortune to have assigned some of the U.S. military's very finest China-trained and experienced area specialist officers. Ken Allen was one of this group, and he distinguished himself then, as he continues to do now. Ken has never operated at the superficial level: in his research and his writings on the PLA's and the PLA Air Force's organizational structure and personnel he seeks to understand—and then convey—the structure and true capability of the force based on all its underpinning strengths and weaknesses. In short, do numbers of modern pieces of hardware or new combat systems equate to combat strength and capability? Ken seeks to answer such questions for the reader on the basis of intensely researched background undertaken over decades, largely based on primary sources which are only accessible to those few with the necessary expertise and high order language skills. His work also serves to provide the methodology for such study and determination into the future by others. However, at this point I must highlight a great concern I have about Ken's exhaustive work. That concern (and personal worry) is that there will be far more attention paid to it outside the United States than by those in our own country! I hope I'm proven wrong.

Introduction

The Six Primary Reasons Why I Wanted to Write This Book

BY KEN ALLEN

First, I want to provide information in a single unclassified source for United States Air Force (USAF) personnel who have the opportunity to engage China's People's Liberation Army Air Force (PLAAF) in military diplomacy either in China or in the U.S. and for anyone else who is looking at the PLAAF for multiple reasons.

Second, I want to write about the five things I care the most about, which are PLAAF organizational structure, personnel (officer/cadre corps and enlisted force), education, training, and military diplomacy. As can be seen, this book does not address weapons and equipment, which is covered in detail in other sources. Although it is crucial to grasp the military capabilities of the PLAAF embodied by its hardware, it is equally important to understand the six components discussed in this book. Although I have written some material in the past about the PLAAF's strategy, theory, and "doctrine," it has not been one of my primary focuses. Therefore, I invited Cristina Garafola to write that chapter and to provide valuable input throughout the entire book.

Third, I believe it is important to have not only a snapshot of where the PLAAF is today but to understand how it got there from the beginning in 1949. This, in turn, helps provide a basis for making predictions about what the PLAAF will look like at its 80th birthday in November 2029.

Fourth, when one does engage the PLAAF face-to-face or examines it from an analytical perspective, it is important to look at the PLAAF through a PLAAF lens, not through a USAF lens. Specifically, the PLAAF and USAF are not organized the same way and, even though they might use the same terms, the concepts are oftentimes completely different. For example, a USAF flight squadron normally has about 15-25 aircraft, while a PLAAF flight squadron has only five aircraft. And, most importantly, as will be shown in this book, the PLA, like every other Chinese government entity or state-owned enterprise, is organized based on a grade structure, whereby every organization and officer are assigned a grade that defines the PLA's command and control structure. As such, even though officers wear ranks, ranks are not as important as their grade, which identifies their billet. Therefore, I believe it is important to use the PLAAF terms and concepts and to educate the audience about them.

Fifth, although I served as a Chinese linguist and analyst in USAF units as well as serving as an Assistant Air Attaché (A/AIRA) in Beijing, the USAF never provided me with any of the information in this book to help lay the foundation for understanding the PLAAF before I assumed my billet. Even after serving as the A/AIRA and writing my first book in 1991, I would say that, when I retired from the USAF in 1992, that I knew less than 10 percent about the PLAAF than what I know now. My second book, *China's Air Force Enters the 21st Century*, was published by RAND in 1995 and laid the foundation for the rest of my career as an analyst of the PLAAF.

Sixth, although I was a physical education major in college and got two C minus grades in political science because I didn't care about politics and history, I ended up receiving a Master's Degree in International Relations and a second Bachelor's Degree in Asian Studies with straight A's, since what I studied was relevant to my job every day. As such, one purpose of this book is to provide material to college students who are studying the PLAAF and to U.S. military personnel who are looking at the PLAAF on a regular basis to help put some of the information about theory, doctrine, and strategy into perspective.

Finally, although this book provides historical details and examples of the PLAAF in various areas, not every issue is updated through 2019.

Ken Allen

Personal Photos



Escorting the PLAAF Song and Dance Troupe at Hickam Air Force Base in 1986.



Negotiations for the J-8-2 Peace Pearl Program in the U.S. in 1986.



Discussion with PLAAF officers at the Air Force Engineering University in Xi'an in 1987.



Discussion with U.S. Secretary of the Air Force, Pete Aldridge, in Beijing in September 1987.



In-country manager for USAF Thunderbirds visit to Beijing in September 1987, who are shown flying over the Great Wall after their demonstration near Beijing.



Observing 18th Air Division's Q-5 training in 1988.



DAO Beijing attachés in summer 1988. Top to bottom: DATT and concurrent ARMA Brigadier General Jack Leide; ALUSNA Captain Vance Morrison; AIRA Colonel Larry Mitchell; A/AIRA Captain Ken Allen; A/ARMA Major Larry Wortzel; A/ALUSNA Marine Lieutenant Colonel Bill Givens; A/ARMA Major Lonnie Keene; and A/AIRA Captain Danny Lever.



Meeting with Defense Minister Zhang Aiping in early 1988 before ranks were reinstated.



Meeting with PLAAF Commander Wang Hai in early 1988 before ranks were reinstated.



Meeting with PLAAF Political Commissar, General Zhu Guang, in late 1988.



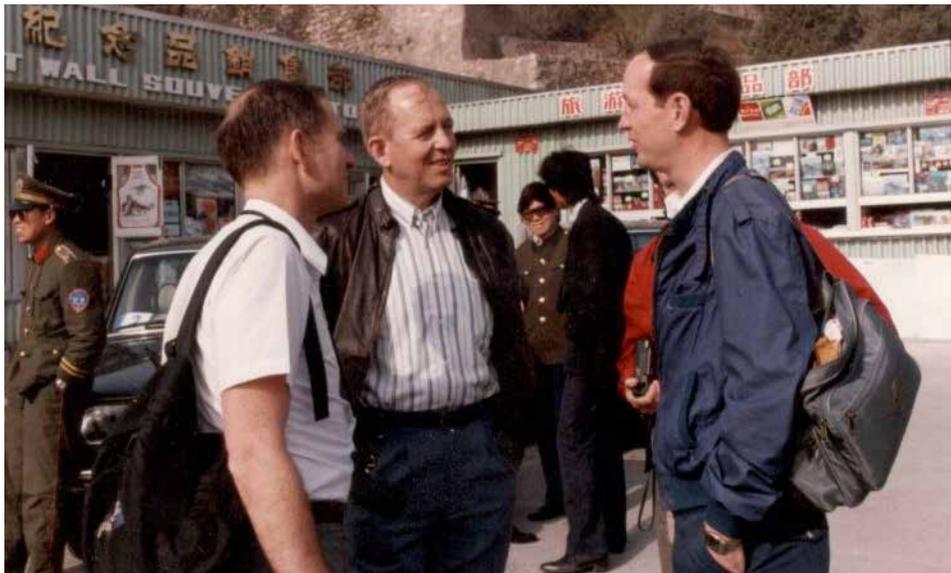
Loading the J-8-2 Peace Pearl Aircraft onboard a USAF C-5 at the Shenyang Aircraft Factory in January 1989.



CSAF General Larry Welch visit with PLAAF Commander General Wang Hai in April 1989.



CSAF General Welch visit to Beijing in April 1989 hosted by PLAAF Commander General Wang Hai.



Receiving a debriefing from General Welch at the Great Wall.



Visit to China Aviation Museum near Beijing in April 1989. Standing next to the Q-5-A from the 5th Air Division (Shandong) that dropped a hydrogen bomb at the Lop Nur Nuclear Weapon Test Base in Malan, Xinjiang, in 1972.¹



Escorting a USAF delegation to Nanning, Guangxi Zhuang Autonomous Region, in 1989 and visiting a hardened aircraft bunker.



DIA Director Lieutenant General James Clapper, pinning on the DOD Defense Superior Service Medal in September 1992 during Ken's retirement ceremony.



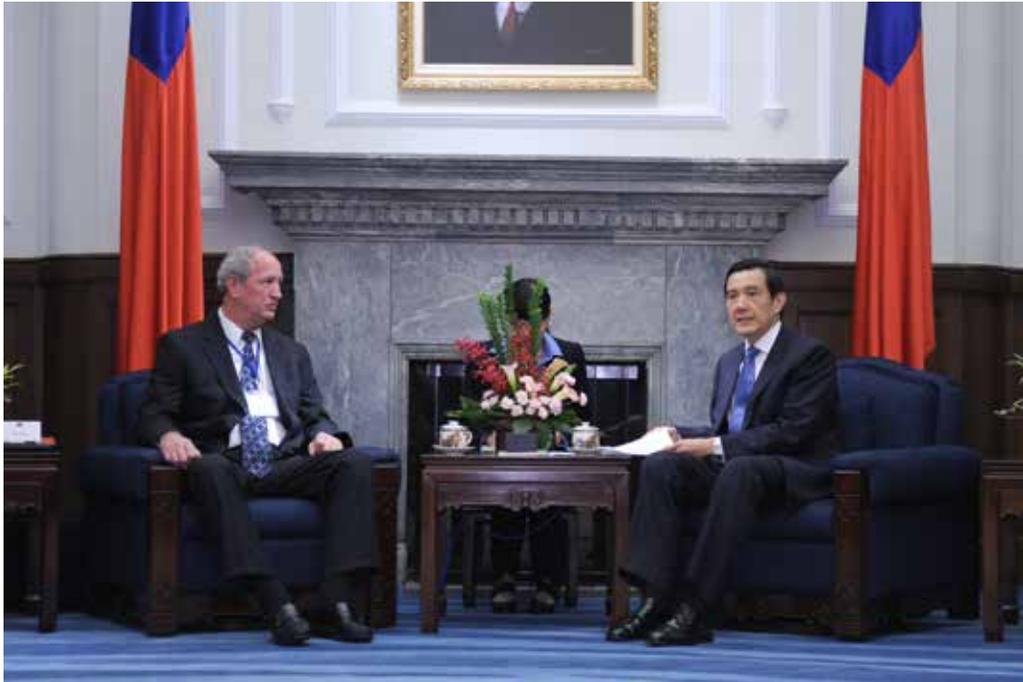
Meeting with Taiwan Air Force Commander, General Tang Fei, in Taipei in 1993.



Attended the 6th International Symposium on Sun Tzu's Art of War in Shenzhen, Guangdong Province, in November 2004.



Attended the 7th International Symposium on Sun Tzu's Art of War in Hangzhou, Zhejiang Province. Photo with Xi Jinping, who was the Governor and Party Secretary.



Meeting with Taiwan President Ma Ying-jeou during annual PLA conference in Taipei in November 2010. The theme of the conference was the PLA AF.



First *China Air Force* magazine in 1986.



China Air Force magazine in May 2019.

Acknowledgements and Dedications

Ken

First of all, I would like to acknowledge my family, including my dad who served in the Marines and my mom who served in the Navy's WAVES in World War II, my sister, my wife, and my two sons, as well as my daughter-in-law and three grandkids.

I would also like to acknowledge all of my former colleagues in the USAF and in the organizations I worked in after retiring from the Air Force in 1992, who helped me understand how the PLA Air Force is organized, operates, and interacts with the rest of the PLA and the industrial complex. In particular, I would like to give a shout out to John Corbett, who I was stationed with in Hawaii and Beijing, and Dennis Blasko, who was one of my students in the Attaché School. We have continued to stay in close contact over the past 20 years and have provided guidance and reviewed all of my writings, including this book, to make sure that the result was (hopefully) in center field and not left field. We also co-authored a two-part article for the Jamestown Foundation's *China Brief* concerning the 2016 PLA reorganization.² Finally, I would like to thank Cristina Garafola for writing the strategy chapter and providing valuable input throughout the entire book. I would like to dedicate this book to the following people:

Herb Schmalenberger, who was my football coach and unofficial faculty advisor at UCD and passed away in 2006. During my sophomore year, I did not pass enough units to be able to play football during my junior year. I met with him to see what I could do about the issue. He told me that he could call my English (poetry) teacher and have her change my grade from a D to a C-, but he wasn't going to do that, because this was a "teaching moment." I have always respected him for doing that. That summer, while working for the Forest Service, he called me and asked if I would be willing to be an assistant coach for the Davis High School freshman football team. I chose to do it, and we went undefeated and unscored upon. He arranged for me to get back on the varsity team as a senior, but I wiped out my ankle halfway through the season so he helped me become an assistant coach for the women's basketball team that went to the nationals and made it to the Elite Eight.

Senior Master Sergeant Daniel Tuschak (USAF Ret.), who was my supervisor in Taiwan (1974-1976) and arranged for me to work in DAO Taipei for 14 months. That job led me down the path toward becoming an attaché in Beijing. In addition, at the end of my tour in Taipei, I received orders for an unaccompanied tour overseas, but he arranged for me to return to the Defense Language Institute to take Russian for a year.

Brigadier General William Webb (USAF Ret.), whom I met in Taiwan when he was studying Chinese to become an attaché in Hong Kong and Beijing and then supported my application to become an attaché in Beijing and continued to serve as my mentor for the next several decades.

Dr. Paul H.B. Godwin, who was an instructor at Air University when I was attending Squadron Officer School in early 1982. He was the only person who discussed China in the three-month course. We became good friends and he served as my mentor until he passed away in October 2017. When I wrote my first book on the PLAAF in 1991 for the Defense Intelligence Agency, he wrote an online review, where he noted that "The book has a body but no soul." The reason was that the book, like most of what I have written since, is focused on data. From that time forward, Paul reviewed almost everything I wrote and helped add some soul to the end result. Hopefully, this book has both a body and a soul.

Major Robert (Bob) Skebo (USAF Ret.), whom I first met when I was training to become an attaché in Washington, D.C., from 1985-1987. We kept in touch ever since and he helped me get one major study through all of the hoops to be published in 2010. He passed away in April 2019.

Finally, I would also like to dedicate this to my family, who supported me through all of the years that I focused my time on this topic.

Cristina

I first met Ken in 2012 at the Center for Strategic and International Studies, and he was extremely generous with his time, sharing many insights and resources on the PLA with a newcomer to the field. Over the years, Ken has always been willing to go the extra mile to inform my research and help me become a better China analyst. I am honored to have had the opportunity to collaborate on this project.

This research also benefits from the expertise of many others, and I thank Nathan Beauchamp-Mustafaga, Jack Bianchi, Ed Burke, and Michael Chase for providing valuable comments and suggestions. Any errors in the strategy chapter of this book remain my own.

Other people I would like to thank include many mentors who helped me develop my critical thinking and writing skills over the years. At Hamilton College, they included Stephen Orvis, Sharon Werning Rivera, Charlotte Lee, Chris Vasantkumar, Sharon Williams, Ambassador Edward Walker, and Philip Klinkner. At Johns Hopkins SAIS, David Lampton, John McLaughlin, Thomas Mahnken, and Thomas Keaney pushed me to improve my analysis. I would also like to thank my colleagues at the RAND Corporation and Project AIR FORCE, especially Bonny Lin and David Ochmanek, and others who have helped me grow immensely as an analyst, particularly Bonnie Glaser and David Helvey. Thank you also to the China Aerospace Studies Institute, as well as two anonymous reviewers, for helping bring this book to life.

My husband, Tom, provided immeasurable encouragement throughout the research, writing, and revision process, while our cat, Bean, enjoyed gleefully striding across the keyboard at many points during this project. Finally, to my parents, Lynn and Glenn, who have supported me in every way.

Organization and Formatting

This book is organized into eight chapters and six appendices. Chapter 1 lays the foundation for the content, to include key terms and concepts, the People’s Liberation Army’s (PLA) grade and rank structure and the PLA Air Force’s (PLAAF) combat history. Chapter 2 discusses the PLAAF’s strategy, theory, and “doctrine.” Chapter 3 lays out the PLAAF’s organizational structure. Chapter 4 discusses the officer corps and enlisted force, as well as the civilian cadre and civilian personnel force. Chapter 5 provides an overview of the PLAAF’s education system, including a history of the PLAAF’s academic institutions and when different degrees were established. Chapter 6 provides a high-level overview of PLAAF training. Chapter seven discusses the PLAAF’s military diplomacy, exchanges, and cooperation. Chapter 8 provides predictions for 2020 through 2029 for each of the six categories. Finally, this book has six appendices, including a list of abbreviations and acronyms, personnel and academic data, citation information, and a list of English and Chinese sources.

The information cut-off date for this book is November 2019, the 70th anniversary of the PLAAF’s founding, except for major global events such as the outbreak of the novel coronavirus (COVID-19).

Not every item is updated through 2019.

As noted elsewhere in this book, the book does not address weapons and equipment.

The following bullets provide a brief overview of formatting used in the book to denote terms that have English and Chinese counterparts, terms that have multiple words in English or Chinese for similar concepts, as well as terms that have recently changed during the 2016 reforms throughout the PLA. These terms are denoted with a forward slash (/). The first set of bullets show examples of a slash preceded by and followed by a space. The second set of bullets shows examples of a slash with no space before or after it.

- Because the People’s Liberation Army (PLA) implemented a major reorganization in 2016, both the former and current names for organizations are identified as follows using either the full term or their acronym when appropriate:
 - Military Region / Theater Command or MR / TC
 - Military Region Air Force / Theater Command Air Force or MRAF / TCAF
 - Second Artillery / Rocket Force
 - General Staff / Joint Staff Department
 - Headquarters / Staff Department
 - Political / Political Work Department
- Some terms have the English and Chinese for each entry as shown below:
 - Headquarters / Staff Department (司令部 / 参谋部)
- Some terms have the English name followed by the acronym and Chinese term in parenthesis as follows:
 - Theater Commands (TC / 战区)
- The PLA’s officer corps has 10 ranks. Some of the Tables identify both the rank for the Army, Air Force, and Rocket Force and for the Navy such the examples below:
 - GEN / ADM
 - MAJ / LCDR

- When the acronym and Chinese translation for key English terms are used, the term is followed by the acronym and Chinese term in parentheses as follows.
 - Air Defense Identification Zone (ADIZ / 防空识别区)
- If more than one Chinese term is used for the translation, then it is also included as shown below:
 - Flight Information Region (FIR / 飞航情报区 / 飞行情报区)
 - Political Commissar (PC / 政委 / 政治委员)
- When a key Chinese term is used in Pinyin, it is sometimes followed by the English term and the Chinese characters as shown below:
 - *Huadong* (East China / 华东)
- Some Chinese terms have more than one set of characters, so they are written as follows:
 - Political Work Department (政治工作部 / 政工部)
 - Staff Department (SD / 空参 / 空军参谋部)
- Some Chinese terms are translated more than one way, so they are noted as follows:
 - Ground-to-Air Missile / Ground Air Defense
- Some terms have either a short name or an acronym plus the Chinese characters in parentheses as shown below:
 - Tsinghua University (Tsinghua / 清华大学)
 - Peking University (PKU / 北京大学)
 - Beijing University of Aeronautics and Astronautics (BUAA / Beihang / 北京航空航天大学)
- Some terms have more than one translation, so both translations are used as follows:
 - 兵种 (branch/arm)
- Some entries show the English name followed by the Chinese term in Pinyin and the character in parentheses as shown below:
 - Academic departments (*xi* / 系)
 - Flight Parameter Recording System (*feican* / 飞参).

Chinese terms that have more than one English translation and are discussed in the Terms and Concepts component within the chapters and both translations are used as shown below:

- Airborne Corps/Force (空降兵军)
- Armament/ordnance (军械)
- Branch/arm or branches/arms (兵种)
- College/academy (学院)
- Combat/operations (作战)
- Commission/Committee (委员会)
- Communications/signals (通信)
- Educational program/diploma (大专学历)
- Intermediate/mid-level (中级)
- Launch/firing (发射)
- Majors/disciplines (学科)
- Management/Administration (管理)
- Meteorological/weather (气象)
- Missions/tasks (任务)
- Open/far seas (远海)
- Professional/Vocation University and Professional/Vocational University (职业大学)
- Recruitment/conscription (征兵 / 征集)

- Resistance/intercepts (抗击)
- Senior/advanced-level (高级)
- Soldiers/enlisted members (士兵)^a
- Tactical/tactics (战术)
- Techniques/skills (技术)
- Theoretical/theory (理论).

a In the PLA, only enlisted personnel, not officers, are called soldiers. Officers are called cadre or officers.

Chapter 1: Laying the Foundation

The information in this chapter lays the foundation for the seven main chapters of this book, covering major developments in the PLA's history and important concepts for understanding and analyzing the PLA that may be new to some readers. It is divided into the following five sections:

- PRC, PLA, and PLAAF time periods
- The PLAAF's early history
- Details on the PLAAF's combat performance
- The PLAAF's force size
- The PLA's grade and rank structure.

PRC, PLA, and PLAAF Time Periods: 1949-Present

Key Points

- Official government and military texts separate China's and the PLA's 70-year history into large periods of time; these divisions shape Chinese texts on the PLAAF's history.
- PLAAF historical periods largely mirror those for the PLA writ large.

Each of the six following chapters in this book is roughly organized chronologically by the changes that occurred from 1949 to 2019. In order to put this in a larger perspective, it is important to understand how the People's Republic of China's (PRC) Chinese Communist Party (CCP), People's Liberation Army (PLA), and PLA Air Force (PLAAF) have divided up their 70-year history. The following periods are representative of information from various key official Chinese sources. It is important to note, however, that not every book is consistent about how the PRC and PLA divide up their history.

The following bullets provide a rough overview of how China has divided up its history:³

- October 1949 – September 1956: Transition from a New Democratic Society to a Socialist Society (由新民主主义社会向社会主义社会过渡).
- September 1956 – May 1966: The Tortuous Development of Socialist Construction in Exploration (社会主义建设在探索中曲折发展).
- May 1966 – October 1976: The Decade of the "Cultural Revolution" ("文化大革命"的十年).
- October 1976 – January 1992: Implementation of Reform and Opening-up and Building a Road to Socialism with Chinese Characteristics (实行改革开放 建设中国特色社会主义道路的开拓).
- January 1992 – October 2002: Persist in Reform and Opening Up, Defend Socialism with Chinese Characteristics, and Create a New Socialist Market Economy System (坚持改革开放 捍卫中国特色社会主义 创建社会主义市场经济新体制).

- November 2002 – March 2013: Hold High the Banner of Socialism with Chinese Characteristics and Establish and Implement the Scientific Development Concept Struggle for the Comprehensive Construction of a Well-off Society (高举中国特色社会主义旗帜 树立和落实科学发展观 为全面建设小康社会而奋斗).
- March 2013 – present: New Era of Socialism with Chinese Characteristics (中国特色社会主义新时代), Pursuit of the Great Rejuvenation of the Chinese Nation (中华民族伟大复兴).

The following bullets provide an overview of how the PLA and PLAAF have divided up their history. However, there is no single official list of the periods that applies to the entire PLA and PLAAF, so the bullets below provide a good example for purposes of this book:⁴

- October 1949 – December 1953:
 - PLA: Military Management During the Transition from Revolutionary War to Peace Construction (从革命战争向和平建设过渡时期的军队管理).
 - PLAAF: Period of Establishment (初建时期).
- January 1954 – May 1966:
 - PLA: Comprehensively Carry Out Military Management During the Period of Modernization, Regularization, and Revolutionary Army Building (全面展开现代化正规化革命军队建设时期的军队管理).^{b,5}
 - PLAAF: Period of All-around Development (全面发展时期).
- May 1966 – October 1976:
 - PLA: Military Management during the “Cultural Revolution” (“文化大革命”时期的军队管理).
 - PLAAF: “Cultural Revolution” (“文化大革命”时期).
- October 1976 – December 1992:
 - PLA: Initiating Military Management in the New Era of Army Building (开创军队建设新局面时期的军队管理).
 - PLAAF: According to *China Air Force Encyclopedia*, the Period of Achieving Modernization (现代化建设时期) began in October 1976 and still existed when the encyclopedia was published in 2005.
- January 1993 – present:
 - PLA: Promoting Military Management in the Period of Military Transformation with Chinese Characteristics (推进中国特色军队变革时期的军队管理).
 - PLAAF: No new period has been identified since the Period of Achieving Modernization was initiated in 1976.

The PLAAF’s Early History

Key Points

- The PLA is the armed wing of the Chinese Communist Party (CCP) and was founded in 1927 prior to the founding of the People’s Republic of China in 1949.
- Initially, senior PLAAF leaders were selected from Army leaders and merely transferred to the PLAAF. It took multiple decades for officers who began their career in the PLAAF to move up the ladder within the PLAAF and assume leadership positions throughout the force.

^b The PLA uses the term “modernization” (现代化) primarily to refer to the development of and use of military weapons, equipment, and technology. It uses the term “regularization” (正规化) to encompass a wide-ranging effort to construct a rational organizational structure within the military and to standardize all aspects of the military through the use of rules and regulations. The exact meaning of “revolutionization” (革命化) of the army remains debatable. In many ways it is a catch-all phrase or process that epitomizes the constant regeneration of communist ideals and traditional military values. The PLA began using these three terms as early as the 1930s and have been incorporated them into PLA laws, regulations, and *Defense White Papers* ever since. For example, the 2015 *Defense White Paper* states, “Military Force Building Measures include aiming at strengthening the revolutionization, modernization and regularization of the armed forces in all respects.”

- The PLAAF underwent significant organizational expansion in its early years, most significantly gaining the PLA's lead ground-based air defense units in 1957 with the merger of the PLAAF and the PLA Air Defense Force.
- Beginning in the late 1950s and lasting through the end of the Cultural Revolution in the late 1970s, geopolitical and domestic upheaval drastically impacted Chinese society, including the PLA and PLAAF.
- Political reforms starting in 1978 ushered in a period of national defense reforms that continues to the present day.

This section discusses the PLAAF's early history from 1924 to the 1980s and covers the changes in its force structure. It is organized into six subsections shown below:

- The PLA's Military Region History
- Creating the Foundation (1924-1949)
- The First Decade (1949-1960)
- The Korean War (1950-1953) and Post-Korean War Reorganization
- Confrontation with the Nationalists in the Taiwan Strait since 1954
- The Sino-Soviet Split in the Late 1950s
- The Cultural Revolution Period (1966-1976).

Because the information in this section is covered in detail in *China's Air Force Enters the 21st Century* and *People's Liberation Army Air Force 2010*, only a brief overview is provided.⁶

The PLA's Military Region / Theater Command History

The PLA is the armed wing of the CCP and was founded in 1927 prior to the founding of the People's Republic of China in 1949. The CCP created the PLA on 1 August 1927 as the Workers' and Peasants' Red Army (红军) composed solely of ground forces. They were organized into front armies (方面军) in the 1930s and renamed field armies (野战军) in the 1940s.⁷ The CCP's Central Military Commission (CMC) began using the terms Liberation Army and People's Liberation Army as early as 1945 to identify the concept of a single armed force facing the Nationalist forces in the civil war. However, the term PLA was not formally used until the CMC issued a general order on 1 November 1948. The following subsections provide an overview of the field armies and Military Regions.

1947-1955 Military Regions and Field Armies

In February 1949, the PLA, already numbering more than 2.5 million men, underwent another major reorganization to include Military Regions (MRs) and field armies as shown below.

- *Zhongyuan* (Central Plain / 中原) MR, which was established in 1947 and was later renamed the *Zhongnan* (Central South / 中南) MR, included Henan, Hubei, Hunan, Guangdong, and Guangxi.
- *Huadong* (East China / 华东) MR, which was established in 1947 and was later renamed the Third Field Army, included Shandong, Jiangxi, Jiangsu, Anhui, Zhejiang, and Fujian
- *Dongbei* (Northeast / 东北) MR, which was established in 1947 and was renamed the Fourth Field Army, that included Heilongjiang, Jilin, and Liaoning.
- *Huabei* (North China / 华北) MR, which was formed in May 1948, included Beijing, Hebei, and Shanxi.
- *Xibei* (Northwest / 西北) MR, which was established in 1947, was renamed the First Field Army and included Shaanxi, Gansu, Ningxia, Qinghai, and Xinjiang.

As the PLA prepared to move into Tibet (Xizang / 西藏) in February 1950, the CMC established its sixth MR, designated the Southwest (Xinan / 西南) MR, which included Sichuan, Yunnan, Guizhou, and Tibet.

1955-1985 Military Regions

During 1949 and the early 1950s, the Soviet Union had a major influence on the PLA’s organization. Based on the Soviet model, the PRC’s 1954 Constitution established the National Defense Council and the Ministry of National Defense (MND).^c The PLA also implemented major organizational restructuring in 1955.

The CMC began abolishing the *bingtuan* and *zongdui* organizational levels in February 1952. In February 1955, the CMC renamed and reorganized the PLA’s six MRs into the following 12 MRs for ground operations: Shenyang, Beijing, Jinan, Nanjing, Guangzhou, Wuhan, Chengdu, Kunming, Lanzhou, Xinjiang, Inner Mongolia, and Xizang (Tibet). The PLA also established six air regions for air defense and three naval districts to control fleet operations in the Yellow Sea, East China Sea, and South China Sea.

In 1956, the Fuzhou MR was established in preparation for operations against the Nationalist forces on Taiwan and became the 13th MR. In May 1967, the Inner Mongolia MR was downgraded to a provincial military district and subordinated to the Beijing MR. In December 1969, the Xizang (Tibet) MR was downgraded to a provincial military district and subordinated to the Chengdu MR.

Therefore, when the 1970s began, the existing 11 MRs were Shenyang, Beijing, Jinan, Nanjing, Guangzhou, Wuhan, Chengdu, Kunming, Lanzhou, Xinjiang, and Fuzhou. The Xinjiang MR was renamed the Wulumuqi MR in May 1979.

1985-2016 Military Regions

Finally, in 1985, China further consolidated its 11 MRs into 7 MRs and subordinate military districts as shown in Table 1-1. Eight of the original 11 MRs were merged into four—Chengdu, Jinan, Lanzhou, and Nanjing—and three key MRs—Beijing, Shenyang, and Guangzhou—remained intact.

Table 1-1: Military Regions and Military Districts: 1985-2016

Military Region	Military District
Shenyang	Liaoning, Jilin, Heilongjiang
Beijing	Hebei, Shanxi, Inner Mongolia
Lanzhou	Gansu, Shaanxi, Xinjiang, Ningxia, Qinghai
Jinan	Shandong, Henan
Nanjing	Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi
Guangzhou	Guangdong, Guangxi, Hunan, Hubei, Hainan
Chengdu	Yunnan, Xizang (Tibet), Guizhou, Sichuan

From 11 Military Regions to 5 Theater Commands in 2016

In late November 2015, at the CMC’s Work Conference on Reform, Xi Jinping announced changes to the organizational structure of the PLA, including changes to the PLAAF.⁸ These changes, which were formally implemented in January 2016, included reforms at the service’s Headquarters (HQ), the shift from seven MRs (Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou, and Chengdu) to five Theater Commands (TCs) (Eastern, Southern, Western, Northern, and Central), and their accompanying Theater Command Air Forces (TCAF), and

^c There have been 12 Defense Ministers since the 1954 Constitution established the Ministry of Defense: Peng Dehuai (Sep 1954-Aug 1959), Lin Biao (Aug 1959-Sep 1971), position vacant (Sep 1971-Jan 1975), Ye Jianying (Jan 1975-Mar 1978), Xu Xiangqian (Mar 1978-Mar 1981), Geng Biao (Mar 1981-Nov 1982), Zhang Aiping (Nov 1982-Apr 1988), Qin Jiwei (Apr 1988-Mar 1993), Chi Haotian (Mar 1993-2002), and Cao Gangchuan (2003-2008), Liang Guanglie (2008-2013), Chang Wanquan (2013-2018), and Wei Fenghe (2018-present).

many other organizational changes from the corps- to regiment-level. Table 1-2 shows each TC and subordinate Military Districts (MDs).⁹ Note: The MRs and TCs are listed in protocol order.

Table 1-2: 5 Theater Commands and Subordinate Military Districts

Theater Command	Military Districts
Eastern	Anhui Province, Fujian Province, Jiangsu Province, Jiangxi Province, and Zhejiang Province
Southern	Guangdong Province, Guangxi Zhuang Autonomous Region, Guizhou Province, Hainan Province, and Yunnan Province
Western	Gansu Province, Ningxia Hui Autonomous Region, Qinghai Province, Tibet Autonomous Region, and Xinjiang Uygur Autonomous Region
Northern	Heilongjiang Province, Inner Mongolia Autonomous Region, Jilin Province, Liaoning Province, and Shandong Province
Central	Hebei Province, Henan Province, Hubei Province, Shaanxi Province, and Shanxi Province

As noted earlier, in addition to the TCs and MDs, the PLA has four garrisons that are equivalent to MDs.¹⁰ These include the Beijing, Tianjin, Shanghai, and Chongqing Garrisons. In addition, although the MDs were subordinate to the MR HQ prior to the reorganization, they have all been resubordinated to either the newly-created PLA Army (PLAA) HQ or the CMC National Defense Mobilization Department based on their current grade, because an organization cannot command another organization at the same grade. As such, the Xinjiang and Tibet MDs, which are TC deputy leader-grade organizations, are directly subordinate to the PLAA HQ, which is a TC leader-grade organization, while the remaining 25 provincial- and autonomous region-level MDs, which are corps leader-grade organizations, are subordinate to the CMC National Defense Mobilization Department, which is a TD deputy leader-grade organization.

A Note on the Use of Republic of China versus Taiwan

The terms Republic of China and Republic of *China Air Force* and corresponding acronyms ROC and ROCAF are used several times concerning Taiwan in this book. The government on Taiwan continues to use the Republic of China and ROC today, such as the Ministry of Defense’s biennial National Defense Report.¹¹ However, the United States ceased using this term and acronym in January 1979 when the United States established diplomatic relations with the People’s Republic of China and Congress passed the Taiwan Relations Act, which included creating the American Institute in Taiwan (AIT) to replace the American Embassy in Taipei. From that time forward, the U.S. Government has just used Taiwan and uses the terms Taiwan’s Armed Forces, Taiwan’s Navy, Taiwan’s Air Force, and Taiwan’s Army in key documents such as the annual report to Congress on the PLA.¹² However, the Department of Defense does not appear to use the acronyms TAF (which refers to both the Armed Forces and Air Force), TN, and TA. For purposes of this book, the term Republic of China and acronym ROC will be used for any information preceding 1979 and Taiwan will be used for all references after January 1979.

Creating the Foundation (1924-1949)^d

In September 1924, the Chinese Nationalist Party (Kuomintang/KMT) and CCP formed a united front to defeat the warlords and attempt to unify China. As part of that front, Sun Yat-sen's Guangzhou Revolutionary Government established an Aviation Bureau and a military flight school in Guangzhou, where two classes received a year of training. Following their graduation, 18 cadets (nine KMT and nine CCP) were sent to the Soviet Union for two years of advanced flight training.

Two of those CCP cadets, Chang Qiankun and Wang Bi, helped shape the PLAAF's future. They both served in the Soviet Air Force until September 1938, when they were sent to Dihua (today's Urumqi/Wulumuqi) in Xinjiang to serve as military instructors. In 1940, they were transferred to Yan'an, Shaanxi Province, where they later helped found the PLAAF.^e

In January 1941, the CCP's CMC established the Air Force Engineering School, even though the CCP had no aircraft or airfields.^f Wang Bi was the first commandant, and Chang Qiankun was the chief instructor. In May 1944 at Yan'an, the CMC established a subordinate Aviation Section. Wang and Chang were the first Director and Deputy Director, respectively.

In May 1946, the CMC established the Northeast Old Aviation School (东北老航校) in Mudanjiang, Jilin Province. The first class began in July 1946 with four basic trainers and a few Type-99 advanced trainers. Many of the initial instructors and ground support personnel were former Japanese Air Force members who had remained in China after the surrender in 1945. By July 1949, the school had trained 560 people, including 125 pilots and 435 ground support personnel. In late 1949, the CMC approved a total of seven flight schools and the Soviet Union agreed to sell China 435 aircraft and to provide advisors for the schools. By then, the PLA had also acquired 115 Nationalist aircraft.

In March 1949, the CMC upgraded the Aviation Section to an Aviation Bureau, with Chang as the Director and Wang as the Political Commissar (PC). On 11 November 1949, the CMC abolished the Aviation Bureau and formally established the PLAAF, which initially consisted of elements of various Army units. The PLAAF began to create subordinate departments within the headquarters (HQ) and a corresponding administrative Aviation Divisions in each of the existing Military Regions (MRs).

Liu Yalou, who at the time was an Army unit Commander, became the first PLAAF Commander, and Xiao Hua, who had experience as both an Army Commander and PC, became the first PC. Chang Qiankun was appointed as a Deputy Commander and Director of the Training Department, and Wang Bi was appointed as a Deputy PC and Director of the Aeronautical Engineering (aircraft maintenance) Department.

The First Decade (1949-1960)¹³

The PLAAF underwent some of its most significant and far-reaching changes during the PRC's first decade. These included establishing an administrative structure in Beijing, building several schools to train pilots and support personnel, acquiring thousands of the Soviet Union's most sophisticated combat aircraft, and engaging in combat against the world's strongest airpower—the United States—and against Chinese Nationalist forces.

When the Nationalists retreated to Taiwan in 1949, the strength of the Communist forces was concentrated within the five field armies (FA) and five MRs in the north and northeast. The PLAAF formally established its HQ in

^d This section and portions of the rest of this chapter are excerpted from Kenneth W. Allen, Glenn Krumel, and Jonathan D. Pollack, *China's Air Force Enters the 21st Century*, 18-67, used with permission; PLAAF 2010, Chapter 1; and ["History of the Air Force Air Divisions of the Chinese People's Liberation Army"] [中国人民解放军空军航空兵历史沿革], 13 May 2014, accessed at <http://www.plaaf.net/special/hkbs.html> and http://blog.sina.com.cn/s/blog_a3f74a990101fi67.html.

^e Yan'an was near the endpoint of the Long March and became the center of the Chinese Communist revolution from late 1935 to early 1947.

^f The actual name for the Central Military Commission (CMC) is the Military Commission of the Central Committee (中央军委委员会 or 中央军委) of the Chinese Communist Party. While the Chinese term has not changed since its creation, the English translation has changed over the years. In the 1960s and 1970s, the commission was commonly referred to as the Military Affairs Commission (MAC).

Beijing on 11 November 1949. As shown below, the PLA created five MRs, each of which had a subordinate functional (业务) and administrative (行政) Aviation Division (航空兵处). In 1950, each Aviation Division was reorganized and renamed as an Military Region Air Force (MRAF) HQ. The six MRs and MRAFs are shown below:¹⁴

- *Zhongyuan* (Central Plain) MR, which was later renamed the *Zhongnan* (Central South) MR and included Henan, Hubei, Hunan, Guangdong, and Guangxi.
- *Huadong* (East China) MR that included Shandong, Jiangxi, Jiangsu, Anhui, Zhejiang, and Fujian.
- *Dongbei* (Northeast) MR that included Heilongjiang, Jilin, and Liaoning.
- *Huabei* (North China) MR that included Beijing, Hebei, and Shanxi.
- *Xibei* (Northwest) MR that included Shaanxi, Gansu, Ningxia, Qinghai, and Xinjiang.
- *Xinan* (Southwest) MR that included Sichuan, Guizhou, and Yunnan.

By the end of 1949, the PLA had established 16 antiaircraft artillery (AAA) regiments stretching from Shenyang, Liaoning Province, to Changsha, Hunan Province, to protect the major cities they had taken from the Nationalists. However, they still did not control Fujian Province or the eastern portion of Guangdong Province across from Taiwan.

To control all of the air defense forces, the CMC formally established the PLA Air Defense HQ in October 1950. At that time, there were two AAA divisions, 16 AAA regiments, one searchlight regiment, two radar battalions, and one aircraft observation battalion. Shortly thereafter, four air defense HQs were established in the MRs.^g

However, from the PLAAF's earliest years, no consideration was ever given to making the air force a service independent of the army. The PLA leadership did not want an autonomous aviation force and, as noted earlier, chose the first Commander, Liu Yalou, and PC, Xiao Hua, directly from the army. Neither had any aviation experience.^h In addition, 2,515 members of Liu Yalou's army unit transferred from Wuhan, Hubei Province, to Beijing to form the core of PLAAF HQ. The administrative structure at PLAAF HQ reflected the air force's needs at the time and consisted of six major departments: headquarters, political, training, engineering, logistics, and personnel. This structure was mirrored in each of the MRAF HQs.

For the first few years, most of the PLAAF's regional HQs were merely administrative organizations without any significant operational forces, and the Nationalists still controlled the skies over southeast China as far north as Shanghai. For example, Nationalist B-24 bombers attacked Beijing on 4 May 1949. The most serious attack occurred in Shanghai in February 1950, when 1,400 people were killed. Therefore, the PLAAF's immediate task was to provide air defense for the major cities, such as Shanghai, Beijing, and Tianjin.

China's vulnerability to air attack underscored the imperative need to build an air force. In early August 1949 (i.e., several months prior to the establishment of the People's Republic), Liu Yalou led a Chinese delegation to Moscow seeking rapid Soviet support in this area. The delegation remained in Moscow for a full two months, with the USSR agreeing to furnish 434 aircraft and to assist the PLA in establishing schools for training Chinese pilots.

^g In addition, other subordinate air defense command organizations were formed. The PLAADF also established five schools (advanced air defense, AAA, air defense, radar, and maintenance) plus five preparatory schools.

^h Wu Faxian (1965–1971) succeeded Liu Yalou (1949–1965) as PLAAF Commander. During Liu's tenure, Wu was a Political Commissar. In September 1971, Wu Faxian was implicated in the Lin Biao affair and was sentenced in 1981 to 17 years of imprisonment. For almost two years, the PLAAF did not have a Commander; official PLAAF histories list no events for 1972 at all. The next PLAAF Commander was Ma Ning (1973–1977), who had an illustrious army career before transferring to the PLAAF in 1949. In 1950–1952, he attended the PLAAF's 1st Aviation School as a pilot cadet. He served in the 21st Air Division (Shanghai) until 1967 when, as the Division Commander, he transferred to Changchun in the Shenyang MR. He was apparently politically adroit during the Cultural Revolution. In 1968, he was on the Jilin Provincial Revolutionary Committee Standing Committee. Ma Ning later served as the Lanzhou MRAF Deputy Commander prior to becoming the PLAAF Commander. As such, he was the first Commander to have any experience as a pilot. The next Commander with any pilot experience was Wang Hai in 1985–1992. Ma's political savvy allowed him to become PLAAF Commander before Zhang Tingfa, who had been a Deputy Commander before the Cultural Revolution. Zhang, who subsequently followed Ma Ning as Commander, had the most diversified headquarters experience of any PLAAF Commander. Zhang served as the PLAAF Commander (1977–1985), Political Commissar, Deputy Commander, Chief of Staff and CCP Politburo member.

In June 1950, the PLAAF's 4th Composite Air Brigade (混成旅) was established in Nanjing as the PLAAF's first air unit. It was based on 30th Army's 90th Division and had three subordinate regiments (10th, 11th, and 12th). At the end of 1950, it was renamed the Air Force 4th Division (空4师) and moved the headquarters to Shanghai. When the Korean War started, they were moved to Liaoning Province. In 1956, the brigade was renamed the Air Force 1st Division (空军第一师). In 1950, the PLAAF also created the 2nd and 3rd Composite Air Brigades, which were renamed the 2nd and 3rd Air Divisions, respectively.

From the establishment of the People's Air Force in November 1949 to the short span of four years in 1953, the People's Air Force developed into 28 aviation divisions, equipped with more than 3,000 aircraft of various types, and the main battle aircraft was replaced by the most advanced jet aircraft at that time. In 1954, the Air Force had its first "all-weather" fighter regiment. By 1957, one-third of all pilots in the Air Force had become "all-weather" pilots. In October 1958, the first batch of ground-to-air missile troops was formed.

At the time of the Communist victory in 1949, the PLAAF had fewer than 3,000 trained aviation personnel, including 202 pilots; 30 navigators; 2,373 mechanics; three engineers; and other unidentified personnel. There were only 159 foreign-made aircraft (the 21 different types constituted a logistical nightmare) but 542 airfields. Airmen from the communist movement constituted 88 percent of the pilots but only 15 percent of the mechanics. Personnel "accepted" from the Nationalist forces represented 85 percent of the mechanics and an even higher percentage of technical personnel. More than 100 Japanese pilots and technically trained ground personnel remained in Manchuria after 1945. They were part of the initial contingent of instructors at the Northeast Old Aviation School.

The PLAAF established its first development plan for the years 1950 to 1953. The plan called for training 25,400 technical troops, establishing about 100 aviation regiments, repairing over 100 airfields, setting up eleven aircraft repair factories, and increasing the size of the PLAAF to 290,000. For the most part, these goals were reached by the end of 1953.

Notwithstanding the many difficulties the PLAAF faced, it had reason to be pleased by its early growth. By 1955, the Soviet Union had supplied the PLAAF with 4,400 aircraft, which were organized into 28 air divisions and 70 regiments, and had trained the pilots and technicians that manned and maintained them.^{14,15} At least 12 academies or schools had been founded. These institutions trained 5,945 pilots, 24,000 technicians, 396 cadres, 690 political cadres, and 310 logistics cadres. PLAAF histories, however, are unclear as to whether or not their goal of 290,000 airmen was realized by 1954. See Chapter 2 for additional information about this period.

The Korean War: 1950–1953¹⁶

This subsection discusses the PLAAF's involvement during the Korean War. It is organized into three parts: the historical setting, PLAAF combat operations, pilot training, air-to-air tactics, lessons learned; and post war reorganization.

Historical Setting

During the Cairo Conference of December 1943, Britain, China, the United States, and the Soviet Union agreed to an international trusteeship of Korea following Japan's defeat. Soviet troops entered northern Korea on 9 August 1945, just before Japan's surrender on 15 August, and American troops arrived in southern Korea on 8 September. By arranging to take Japan's surrender north and south of the 38th parallel, the two powers created two separate zones and, ultimately, two separate countries. Within a year after separate elections were held in the north and south in 1948, Soviet and American forces had been largely withdrawn from the divided peninsula. By June 1950, the North

i Depending on the source, the number of aircraft the Soviets provided from 1949 to 1955 has ranged from 3,000 to 4,400. A 2012 report indicated the original number of 3,000 was inaccurate.

was a stronger state, both industrially because of its mineral and hydro-power resources and militarily because the Soviets had armed it for offensive warfare.

The North Korean surprise attack on 25 June 1950 was at once condemned by the United Nations Security Council. (The Soviet Union had boycotted the Security Council for six months in protest against the presence of Nationalist China and was not present to cast a veto.) None of the official PLAAF histories on the “War to Resist America and Aid Korea” comment in any detail on the war’s origins. The sections dealing with the war merely state that “the Korean civil war erupted on 25 June 1950.”

Immediately following the North Korean attack, President Truman sent forces to defend South Korea and secured the support of the UN in the name of collective security. Forces were sent from Britain, Turkey, and 13 other member countries of the UN,^j although South Korea supplied two-fifths of the ground forces and the United States one-half of the ground forces, as well as most of the naval and airpower. All were put under the command of General Douglas MacArthur.

The war had four phases. First, under the well-prepared Soviet-armed North Korean assault, the outnumbered South Korean-American forces initially were forced back southeast of the Naktong (Nakdong) River to protect a fifty-by-fifty mile perimeter around Pusan in the extreme southeast. They fought off North Korean attacks while garnering reinforcements from abroad. In the second phase, MacArthur demonstrated the offensive power of modern military technology with a massive amphibious landing on 15 September at Inchon, a gamble that succeeded brilliantly and was soon followed by recovery of Seoul and destruction of the North Korean invasion force.

The war entered the third phase when UN forces crossed the 38th parallel in early October and, shifting their war aim from repulsing of the Northern invasion to reuniting Korea by force, pushed north toward the Yalu River. The two main American thrusts were under separate commands, divided by 50 miles of seemingly impassable mountains. In mid-October, based partially on concern about an American invasion of China through Korea, a massive force of Chinese “volunteers” began to cross the Yalu into North Korea to defend China’s interests on the frontier of its northeast industrial base and to solidify its new alliance with the Soviet Union. Marching long distances through the mountains by night, lying hidden from air reconnaissance by day, Chinese forces waited until they totaled 300,000 or more by late November. Unexpected flank attacks then forced the American columns into a costly retreat of 275 miles in the winter cold, to well south of Seoul. However, massive UN firepower eventually enabled a stalemate at the 38th parallel. General MacArthur’s disagreement with the policy to limit the war led to his dismissal in April 1951. In the fourth phase of the war, truce talks began in July 1951 and dragged on at Panmunjom for two years. An armistice was finally signed July 27, 1953, shortly after the inauguration of President Eisenhower and the death of Joseph Stalin.

The PLAAF was the primary air force involved in the Korean War on the communist side, although the small North Korean Air Force and pilots from the Soviet Air Force also took part.¹⁸ On the UN side, the largest force was the Far East Air Forces (FEAF), which was the air component of the Far East Command. FEAF was composed of the U.S. 5th Air Force (the largest subordinate command), the 20th Air Force, the 13th Air Force, the Far East Air Materiel Command, plus a few other small units. In addition, U.S. Navy and Marine Corps aircraft, plus other friendly foreign air units, including the Royal Australian Air Force’s No. 77 Squadron and the small South Korean air force, participated.^k

j This included Canada, Australia, Philippines, New Zealand, Thailand, Ethiopia, Greece, France, Colombia, Belgium, South Africa, Netherlands, and Luxembourg.

k During the war, FEAF’s personnel strength more than tripled as it grew from 33,625 in June 1950 to 112, 188 in July 1953. Counting an average of two groups and seven squadrons of Marines and three squadrons of friendly foreign air forces, FEAF possessed or controlled an average of 19 groups and 62 squadrons from June 1950 to July 1953. These squadrons possessed an average of 1,248 aircraft, of which an average of 839 were kept combat ready. A total of 1,040,708 UN aircraft sorties were flown during the war. FEAF units flew a total of 720,980 sorties, including 66,997 counterair; 192,581 interdiction; 57,665 close-support; 181,659 cargo; and 222,078 miscellaneous sorties. Marine units flew an additional total of 107,303 sorties; land-based friendly foreign air units flew another total of 44,873 sorties; and the U.S. Navy flew an additional 167,552 sorties.

From the PLAAF's perspective, the Korean War accomplished several goals. The most important of these were to establish a command organization, to repair and build suitable airfields, to acquire substantial numbers of modern combat aircraft organized into over 25 air divisions, and to gain combat experience for its pilots, staff, and support personnel.

The official PLAAF and USAF histories of the Korean War describe the conflict chronologically, but focus on different considerations. Whereas both describe the organizational changes in air force commands during the war, the acquisition of new equipment, and the constant challenge to achieve air superiority, PLAAF accounts necessarily differ from the USAF histories, given that the PLAAF could not provide direct support for the ground troops. Details on the PLAAF's performance are included in the next section of this chapter.

The PLAAF's Lessons Learned from the Korean War

As part of its official history, the PLAAF provided an analysis of the war and drew six principal conclusions. The first focused on the policy of trying to repair North Korean airfields as steppingstones toward the south and for providing direct support to the ground forces. It was not until the end of 1951 that the Chinese military leadership conceded that this policy would not work because the UN forces controlled the skies over North Korea and could bomb the airfields at will. The CMC also determined that the PLAAF could not directly support the ground troops. As a result, the mission changed to maintaining air superiority in northwestern Korea, to providing point protection of key transportation lines and military and industrial targets, and to providing indirect support for the ground forces.

The second lesson was the primacy still placed on the human factor. Even though the UN forces had higher-quality equipment and technology, the PLAAF insisted that its forces were superior because they had come from the ground forces accustomed to difficult situations and were willing to sacrifice themselves for China. This seemed an implicit admission that the Chinese sustained serious losses in the air.

The third lesson was that high technical skills among pilots and maintenance personnel are the keys to victory. For example, the PLAAF compared the kill ratio and aircraft malfunction ratio during the war. From September 1951 to May 1952, according to PLAAF data, the USAF kill ratio was purportedly 1.46:1 and the PLAAF had an average of one maintenance malfunction for every 558.8 sorties. After October 1952, when the F-86 became the primary fighter, the USAF kill ratio was 1.42:1, but the PLAAF had an average of only one malfunction for every 1,003 sorties. However, the kill ratios calculated by the PLAAF do not appear credible. U.S. figures indicate that the Sabres enjoyed an exchange ratio of closer to 10:1. The fourth lesson was the imperative need to improve the command level to ensure victory. Several instances were cited of missions being conducted mechanically, resulting in the needless loss of aircraft, including the Il-10 mission discussed earlier.

The fifth lesson was the pivotal importance of equipment. Specific examples included PLAAF's claims of a kill ratio of 1:7.8 against the F-80 and F-84. The situation changed when the UN forces acquired the F-86, but the PLAAF's acquisition of MiG-15Bis evened up the odds. For example, of the 125 air battles engaged in during 1952, 85 were with F-86s. Of these, the PLAAF purportedly won nine of them (i.e., shot down at least one F-86 with no PLAAF losses), came out ahead in 15 (it had fewer losses than the UN forces), tied 34, and had more losses in 27. In the remaining 40 battles against other aircraft, the PLAAF won 20, came out ahead in 10, tied 8, and lost 2. The final lesson was the continued importance of the Political Commissar system's emphasis on political work among the troops to ensuring victory.

But these "lessons learned" were neither comprehensive nor fully candid. Indeed, China's authorized version of these events—even in the 1980s—reveals an unwillingness to fully and accurately portray the record of the conflict. The wide discrepancy in air-to-air combat figures cited by both sides of the Korean War is a good illustration of

the PLA's difficulties in analyzing the effectiveness of airpower. These claims suggest that the Chinese continue to delude themselves about the capabilities and performance of their aircraft during the war.

Post-Korean War Reorganization

Coincident with the fuller development of defense ties with Moscow, China made an effort to reorganize along Soviet lines. In 1954, China's leaders established the National Defense Council and the MND and reorganized the PLA's five FA areas into 13 MRs.

In 1955, the Air Defense Troops became the PLA Air Defense Force (PLAADF), with Yang Chengwu as the Commander. At this point, the ADF became a service equivalent to the air force and navy. In May 1957, however, the ADF was merged with the PLAAF. At that time, the PLAADF had four MR air defense HQs (Shenyang, Beijing, Nanjing, and Guangzhou), one PLAADF corps (Fuzhou), and eight schools, plus AAA troops, searchlight troops, and aircraft reporting troops, totaling 149,000 personnel. The PLAAF gained substantially in end-strength through the merger, and the logic of a more integrated organizational structure was thus more fully in place.

When the PLAAF and ADF merged, the new PLAAF leadership consisted of the Commander (Liu Yalou), PC (Wu Faxian), and seven Deputy Commanders—five from the PLAAF and two from the ADF. Although several elements with similar responsibilities were merged and some redundant elements were eliminated, the administrative and operational structure continued to reflect two separate organizations. To some degree, this situation has persisted in subsequent decades, and has hampered a true integration of the aviation (combat aircraft) and air defense (AAA, SAM, radar, and communications) assets.

In conjunction with this reorganization, the air force renamed its six MRAF HQs in May 1955 as the Shenyang, Beijing, Nanjing, Guangzhou, Lanzhou, and Wuhan MRAFs. Although four of the MRAFs remained in the same location, two of them moved.^l Because of the lack of an adequate command and control system, the MRAF HQs were responsible primarily for those units surrounding the six major cities.^m Table 1-3 below shows the history of the MRAFs from 1955 to 2016, when they were reorganized as TCAFs. The MRAFs are listed in protocol order. Historically, everything, including organizations and personnel, are listed in protocol order. This includes the services (Army, Navy, Air Force, Second Artillery / Rocket Force) based on when they were created, MRs / TCs based on when they were created, and units. Personnel are also listed in protocol order, but it is more complicated. At each level, this includes the Commander, PC, Deputy Commanders and Deputy PCs, Chief of Staff, Director of the Political / Political Work Department, Director of the Logistics Department and Equipment Department. If the list concerns the Party Standing Committee, then the PC is listed first because he is the Party Secretary. Concerning the Deputy Commanders, they are usually listed based on when they assumed their billet; however, some new deputies are moved to the top of the list, which implies the other deputies will retire when they meet their mandatory retirement age and the new Deputy might have the opportunity to move up to become the Commander of that unit.

^l The South Central MRAF in Wuhan moved to Guangzhou as the Guangzhou MRAF, and the Southwest MRAF in Chengdu moved to Wuhan to become the Wuhan MRAF.

^m In addition, two other types of operational organizations subordinate to PLAAF HQ or the MRAF HQ—Air Corps and Command Posts—were established to control aircraft defending the other major cities within China.

Table 1-3: Military Region Air Forces 1955 to 2015¹⁹

MRAF	Dates	Comments
Shenyang	1955-2015	1950 began as the Dongbei (Northeast) MRAF
Beijing	1955-2015	1950 began as the Huabei (North China) MRAF
Lanzhou	1955-2015	1951 began as the Xibei (Northwest) MRAF
Jinan	1967-2015	1985 absorbed components of the Wuhan MRAF
Nanjing	1955-2015	1950 began as the Huadong (East China) MRAF
Guangzhou	1955-2015	1950 began as the Zhongnan (Central South) MRAF
Chengdu	1955-2015	1950 began as the Xi'nan (Southwest) MRAF
Fuzhou	1958-1985	1985 abolished and merged into Nanjing MRAF
Wuhan	1955-1985	1985 abolished and merged into Guangzhou and Jinan MRAFs

In addition to realigning the MRAFs, the Air Force HQ organization in Beijing was restructured in May 1955, and the six major departments were expanded to 11, plus a military law division, to handle the increasing responsibilities and missions. The 11 departments were the headquarters, political, personnel, military training, schools, engineering, procurement, airfield construction, logistics, finance, and directly subordinate political departments. This administrative structure was mirrored at each subordinate level, beginning with the MRAF HQ.

The significance of these changes was that the air force was beginning to expand its operational and administrative command and control structure to perform its primary air defense mission. However, the changes also reveal that the air force was not organized to perform a support role for the ground forces. For example, the structure of the six MRAFs covering all of the 13 MRs was designed for air defense, not ground support. Furthermore, the air force and army HQ were not (and are still not) collocated. This, in reality, led to further organizational separation between the two services.

Confrontation with the Nationalists in the Taiwan Strait since 1954

After the KMT fled to Taiwan, the United States did not attempt to protect it; however, this situation soon changed due to the Korean War in 1950.²⁰ As a result of the war breaking out, the Truman administration sent the Seventh Fleet stationed in Japan to the Taiwan Strait to “preserve international peace and security” by not only protecting Taiwan from an attack but also to keep the KMT from attacking the mainland. As the Korean War began to subside and after the Eisenhower administration began in 1953, the U.S. ended its naval blockade that protected the ROC.

Starting in 1949, the PLA began stationing some of its ground forces opposite Taiwan in Fujian Province and began repairing various airfields in Fujian and Guangdong Provinces in advance of deploying additional troops there in 1950.²¹ However, these preparations were put on hold during the Korean War in order to concentrate forces in the northeast. Meanwhile, the Nationalist Air Force controlled the airspace over Fujian, eastern Guangdong, and southern Zhejiang Provinces, to facilitate raids against other targets. In addition, it controlled a series of islands just off the coast of Zhejiang and Fujian Provinces, using Dachen Island, Quemoy (Kinmen/Jinmen), which is an ROC/Taiwan outpost consisting of two islands covering 130 km² and located just two miles from the mainland port of Xiamen (Amoy), and Matsu (Mazu) as the key centers. In 1954, the PLA successfully occupied the Dachen Island group in what is known as the Yijiangshan Campaign, discussed later. It also tried unsuccessfully to dislodge Nationalist forces from Quemoy and Matsu islands in 1954 and 1958.

The ROC Air Defense Identification Zone Covering the Taiwan Strait

An Air Defense Identification Zone (ADIZ / 防空识别区) is defined in the 1944 Chicago Convention of International Civil Aviation as “a special designated airspace of defined dimensions within which aircraft are required to comply with special identification and/or reporting procedures additional to those related to the provision of air traffic service.”²² Originally implemented in the postwar/Cold War period, ADIZs functioned to facilitate the early identification of inbound aircraft and reduce the frequency and inherent risks of airborne interceptions. The United States was the first country to adopt an ADIZ, in 1950. It then facilitated implementation of ADIZs in Japan, Taiwan, South Korea and Iceland. A number of other countries adopted their own ADIZs, but some, such as Iceland’s and Norway’s, were dismantled following the Cold War. ADIZs were not a matter of international concern until China’s 2013 announcement of an East China Sea ADIZ.

Despite the Chicago Convention’s tacit authorization of ADIZs, there is no international regulation or guidance for implementing or operating them. They are neither explicitly prohibited nor permitted under international law. As a result, practices are inconsistent. Inconsistencies have led to misunderstandings and, as China’s ADIZ demonstrated, have the potential to inflame international tensions.

In 1953, the U.S. Military Assistance Advisory Group (MAAG), which was established in Taiwan in 1951 and existed until 1978, created the ADIZ shown in Figure 1-1.²³ The ADIZ covers all of Fujian Province and southern Zhejiang Province.

Figure 1-1: Republic of China ADIZ



In 1954, the “centerline” (海峡中线 / 海峡中線) shown in Figure 1-2 was drawn by the United States when it signed the Mutual Defence Treaty with Taiwan.²⁴

²² Depending on the source, the centerline of the Taiwan Strait has also been identified as the center line, median line, medium line, middle line, mid-line, and mid-line. Of note, the PRC rarely mentions this term. For purposes of this book, centerline is used.

Figure 1-2: Taiwan Strait Centerline



Concerning the background of the centerline, the following information was provided based on a discussion with military experts in Taiwan.²⁵ According to their perspective:

“The centerline of the Taiwan Strait was not conceived solely by the Republic of China (ROC); the history traces back to the days of the ROC-U.S. mutual defense treaty in 1954, and it served two purposes: a) prevention of a large-scale confrontation between two sides of the Taiwan Strait, and b) a possible massive counterattack to reclaim the mainland by ROC forces because the military strength of the ROC was greater than that of mainland China, and the United States was quite worried of Chiang Kai-shek’s intention to initiate a massive military operation against the PRC, which might well have escalated into a conflict involving the United States.... [T] here has never been an agreement on the centerline of the Taiwan Strait between the two opposing sides. During the 1st and 2nd Taiwan Strait Cris[es] in the 1950s, the ROC sent a sizable military reinforcement to Kinmen (Quemoy) and Matsu to fight off Mainland China’s military actions. When the confrontation ended, neither side signed any truce treaties or agreements, because both sides continued to claim the territories of one another. Even though trivial skirmishes ensued, the centerline was gradually becoming a tacit agreement between the two. Mainland China did not allow its vessels to enter the Strait until 1979, which was the year the U.S. severed relations with the ROC.”

Taipei Flight Information Region

A flight information region (FIR / 飞航情报区 / 飞行情报区) is an area in which a country (or, where warranted, a single city) coordinates air traffic, information, and alert services for aircraft in flight. This information includes weather conditions, position of nearby aircraft, and any potential dangers to flight.²⁶ Planning flight routes that exist entirely within one FIR generally falls to the state administering that FIR, according to the guidelines of the International Civil Aviation Organization (ICAO). As shown in Figure 1-3, there are separate Shanghai, Taipei, Guangzhou, Fukuoka, Hong Kong, and Manila FIRs.

Figure 1-3: Taipei Flight Information Region



The Taipei FIR services over 1.5 million flights per year carrying 58 million travelers annually, yet Taiwan is not a member of ICAO, a United Nations agency. Taiwan was expelled from the UN in favor of the PRC in 1971 and is therefore not afforded member status in most of its agencies. As recently as 2013, China asked the ICAO president to invite Taiwan as a guest to its triennial assembly, where the organization determines its worldwide policy agenda. But in a sign of colder relations between Beijing and the administration of President Tsai Ing-wen, Taiwan was snubbed in 2016. Taiwan's exclusion from the international body means it has no formal avenue for registering complaints against China's aviation actions.

The following subsections discuss the First, Second, and Third Taiwan Strait Crises, as well as the Yijiangshan Campaign and air activity over the Taiwan Strait since 1958.

First Taiwan Strait Crisis: 1954-1955

The First Taiwan Strait Crisis started even as the Korean War began to subside. The CCP intended to reunite the PRC and the ROC, while the KMT wanted to regain control of Mainland China.^o This situation resulted in tensions over the strategically located Quemoy and Matsu islands in the Taiwan Strait. After Chiang Kai-shek and the nationalists fled from mainland China to Taiwan, Chiang established troops on these two islands. Once the United States removed the Seventh Fleet from the Taiwan Strait in 1954, the KMT attempted to retake mainland China by launching attacks from these strategic locations. In response, the PRC began shelling these islands.²⁷

During the First Taiwan Strait Crisis, the United States did not re-deploy U.S. fleets to the Taiwan Strait. Instead, the United States signed the "Mutual Defense Treaty." This treaty is a bilateral security agreement that lasted until 1978^p and guaranteed US-ROC cooperation against communist powers in order to reduce communist influence in the Asia Pacific Region. Likewise, the U.S. also signed the "Formosa Resolution"^q in 1955, which guaranteed U.S. defense of the ROC if a PRC attack threatened it.²⁸ This legislation did not include the islands of Quemoy and Matsu that the PRC had already begun attacking; however, as a result of this resolution, the PRC stopped bombing the islands in 1955. Although the United States already withdrew the Seventh Fleet from the Taiwan Strait, it still intervened diplomatically in order to deter PRC attacks and ensure that the PRC did not defeat the ROC.

^o The information in the first two paragraphs, including the endnotes, comes from Lizzy Leary, *Strait Talk: United States Containment of Communism in The Taiwan Strait*.

^p It ended when the United States formally recognized the CCP as the rightful Chinese government rather than the KMT.

^q The name of this treaty was derived from the former name of the island of Taiwan, which was Formosa. This was the name given to the island in 1542 by Portuguese sailors. This name was used by English speakers until the early 20th century.

Shortly after the May–July 1954 Geneva Conference on Indochina, the PLA began shelling Quemoy.²⁹ This opened up eight months of artillery, air, and naval exchanges, centering on these and other offshore islands held by the Nationalists. As a counterpoise to Beijing’s massing of troops on the mainland, President Eisenhower concentrated sea and air forces in the Taiwan area, withholding American forces from the offshore fighting while sustaining Quemoy and Matsu logistically. At the culmination of the crisis in March 1955, Beijing backed off and called for talks with Washington, which began in Geneva in August.

By 1954, the Nationalists had one division and six assault groups on Dachen Island itself and eight to 12 vessels in the surrounding waters, for a total of about 20,000 troops. They also had about 1,000 troops deployed on the Yijiangshan Islands, which are part of the Dachen Island group and consist of two small islands covering 1.7 km², strategically located about 10 nautical miles from the mainland coast. At the same time the PLA began shelling Quemoy and Matsu, the CMC ordered the PLA’s East China MR (headquartered in Nanjing) to liberate the Dachen Islands, beginning with an assault on the Yijiangshan Islands.

The air assault on the Dachen Islands began on 1 November 1954, and the landing assault began on 18 January 1955. Following the occupation of Yijiangshan, the U.S. Navy helped evacuate Nationalist forces to Taiwan from the remaining islands in the Dachen group. The PLA occupied all of the islands by 25 February.

This expansion of Beijing’s military activities, however, was paralleled by an expansion of American commitments. In September 1954, the United States created a joint defense system, the Southeast Asia Treaty Organization (SEATO), to include Britain, France, Australia, New Zealand, the Philippines, Thailand, and Pakistan. Washington also signed defensive alliances with Seoul (October 1953) and Taipei (December 1954). Thus, by the time the Communist–Nationalist confrontation over Quemoy and Yijiangshan occurred in 1954, China’s activity concerning four contiguous areas was matched by an American-led effort at containing Chinese power and deterring the PLA from any major use of force along the Chinese coast.

For all practical purposes, the Nationalist’s Air Force controlled the airspace over the Taiwan Strait, Fujian Province, Zhejiang Province, and Guangdong Province until the 1958 Taiwan Strait Crisis, even though the PLAAF established a Command Post in Zhejiang Province. After that time, the PLAAF moved forces into those three provinces, but the Nationalist’s Air Force still controlled the airspace over the Taiwan Strait until the late 1990s.

*PLAAF Involvement in the Yijiangshan Campaign: 1954–1955*³⁰

The details of the PLAAF’s role in the Yijiangshan Campaign are instructive because the campaign was the PLA’s first and only true joint operation. The campaign also provided the framework for the 1958 attempt to dislodge Chinese Nationalist forces from Quemoy and Matsu, as well as the border conflict with Vietnam two decades later. Even though the PLAAF had been involved in the Korean War, during this campaign, it was not prepared to take over an island. As such, it had to start from scratch, including gathering intelligence information and practicing dropping bombs. See *China’s Air Force Enters the 21st Century* for detailed information on the campaign. PLAAF and naval aviation units used for the operation included elements of one bomber division, one ground attack division, three fighter divisions, two independent reconnaissance regiments, and three naval aviation fighter divisions, for a total of 200 aircraft deployed to five airfields. The PLAAF pilots were flying the MiG-15Bis, Tu-2, and Il-10 aircraft. At that time, the Nationalists, flying F-84s and F-47s, were just beginning to be equipped with F-86s. The actual attack occurred from 2 November, when the air assault began, to 18 January, when the landing assault began. Overall, the air force flew a total of 288 sorties, including 168 sorties for air cover and 72 bomber (Tu-2s) and 48 ground attack (Il-10s) sorties on the first day of the campaign. They dropped 851 bombs (127 tons) and fired 3,741 rounds of ammunition.

Second Taiwan Strait Crisis: 1958

In 1956, the PLA began building a new group of airfields in Fujian, Zhejiang, and eastern Guangdong Provinces and had begun making preparations to move the air force into Fujian. By 1958, Beijing estimated that the Nationalists had six infantry divisions with 85,000 troops and over 400 artillery pieces stationed on Quemoy and Matsu. In the aftermath of a two-month-long meeting of the CMC between May and July of 1958, Beijing began a sharp upsurge in propaganda calling for the “liberation” of Taiwan. The plans called for the air force to enter Fujian first, and for Chinese artillery to begin shelling Quemoy. In response, Washington announced that its forces in the Far East were going on alert and would conduct naval and air force patrols north to Okinawa and south to the Philippines. In addition, Taiwan put its forces on alert on 17 July and began conducting reconnaissance flights along the coast of Fujian and Guangdong, publicly calling this “preparations to quickly counterattack the mainland.”

Overall, the PLAAF’s battle for command of the air took three months and can be divided into two phases. Phase 1 took place from 27 July to 22 August and consisted of the PLAAF moving into Fujian and Guangdong. Phase 2 took place from 23 August to 10 October and consisted of air cover for the naval and army artillery shelling and the blockade of Quemoy. During preparations for the assault, the Military Commission also established the following three rules of engagement for the air force:

- The air force could not enter the high seas to conduct operations.
- If the Nationalist Air Force did not bomb the mainland, the PLAAF could not bomb Quemoy and Matsu.
- The air force was not allowed to attack the U.S. military but could defend against any U.S. aircraft entering Chinese territory.

Once the general plan and rules of engagement were established, the air force gave the order on 19 July to begin implementing the plan. During the two months of actual combat, the PLAAF and Nationalist Air Force engaged in air combat over the two islands, while the United States flew air cover 20 to 40 km south of Quemoy but never engaged any PLAAF aircraft.

The final air battle took place on October 10, when a PLAAF pilot shot down two F-86s. By the end of October, Beijing deescalated the crisis with a temporary cease-fire followed by intermittent shelling. The Strait’s air defense situation had reached a stalemate, with the Nationalists controlling the airspace over the strait and the PLAAF gradually controlling the airspace over Fujian, Zhejiang, and Guangdong provinces. Over the next few years, the Nationalists continued to probe the mainland’s defenses with reconnaissance flights, including high-altitude U-2 flights of which the PLAAF shot down five between 1962 and 1967.

Concerning Lockheed Martin’s U-2 surveillance aircraft, the Black Cat Squadron, formally the 35th squadron, was a squadron of the Republic of China (ROC) Air Force (ROCAF) that flew U-2s out of Taoyuan Air Base in northern Taiwan from 1961 to 1974.⁵³ 26 ROCAF pilots successfully completed U-2 training in the U.S. and flew 220 operational missions, with about half over China. The USAF and Central Intelligence Agency (CIA) managed the overall program.

During the squadron’s 14 years of existence, the PLAAF shot down five U-2s between 1962-1967 using SA-2 SAMs, with three pilots killed and two captured. Another pilot was killed while performing an operational mission off the Chinese coast, while seven U-2s were lost during training missions, killing six pilots. Altogether, a total of 19 U-2s were assigned to the Black Cat Squadron, although the squadron usually had only two U-2s assigned to it at a time.

In January 1961, the CIA provided the ROC with its first two U-2Cs, and, in April, the squadron flew its first mission over China. Other countries were also covered from time to time by the 35th Squadron, including North

^r Of note, although the ROC referred to the U-2 unit as the “Black Cat Squadron” and Lockheed Martin referred to the aircraft as the Dragon Lady, the PLAAF referred to the aircraft as the “Black Widow” (黑寡妇).

Korea, North Vietnam, and Laos, but the main objective was to conduct reconnaissance missions over northwest China to assess the PRC's nuclear capabilities, which were being tested there. Some of the missions were flown out of USAF bases in South Korea and Thailand. The aircraft normally flew at 21,000 meters at 850 knots but could ascend to 25,900 meters, which was higher than the PLAAF's AAA or fighters could operate. However, the PLAAF gradually increased the number of SA-2 SAMs and their location, so they could shoot down the U-2s.

The last U-2 aircraft mission over mainland China took place on 16 March 1968 as a result of the PLAAF's increasing SAM and MiG-21 capabilities, along with the rapprochement between the U.S. and the PRC and better Long-Range Oblique Reconnaissance (LOROP) cameras on the new U-2R aircraft. After that, all U-2 missions were flown outside a buffer zone at least 20 nautical miles (37 kilometers) around China.

During his visit to China in 1972, U.S. President Richard Nixon promised the Chinese authorities to cease all reconnaissance missions near and over China, though this was also made practical because U.S. photo satellites by 1972 were able to provide better overhead images without risking losing aircraft and pilots, or provoking international incidents.

Third Taiwan Strait Crisis: 1995-1996

After the Second Taiwan Strait Crisis, the U.S. began its formal recognition of the PRC in 1979, and continued security protections to Taiwan, which included passing the Taiwan Relations Act and the "six assurances."³² Tensions in 1995 originated from an invitation that Cornell University extended to Lee Teng-hui in 1995. Lee was the President of the ROC and the KMT Chairman from 1988 until 2000, and is referred to as the "Father of the ROC Democracy." Although the U.S. State Department initially refused to grant Lee a visa, the U.S. House of Representatives voted in unanimous favor of granting President Lee a visa to the United States, and the Senate followed with a nearly unanimous vote of its own. The Clinton administration claimed that a visit by Lee "would have serious consequences" and that "a visit by a person his title, whether or not the visit were termed private, would be seen by the PRC as removing an essential element of the US-ROC relationship."³³ Although the Clinton administration repeatedly stressed that it had not changed its stance on the "One China" policy and despite the PRC government's warnings, President Clinton finally reversed the ban preventing high ranking Taiwan officials from visiting the United States and granted Lee a visa.³⁴

The PRC government promptly announced its response to the visa by claiming, "If the United States clings to its erroneous decision it will inevitably cause severe damage to Sino-American relations. For that it should bear all the consequences."³⁵ After the United States refused to revoke the visa, the PRC government claimed that the U.S. violated the "One China principle." Sino-American diplomatic visits were cancelled and the PRC recalled its ambassador to the U.S. As a result, the Third Taiwan Strait Crisis, also called the 1995-1996 Taiwan Strait Crisis, officially began when Lee Teng-hui accepted the invitation from Cornell University to deliver a speech on 9 June 1995 on "Taiwan's Democratization Experience."

As noted in Chapter 7, the PLAAF Commander at the time, General Yu Zhenwu, who was the first and only PLAAF Commander to visit, was in the U.S. at the time of the announcement and cut his visit short to return home.

The initial phase of the crisis involved a series of Dongfeng-15 (aka DF-15, M-9, and CSS-6) short-range ballistic missile (SRBM) tests and exercises conducted by the PRC's Second Artillery Force in the waters about 35-40 miles north and south of Taiwan from 21-28 July 1995 (6 missiles) and 7 March 1996 (3 missiles).^{s, 36} Following the first missile tests in July the Taiwan stock market plummeted 1,000 points (27 percent) in three days, and \$15 billion in investment reportedly fled the island and insurance rates for companies and shippers rose rapidly to prohibitive levels. The stock market did not recover during the year, making it the worst performing in Asia; however, it

^s Note that there are inconsistencies in all of the sources noted for this crisis concerning the distance the DF-12 (aka M20 and CSS-X-15) missiles landed from Taiwan. The information ranged from 19-100 miles from Taiwan and six miles away from Pengjia Islet. *The Washington Post* article stated that one of the missiles passed almost directly over Taiwan's capital, Taipei, before landing 19 miles off the coast.

recovered completely by the end of 1996.³⁷ Another set of missile firings, accompanied by live ammunition exercises, occurred from 15-25 August 1995. Naval exercises in August were followed by highly publicized amphibious assault exercises in November and the mobilization of 100,000 troops for a potential invasion of Taiwan. Although, the exercise reportedly involved air activity, no specific information was found concerning which forces—PLAAF or Naval Aviation—and types of aircraft were involved. According to a *Washington Post* article:

“In March 1996, the PLA also conducted an exercise off of Taiwan that involved four phases that were monitored by a USAF RC-135 reconnaissance aircraft and the USN cruiser USS Bunker Hill. The first phase involved three DF-15 SRBMs that were rapid-fired from China’s Huanan mountains toward Taiwan. They splashed down in the shipping lanes adjacent to Taiwan’s two principal seaports: first Kaohsiung in the south, then Chilung in the north, then south again to Kaohsiung. The SRBM strikes were followed by submarines, destroyers, and Russian-built Su-27 strike fighters [acquired by the PLAAF in 1992]³⁸ engaging in an air-and-sea superiority campaign near Dongshan and Nanao Islands in the southern strait. Amphibious forces had gathered, finally, for an assault to secure a beachhead on Haitan Island, selected according to naval intelligence ‘because of the similarity of the topography there with that of Taiwan.’”³⁹

No information was found concerning any response by Taiwan’s Air Force or Navy. However, in December 1995, the U.S. Navy sent the USS Nimitz aircraft carrier battle group, including a cruiser, destroyer, frigate, and two submarines through the Taiwan Strait as a show of force.⁴⁰ Officially, the Pentagon explained that the weather had forced the American warships to sail through the strait. Nevertheless, it was the first time any American aircraft carrier had appeared in the Taiwan Strait since the U.S. and China established diplomatic relations in 1979. According to a *Washington Post* article:

“The U.S. government responded by staging the biggest display of American military might in Asia since the Vietnam War. President Clinton ordered additional ships into the region in March 1996. Two aircraft carrier battle groups, Carrier Group Seven centered on USS Nimitz and Carrier Group Five centered on USS Independence, were present in the region, but did not enter the Taiwan Strait. The military tests and exercises also strengthened the argument for further U.S. arms sales to Taiwan and led to the strengthening of military ties between the U.S. and Japan, increasing the role Japan would play in defending Taiwan.”⁴¹

Air Activity Over the Taiwan Strait since 1958⁴²

As noted earlier, the PLAAF and Naval Aviation did not fly hardly any sorties over the Taiwan Strait until around 1996 nor to the centerline until 1998. According to a Taiwan MND spokesman in August 1999, “Following Beijing’s March 1996 large-scale military exercise opposite Taiwan, Communist Chinese aircraft have been flying more often in the Taiwan Strait.” According to publicly-available material, “The exercise included 12,000 Air Force and 3,000 Naval Aviation personnel. More than 280 aircraft deployed to the exercise area and conducted 680 sorties, including 82 transport sorties. Over 800 combat aircraft were within a combat readiness of 550 miles or were on alert.” Another report stated the PLA deployed fewer than 100 additional aircraft to the 13 Fujian airfields from other airfields, raising the total to only 226 aircraft. Based on a briefing by the U.S. Office of Naval Intelligence, the PLA conducted a total of 1,755 sorties during the exercise. Further press reporting stated that the PLAAF deployed aircraft from its second and third-line airfields to first-line airfields, where they conducted their exercise activity. It took about 3.5 hours for the PLAAF fighters to prepare for takeoff, compared to the ten hours they had needed

previously. In addition, the PLAAF demonstrated rapid aircraft sortie regeneration of forty minutes, which was considerably quicker than in the past.⁴³

There are several probable reasons why the PLAAF has stepped up its flight activity over the Strait since 1996 and near the centerline for the first time in 1998. First, the CMC wanted to challenge the fact that Taiwan's Air Force basically owned the entire airspace over the Taiwan Strait since the 1950s and the PLAAF could not effectively challenge this control. Taiwan's fighter and reconnaissance aircraft routinely crossed the centerline, and transport aircraft ferried supplies to troops on Quemoy and Matsu. The PLAAF had little choice but to have a tacit agreement on the centerline, so that it could at least have the facade of some control over the Strait. Even so, the mainland officially refuted the idea of a centerline, stating that Taiwan is a part of China, so there cannot be a centerline over a body of water that belongs to China.

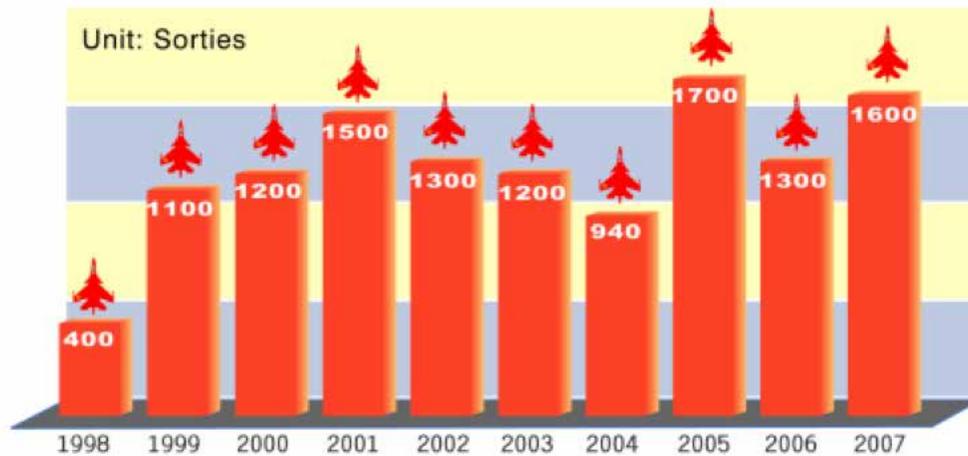
To put this in perspective, in November 1998, the Commander of a Taiwan Air Force Mirage-2000 fighter group stated:⁴⁴

“Following the air battles that took place over the Taiwan Strait in 1958, our fighters have kept a distance of 35 miles from the mainland’s coast, while the Chinese Communist fighters usually carry out their duties close to their own coastline. If two Communist jet fighters took off, the Taiwan Air Force would dispatch four planes to watch them. Maintaining a tacit agreement on an invisible centerline of the Strait, neither side has conducted any provocative flights. In the past, there was a tacit agreement that ‘we leave when you come, and we come when you leave.’ Recently, however, the Chinese Communist fighters have conducted frequent intentional flights across the centerline of the Taiwan Strait. Taiwan Air Force F-16 and Mirage 2000 aircraft could detect Chinese Communist fighters on their radar screens. The Communist aircraft were probably attempting to collect information about the training of our new-generation fighter.”

On 9 July 1999, President Lee Teng-hui in Taiwan declared that relations between Taiwan and mainland China should be conducted on a “state-to-state” basis. Shortly thereafter, the PLAAF increased the number of sorties over the Taiwan Strait, including crossing over the centerline several times. This issue generated interest and speculation about the possibility of an aircraft incident occurring, either by accident or on purpose by either side, that could start a war across the Strait. On 10 August 1999, a Taiwan MND spokesperson stated that “eight J-8 fighters have deployed to Fuzhou airfield and were conducting flights over the Taiwan Strait. There were about 150 aircraft permanently stationed in Fujian’s coastal areas. In addition, Su-27 fighters stationed in Guangdong Province have begun training activities in areas close to the centerline.”

Taiwan's MND has published several *National Security Reports* in Chinese and English since 1992. The 2006 and 2008 reports provided information concerning the number of PLAAF and Naval Aviation sorties per year that crossed into the Taiwan Strait but did not cross the centerline. Figure 1-4 shows the data from the 2008 report, which went from a low of 400 in 1998 to 1,700 in 2005 and 1,600 in 2007; however, MND ceased publishing the numbers after the 2007 report.⁴⁵ The next report on the number of sorties did not occur until October 2020 (See Chapter 8).

Figure 1-4: PLA Aircraft Sorties to the Centerline 1998-2007⁴⁶



Although Naval Aviation bombers began flying training missions into the Western Pacific in 2013, the first PLAAF bombers to fly through the Miyako Strait and Bashi Channel into the Western Pacific did not occur until March 2015 when four different drills were conducted. Specifically, the first flight took place in March through the Bashi Channel, the second in May through the Miyako Strait, the third in August through the Bashi Channel, and the fourth in November.⁴⁷ Since then, these types of flights have become “routine” but continue to receive frequent press coverage from China, Taiwan, and Japan.

Of particular note, in 2015, the PRC’s Civil Aviation Administration of China (CAAC) created a civil flight route through the Taiwan Strait that approaches the centerline separating the two sides by a mere 7.8 kilometers, while three feeder routes from Dongshan, Fuzhou, and Xiamen labeled W121, W122 and W123, respectively, might interfere with services between Taiwan’s main island and the islands of Kinmen and Matsu.⁴⁸ Shortly thereafter, the PLAAF began flying H-6 bomber and KJ AEW aircraft flights escorted by Sukhoi fighters into the Western Pacific, as noted above and later in Chapter 6’s Aviation Branch/Arm Unit Training Section’s Maritime Flight Training subsection. Shortly after the M503 announcement, Taiwan’s Mainland Affairs Council protested because the flight route was close to its Air Force training areas and impeded Taiwan’s flight routes to Kinmen and Matsu.⁴⁹

Although the PLAAF began flying sorties into the Western Pacific in March 2015, it did not fly any fighter sorties that crossed the centerline of the Strait until 31 March 2019, when two J-11s crossed the centerline.⁵⁰ This was the first time any aircraft crossed the centerline since 2011 when two PLAAF Su-27s/J-11s shadowing a USAF reconnaissance aircraft crossed the centerline for about two minutes.⁵¹ In response, Taiwan’s Air Force scrambled two F-16s to intercept them. Taiwan’s MND maintained this was an isolated incident and did not regard it as provocative. Taiwan’s Air Force apparently scrambled fighters to intercept all of the sorties flown across the centerline and into the southern ADIZ. Of note, the air forces from both sides of the strait communicated with each other using Mandarin, not English.⁵² See Chapter 8 for information concerning the increase in sorties flown in 2020.

The Sino-Soviet Split in the Late 1950s

During the second half of the 1950s, strains in the Sino-Soviet alliance gradually began to emerge over questions of ideology, security, and economic development. Chinese leaders were disturbed by the Soviet Union’s moves under Nikita Khrushchev toward de-Stalinization and peaceful coexistence with the West. Moscow’s successful earth satellite launch in 1957 strengthened Mao’s belief that the world balance was in the communists’ favor—or,

^t The PRC’s name for the Miyako Strait is Gonggu Strait (宫古海峡) and the Chinese term for the Bashi Channel is 巴士海峡.

in his words, “the east wind prevails over the west wind”—leading him to call for a more militant policy toward the noncommunist world in contrast to the seemingly more conciliatory policy of the Soviet Union.

In addition to ideological disagreements, there were major strains in the Sino-Soviet security relationship. Mutual antipathies arose in connection with China’s attacks on the offshore islands in the summer of 1958, a Soviet proposal in 1958 for a joint naval arrangement that would have put China in a subordinate position, Soviet neutrality during the 1959 tension on the Sino-Indian border, and Moscow’s abrogation in 1959 of its 1957 agreement to help China produce its own nuclear weapons and missiles. In addition, in an attempt to break away from the Soviet model of economic development, and achieve rapid growth at an accelerated pace, China launched the radical policies of the Great Leap Forward (1958–1960), which resulted in widespread waste of resources and was at least partially responsible for a devastating famine in 1960 and 1961 that led to tens of millions of deaths. These Sino-Soviet differences led Moscow to withdraw all Soviet advisers from China in 1960.

As noted later, Soviet aid for PLA modernization began in full force in spring 1951, with the Soviet Union supplying fighter and bomber aircraft, and helping develop China’s defense industry, including aircraft and ordnance factories built in the 1950s.⁵³ Ultimately, the Soviet Union sent 600 military advisors and 7,000 experts in China in the 1950s, and provided 44 defense factories.⁵⁴

The Cultural Revolution Period (1966-1976)⁵⁵

As a result of the failure of the Great Leap Forward and grievous internal calamities that followed in its wake, Mao Zedong was on the sidelines in the early 1960s. By 1962, however, he began an offensive to purify the Party, having grown increasingly uneasy about what he believed were the creeping “capitalist” and anti-socialist tendencies in the country. More basically, however, Mao used these themes to attack those who had opposed his Great Leap policies, thereby enabling Mao and his political allies to reassert their power.

Toward this end, Mao launched the Socialist Education Movement in 1962 with an emphasis on restoring ideological purity, reinfusing revolutionary fervor into the Party and government bureaucracies, and intensifying class struggle. This movement was tied to Minister of Defense Lin Biao and the movement “to learn from the People’s Liberation Army” and to large-scale efforts to send students, intellectuals, and bureaucrats to communes and factories in the countryside. All of these movements were also aimed at dislodging from power Liu Shaoqi and Deng Xiaoping, who opposed Mao’s views.

By mid-1965, Mao had gradually but systematically regained control of the Party with the support of Lin Biao, Jiang Qing (Mao’s fourth wife), and others. What started as an attack on Liu Shaoqi and Deng Xiaoping in 1965 turned into the Great Proletarian Cultural Revolution. As a result, Mao turned to two separate groups—the PLA and students—to support his movement. Millions of students became Red Guards and supported by Minister of Defense Lin Biao, virtually shut down the country, shattering the Party organization in its wake. Although the PLA was under Mao’s rallying call to “support the left (支左),” PLA regional military Commanders ordered their forces to restrain the leftist radicals, ultimately restoring order throughout much of China. The PLA was also responsible for the appearance in early 1967 of the revolutionary committees, a new form of local control that replaced local Party Committees and administrative bodies. The revolutionary committees were staffed with Cultural Revolution activists, trusted cadres, and military Commanders, the latter frequently holding the greatest power.

After 1966, the CCP’s Central Committee established 11 more aviation divisions and a group of antiaircraft artillery, surface-to-air missiles, and radar units based on the judgment of the situation at that time.

The radical tide receded somewhat beginning in late 1967, but it was not until after mid-1968 that Mao came to realize the uselessness of further revolutionary violence. Liu Shaoqi, Deng Xiaoping, and their fellow “revisionists” and “capitalist roaders” had been purged from public life by early 1967, and the Maoist group had since been in full command of the political scene.

Viewed in a larger perspective, the need for domestic stability was occasioned perhaps even more by pressures emanating from outside China. The Chinese were alarmed from 1966 through 1968 by the steady Soviet military buildup along their common border and U.S. involvement in the Vietnam War. The Soviet invasion of Czechoslovakia in 1968 heightened Chinese apprehensions. In March 1969, Chinese and Soviet ground troops clashed on Zhenbao (Damanskiy) Island in the disputed Ussuri River border area, although neither air force was involved.^u The tension on the border had a sobering effect on the fractious Chinese political scene and provided the regime with compelling reasons to end the Cultural Revolution.

The activist phase of the Cultural Revolution ended in April 1969 at the Ninth Party Congress, which confirmed Mao as the supreme leader. Lin Biao was promoted to Party Vice Chairman and was named as Mao's successor. The general emphasis after 1969 was on reconstruction through rebuilding the Party, economic stabilization, and greater attention to foreign affairs.

With Lin Biao as the officially designated successor for Mao, it appeared that the PRC was heading toward military rule. But an active role of the military in politics also meant that politics entered the military. As the only institution of power left largely unscathed by the Cultural Revolution, the PLA was particularly important in the politics of transition and reconstruction. The PLA was, however, not a homogeneous body. In 1970 and 1971, Premier Zhou Enlai was able to forge a centrist-rightist alliance with a group of PLA regional Commanders who had taken exception to many of Lin Biao's policies.

The PLA was divided on policy issues as well as by internal power struggles. On one side was the Lin Biao faction, which continued to exhort the need for "politics in command" and for an unremitting struggle against both the United States and the Soviet Union. On the other side was a majority of the regional military Commanders, who had become concerned about the effect Lin Biao's political ambitions would have on military modernization and economic development. In the Lin Biao crisis of 1970 and 1971, the majority of regional military leaders turned against the minister of national defense, who died in an aircraft crash over Mongolia in September 1971 following the failure of a purported coup attempt against Mao Zedong.

The Cultural Revolution finally came to a close when Mao died in September 1976, and the infamous "Gang of Four," which included his wife Jiang Qing, were arrested. Mao's death followed that of Zhou Enlai and Marshal Zhu De earlier in the year and opened the way for Deng Xiaoping's second rehabilitation, which was completed in 1978. Deng's rehabilitation, in turn, initiated a process of reform in national defense policy that continues to the present day.

Overall, the Cultural Revolution was a disaster for the PLAAF. According to PLAAF writings, the force increased in size during the Cultural Revolution, but its overall development suffered. Specifically, the force's development suffered because of PLAAF Commander Wu Faxian's involvement with Defense Minister Lin Biao. Wu Faxian, who had been the PLAAF PC from 1957-1965, was appointed PLAAF Commander in May 1965. He was concurrently assigned as a Deputy Chief of the General Staff and a Deputy Director of the General Office in the CMC. While in these positions, he became a member of Defense Minister Lin Biao's clique. When Lin's aircraft crashed in Mongolia in September 1971 after the alleged abortive coup against Mao Zedong, Wu Faxian was immediately arrested. He was tried 10 years later and sentenced to 17 years in prison. The PLAAF was not assigned a new Commander until 18 months after Wu's arrest, when Ma Ning was appointed in May 1973. Ma, who was the first pilot to become the Commander, remained there until March 1977. His highest position before being promoted to Commander had been as a Deputy Commander in the Lanzhou MRAF. He was, however, largely a transitional figure and his rise to prominence in the PLAAF seems linked more to his political views than his aviation skills.

^u The 1969 Sino-Soviet border clash and ensuing Soviet threats to eliminate China's nascent nuclear weapon capabilities are special for three major reasons: First, the event involved at least a plausible threat to attack China on a massive scale. Second, this was the first crisis involving the use of Chinese military force against the Soviet rather than the American superpower, thus causing ideological problems. Third, this crisis seemed to have no attainable military objectives for either side. Of particular note, the PLAAF's official histories, including the air force's chronology, do not even mention the crisis.

During the 1960s, the PLAAF added new AAA, SAM, and radar units to its air defense component. In late 1965, it began deploying AAA units to North Vietnam. From January 1954 to 1971, the PLAAF created an additional 22 air divisions throughout China, for a total of 50 air divisions. Although the PLAAF still had 50 air divisions during the 1980s, the number has been gradually reduced to around nine today.⁵⁶ By the end of 1972, the total number of air force units and the number of troops had reached the largest period in history.

Even though the size of the force grew from 1966 to 1976, its educational and training institutions suffered serious setbacks. Prior to the start of the Cultural Revolution, the PLAAF had 29 schools.⁵⁷ In 1969, 12 of them were shut down, and flight training and exercises were reduced considerably. In the mid-1980s, the Air Force reduced the total number of billets by 20 percent, the number of air divisions and regiments were reduced, and the proportion of old equipment dropped significantly.

According to the PLAAF, the number of hours its fighter pilots flew annually during this decade hit record lows, as shown in the following examples. The number of hours required by regulations in 1964 was 122 hours and 25 minutes. The lowest number required was 23 hours and 45 minutes in 1968. The minimum requirement was increased to 55 hours in 1970, but the actual number flown was around 30-40 hours. In 1977, after a major readjustment, pilots averaged 80 hours and 17 minutes of flying time, which was a 30 percent increase over 1976. In 1978, pilots in the Guangzhou MRAF increased their flight hours to 105 hours and 47 minutes.

Details on the PLAAF's Combat Performance

Key Points

- During the war, the PLAAF established airfields near the Yalu, trained pilots, and sought to adapt air-to-air tactics against UN forces.
- Based on PLA combat data, the vast majority of aircraft the PLAAF claims to have shot down or damaged were due to ground-based air defense forces rather than PLAAF aircraft.
- The PLA last fought in a major war in 1979 (the Sino-Vietnam War), but the PLAAF was not allowed to cross the border to conduct combat operations during the conflict.

This section first provides details on the PLAAF's largest-ever operations during combat, which occurred during the Korean War. During the war, the PLAAF established airfields near the Yalu, trained pilots, and sought to adapt air-to-air tactics against UN forces. This section then reviews data on the PLAAF's combat performance during the Korean War and other conflicts.

PLAAF Combat Operations in the Korean War

During the first few weeks of the Korean war, FEAF airmen easily eliminated the small North Korean Air Force, largely by destroying the aircraft while they were still on the ground. This early attainment of air superiority paid large dividends. Without the hazard of hostile air attacks, UN ground forces could maneuver freely by day to resist the more powerful Communist ground forces, who were able to move and fight primarily at night. Following the defeat of the North Korean Air Force, FEAF "owned" the air to the Yalu River, but here air superiority ended, because UN airmen were forbidden to violate the sanctity of the Chinese borders.

Since the UN command's politico-military restrictions confined FEAF air operations to North Korea, the Chinese were free to build and refurbish airfields on Chinese soil to house the expanding inventory of combat aircraft provided in large part by the Soviet Union. The main PLAAF airfield was just across the Yalu at Andong, but MiG-15s were eventually stationed at four other airfields, each capable of supporting continuous operations of up to 300 aircraft. By American standards, these airfields were poor, lacking facilities for maintenance and service of

aircraft, but the PLAAF showed that they could accept lower standards of flying safety and personal comfort and still operate at a fairly high sustained rate of operations.

The first missions flown from China against the allies occurred on 1 November 1950, prior to the large-scale entry of Chinese ground forces later in the month. During the first months of the war, the Chinese recognized that their ground campaigns could not succeed without air support. Therefore, in late 1950, the PLAAF Commander, Liu Yalou, was ordered to begin devising a plan to support a PLA ground offensive that would begin in the spring. Like the FEAF Commanders, he also had political and operational restrictions placed on him. He was told not to strike UN forces in the south for fear of retaliatory strikes on airfields inside China, and he was limited by the range of the MiG-15, which could not be used to attack tactical targets lying more than 100 miles away from its home airfield. As a result, he decided to begin renovating and building airfields inside North Korea, including “secret” bases near the 38th parallel, and to begin establishing a zone of air superiority over northwestern Korea.

As part of the war plan, the PLAAF and North Koreans were able to build up an extensive network of early warning and ground-control intercept (GCI) radar sites that fed information to a joint PLAAF-North Korean Air Force operations center at Andong. The early-warning coverage extended well south of the 38th parallel, and the GCI coverage was most effective along the west coast of Korea and particularly within a 90-mile radius of Andong. Employing MiG-15s by day and a miscellany of jet and piston day-fighters by night, the PLAAF began to integrate GCI techniques into their air defenses. The GCI radar at Andong could position the PLAAF pilots within two to five miles of UN aircraft to a distance of 70 miles. This was the technical limit of available GCI radars, because the “blips” of friendly and enemy planes merged on the ground radar scope when they were closer.

In addition, the AAA order of battle around North Korean airfields consisted of about 786 AAA guns and 1,672 automatic weapons by late 1952. The Communists also made extensive utilization of searchlights, eventually deploying about 500 mobile systems, which could illuminate a target up to 30,000 feet on a clear night.

Throughout 1951 and 1952, the PLAAF tried to carry out its airfield construction plan inside North Korea. Initially, FEAF employed its B-29s in an “airfield neutralization program” to attack the airfields during daylight, but the Chinese-North Korean coordinated air defense system throughout northwestern Korea seriously hampered these attacks. Therefore, FEAF equipped its B-29s with the Shoran beacon system to conduct effective night attacks. The Chinese worked feverishly to repair the bomb damage and even tried piling dirt on the runways to make it appear that the runways had been damaged. But these efforts did not prove successful. As a result, the PLAAF was never able to directly support ground troops during the war.

Pilot Training during the Korean War

One of the most important PLAAF priorities was to train its pilots. To create a cadre of experienced pilots, the PLAAF devised a training cycle consisting of five phases:

- The first involved three steps: (1) route familiarization into the battle area when no UN forces were in the area, (2) flying into the battle area when UN forces were there but were not a very big threat, and (3) flying missions as the threat gradually increased.
- The second consisted of three steps: (1) attacking small flights of bombers, (2) attacking small flights of F-86s, and (3) attacking large formations of aircraft.
- The third consisted of flying with experienced leaders, then flying independently.
- The fourth consisted of alternating between flying with experienced and new pilots.
- The fifth was a period of rest and relaxation, so that no one was in continuous combat for too long. During this period, the pilots summarized their combat experience.

Although FEAF Commanders did not have access to the specifics of this training cycle, they did determine most of the details. For example, FEAF intelligence reports indicated that the PLAAF appeared to fly in a predictable three-month training and operational cycle. A new “class of trainees” would fly their MiGs across to meet the Sabres for several weeks but would maintain a high altitude and would not engage in combat. When the “trainee” pilots could be brought under attack they were apt to display utter confusion. Some forgot to drop their external tanks; others fired their guns wildly; and many ejected from their aircraft without particular provocation. As the “class” gained flying proficiency, the PLAAF pilots would become more aggressive and more effectively engage the Sabre pilots. It was during this phase that the Sabre pilots attained their peak aircraft kills. This period would be followed by a near stand-down, then a new “class” would begin all over again.

From the FEAF perspective, the pilots ranged in skill from the very few “honcho” pilots down to the predominant mass of “recruit” pilots. FEAF intelligence officers always insisted that the Sabre pilots did not need to know the nationality of the men they fought. However, Sabre pilots believed that most of the “honcho” pilots were Russians and the “recruits” were Chinese and North Koreans. In the last months of the war—when the “honchos” had apparently gone home—many MiG pilots refused to engage the Sabre force. Although the PLAAF history makes no mention of the role of Soviet pilots, the Russians have acknowledged that Soviet pilots flew missions in North Korea from Chinese airfields. Detailed histories of the Korean War based on Soviet and Chinese archival holdings also provide ample evidence of the role played by Soviet pilots during the war.

Air-to-Air Tactics during the Korean War

From the very beginning of the war, the inexperienced PLAAF pilots tried different tactics and adjusted them, as necessary. Until the first F-86 Sabres arrived, the MiG-15 pilots aggressively attacked and “boxed” the slower F-80s and F-84s as they escorted the B-29s and

B-26s on their bombing runs into the northwest. However, FEAF pilots gained kills when they caught the planes in turns, something they were able to do at the less-than-20,000-ft altitudes where the fights were waged.

During early 1951, only about one-fourth of the PLAAF pilots sighted by the FEAF sought to engage UN airpower. As FEAF bombers approached the northwest, as many as 50 MiG-15s would scramble and fly to meet the bombers and their escorts, but not all of the MiGs would move in for the attack. By mid-1951, the PLAAF was trying a “yo-yo” tactic: 20 or more MiGs established orbits over UN air formations; then, preferably from up-sun and usually in elements of two, the MiGs dived downward and attacked from high astern; and, finally, the elements zoomed back up into the pool of orbiting MiGs overhead.

By the end of 1952, when the two primary air-to-air combat aircraft were the F-86 Sabre and the MiG-15 Fagot, the PLAAF (sacrificing quality for quantity) was attempting to devise air superiority tactics and to develop fighter interceptor cadres. It experimented again with line-abreast passes against Sabres, using the Sabres to simulate bombers. In an effort to probe UN radar defenses and test the scramble time for the Sabres, it also penetrated south only to withdraw immediately when the Sabres were scrambled. During this period, it was trying to work out the mechanics—command, staff, maintenance, supply, and related problems—of sizable counter-air efforts against the most advanced airpower force in the world.

The decisive factor in U.S. air victories was the experience of the FEAF pilots. The Chinese never adequately or consistently exploited the advantageous characteristics of the MiG-15s, probably because their pilots and their Commanders lacked experience in air warfare. The PLAAF consistently misused its available assets by failing to exploit its numerical advantages and the superior high-altitude capabilities of its equipment. The Chinese paid a serious price for the limited experience of their pilots.

During combat, the light MiG-15 consistently outclimbed the heavier F-86 at all altitudes, especially at the higher altitudes. As a general rule, the MiG-15 had a greater rate of initial acceleration than an F-86 in a dive, but the F-86 had a higher terminal velocity at all altitudes and consequently the advantage in a sustained steep dive. The ability of the MiG to convert speed into a high-angle “zoom” was outstanding. The F-86 appeared to enjoy a very slight speed advantage at all altitudes, and it had a slight advantage in very high-speed turning duels.

Recognizing the tactical advantages granted to the MiG pilots by their sanctuary inside China, the combat situation over MiG Alley, and the relative performance characteristics of the MiG and Sabre, FEAF Sabre wings developed innovative tactics to maintain air superiority. Perceiving their inability to provide maximum protection to friendly aircraft from flying escort, the Sabres emphasized fighter interceptor “screens” or “sweeps” in conjunction with small escort forces which accompanied the friendly aircraft. Since the MiG airfields were concentrated in a small geographical area just over the Yalu inside China, the Sabre sweeps and screens represented an optimum employment of interceptor aircraft.

But the Chinese pilots were almost totally incapable of providing direct support for their ground forces. The PLAAF attempted to directly support the ground troops on only a few occasions. In June 1951, I1-10 fighter-bomber aircraft were used for the first time to dislodge South Korean forces off Sinmi-do Island. Two I1-10s and six Yak-9 fighters were destroyed en route, while three more I1-10s and four MiG-15s that were flying cover for them were damaged during the attack. Another occasion occurred in November 1951, when F-86s destroyed eight Tu-2 bombers, three La-9 fighters, and one MiG-15 en route to attack South Korean troops on the offshore island of Taehwa-do.

Data on the PLAAF's Combat Performance, 1950-1973

This section provides data about the PLAAF's combat history and performance.⁵⁸ According to official PLAAF sources, the PLAAF has published two different sets of figures for the number of aircraft it claims to have shot down and damaged since 1949:

- 1,474 shot down and 2,344 damaged, for a total of 3,818.⁵⁹
- 1,017 shot down and 634 damaged, for a total of 1,651.⁶⁰

The primary reason for the discrepancy appears to be the fact that the PLA had a separate Air Defense Force until it was merged into the PLAAF in February 1957. The PLAADF consisted of AAA, radar, search light, and air surveillance units. From a historical perspective, this is why the PLAAF still divides its combat forces into aviation and air defense (SAMs, AAA, and radar).^v Whereas the first set of figures (3,818) includes aircraft shot down and damaged by both the PLAAF and PLAADF, the second set of figures (1,651) does not include the figures from the PLAADF.

Based on a review of PLA and PLAAF publications, the PLAAF organizes its combat history into the following four categories, some of which overlap in time:

- Korean War (December 1950 to July 1953).
- Territorial air defense of China (1954 to present).
- PLAADF units in Vietnam (August 1965 to March 1969).
- PLAADF units in Laos (1970 to November 1973).

Although the sum of the individual numbers found in each category does not match the totals exactly, the numbers provide a good idea of the breakdown among the four categories, as well as between aviation and air

v The PLAAF did not field its first SAM unit until 1958.

defense forces as shown below. [Note: The official PRC names for the wars are “the war to resist U.S. aggression and aid country X” (抗美援朝战争).]

- December 1950 to July 1953: The War to Resist U.S. Aggression and Aid [North] Korea.
- 1954 to the Present: Territorial air defense, which includes the 1958 Taiwan Strait Crisis, Nationalist flights over the mainland through the late 1960s, and U.S. manned and unmanned reconnaissance aircraft along the southern coast during the 1960s. This number also includes five U-2s flown by Nationalist pilots that were shot down over China by PLAAF SAMs from September 1962 to September 1967.
- August 1965 to March 1969: The War to Resist U.S. Aggression and Aid Vietnam, which includes only PLAAF AAA units in North Vietnam.
- 1970 to November 1973: The War to Resist U.S. Aggression and Aid Laos, which includes only PLAAF AAA units in Laos.

Based on the data reviewed, the PLAAF claims to have had the following PLAAF aircraft shot down (236) or damaged (156) by the enemy during this same period of time:

- Korean War: 231 aircraft shot down and 151 damaged.
- Taiwan Strait Crisis in 1958: five aircraft shot down and five damaged.

Table 1-4 summarizes the two sets of figures. Of note, only one of the sources available even mentioned the 1979 border conflict with Vietnam, which states that “based on guidance from the CMC, PLAAF units conducted patrols and warning within China’s territory.”⁶¹

Table 1-4: Combined PLA Air Force and Air Defense Force Data

	Shot Down	Damaged
Korean War		
PLA Air Defense Force	413	1,559
PLAAF Aircraft	330	95
Territorial Air Defense		
PLAAF Air Defense	90	177
PLAAF Aircraft	23	16
Vietnam War		
PLAAF Air Defense	579	479
Laos		
PLAAF Air Defense	17	3
TOTAL (3,781)	1,452	2,329

Although the PLA publications reviewed do not have a single table that consolidates all of the disparate information above, the total numbers appear to be fairly consistent: 1,651 for the PLAAF only and 3,818 for the PLAAF and PLAADF combined. Reporting on the number of aircraft on both sides that were shot down and damaged during the Korean War and the number of aircraft shot down by AAA units in Vietnam and Laos also seems to be consistent.

From a percentage perspective, of the 1,452 aircraft the PLAAF and PLAADF claims to have shot down, about 24 percent (353) were shot down by aircraft—almost all of which occurred during the Korean War. The majority of the remaining aircraft were shot down by AAA, with only a few by SAMs. A review of PLAAF writings today, however,

shows little reporting on the AAA forces. As discussed in Chapter 3, the AAA Branch/Arm was merged with the SAM Branch/Arm in 2012 to become the Ground Air Defense Branch/Arm, and, for all practical purposes, almost all AAA has disappeared from the PLAAF's inventory.^{w,62}

The last time PLAAF aircraft, SAMs, or AAA shot down an enemy aircraft was over four decades ago. According to PLAAF data, the PLAAF's last combat engagements with various weapon systems were as follows:

- The last time a PLAAF aircraft shot down a manned aircraft was in April 1967, which involved a U.S. Navy F-4 near Guangxi Province in southern China.⁶³
- The last time a PLAAF AAA unit stationed inside China shot down a manned aircraft was May 1967, which involved a U.S. Navy A-4 near Guangxi Province.⁶⁴
- From November 1964 to October 1969, PLAAF pilots, AAA, and SAMs reportedly shot down 17 unmanned aircraft.⁶⁵
- The last time a PLAAF SAM shot down an aircraft was on 5 October 1987, when a Vietnamese MiG-21 crossed the border of Guangxi Province.⁶⁶

As noted above, the last air-to-air battle occurred during the Vietnam War in March 1967 against an American F-4B off southern China, and the last large-scale air-to-air combat against Taiwan occurred in 1958. To put this in a personnel perspective, the previous PLAAF Commander, General Xu Qiliang and current vice chairman of the CMC, joined the PLAAF in 1966 at the age of 16. As such, there is no one left in the PLAAF today with any combat experience.

Finally, the total lack of reporting on the 1979 border conflict with Vietnam indicates that the PLA has yet to agree upon an approved history of the event.⁶⁷ The PLAAF was still recovering from its massive problems during the Cultural Revolution and did not cross the border or engage in any air combat during the 1979 event. However, even former PLAAF Commander Wang Hai's autobiography did not have a single sentence about the event, even though he was the Guangzhou MRAF Commander during the conflict.

The PLAAF's Force Size

Key Points

- After growing in the 1940s and 1950s and again during the Cultural Revolution, the PLAAF has undertaken five major force reductions during its history, most recently in 2016.
- The PLAAF has grown again since 1992 to roughly 395,000 troops as of 2020.

Since 1949, the PLA has had 11 force reductions, each of which included changes to the PLAAF.^{x,68} Early programs were aimed primarily at cutting the size of HQ staff from 15 to 20 percent. In December 1975, the PLAAF reduced its entire force by 100,000 people, and in August 1985, it further downsized 20 percent by eliminating some organizations, reforming the unit organization structure, and eliminating old equipment. In October 1992, it carried out yet another 20-percent reduction. According to the IISS's annual *Military Balance*, the PLAAF had 330,000 personnel in 2010 and 2011.⁶⁹ According to China's 2012 *Defense White Paper*, the PLAAF in 2012 consisted of 398,000 personnel.⁷⁰

w The PLA translates the term *bingzhong* (兵种) as "branch" and "arms," so this book uses branch/arm.

x The overall PLA force reductions occurred in 1950, 1952, 1953, 1957, 1980, 1982, 1985, 1997, 2004, and 2016. Of these, the PLAAF implemented force reductions in only eight of them (1960, 1970, 1975, 1985, 1992, 2004, and 2016).

On 3 September 2015, Xi Jinping announced that the Chinese military would implement a 300,000-man force reduction, of which half were officers. As the 11th force reduction and reorganization of the PLA since 1952,⁷¹ the focus in 2016 was on “above-the-neck” (e.g., above the corps level) organizations, whereas 2017 focused on “below-the-neck” (e.g., corps and below). Based on available information, it appears that, even though the number of personnel at PLAAF HQ and TCAF HQ levels has been reduced, the overall number of PLAAF personnel has actually increased since 2012. Five years later in August 2017, that figure had reportedly risen to 420,000⁷²; however, no specific details were reported and IISS retained the number of 398,000 until 2020, when it reduced that number to 395,000 for the end of 2019.⁷³

The PLA’s Officer Grade and Rank Structure

Key Points

- The PLA had a rank structure for its officers during its early years, but today uses both a grade and rank structure, both of which are displayed on a PLA officer’s uniform. Grades are more important than ranks in the PLA.
- Grades determine an individual’s and organization’s position in the military hierarchy, and the grade system provides a framework for understanding an officer’s likely promotion paths as well as relationships between various PLA organizations.
- Although the enlisted force was part of the original grade system, they were removed from the system in 1979.

Officer Rank System

The current officer rank system was implemented in 1988.⁷⁴ As shown in Table 1-5, from August 1927 to 1937, the Red Army did not have a rank system for its officers (cadres). Although portions of the Red Army (Fourth and Eighth Route Armies) had a rank system from 1937 to 1946, it was based on the Nationalist Party (KMT) system and was not consistent throughout the force. No formal rank system was used from 1946 to 1948, when the PLA was created, nor did it ever have a rank system for its enlisted force. The PLA established its first 21-grade system in 1952, which was revised five times, and its first formal rank system in 1955, which was then abolished in 1965 and was not replaced until 1988. Together, the grade and rank systems have consisted of five basic components: grade categories (职务), grades (级别), rank categories (等级), ranks (军衔), and billets (岗位). These terms do not always translate directly into English, and are sometimes mixed together, but their meaning is usually clear from the context.

Table 1-5: Red Army and PLA Officer Grades and Ranks, 1927-Present

Year	Grades	Ranks
1927	None	None
1937	None	10 ranks based on the KMT system
1946	None	Abolished
1952	21	None
1955	20	15 ranks based on the Soviet System
1965	27 based on the State Administrative Grade System	Abolished
1972	23 based on the State Administrative Grade System	None
1979	18	None
1988	15	10 ranks

⁷¹ The numbers for the previous 10 years reported in the annual IISS *Military Balance* report are: 2010-2011 (330,000), 2012-2018 (398,000), 2019 (395,000).

This dual system, of ranks and grades and grades in particular, tends to be taken as a distinguishing feature of the PLA. In fact, the grades, versus ranks, are an explicit indicator of an officer's role in the chain of command based on their billet.

Table 1-6 below shows the 18-grade structure from 1979 to 1988 when the *bingtuan* leader^z and deputy leader grades and platoon deputy leader grade were abolished. The *bingtuan* leader grade was merged into the MR deputy leader grade and the *bingtuan* deputy leader grade was merged into the corps leader grade, while the platoon deputy leader grade was merged into the platoon leader grade. From 1979 to 1988, all of the MRAF HQ were *bingtuan* leader-grade organizations, so none of the Commanders were concurrent MR Commanders. However, following the merger of the *bingtuan* leader and MR deputy leader grades, all MRAF Commanders became concurrent MR Deputy Commanders. Note that none of the grades were assigned ranks, which were not reinstated until 1988.

Table 1-6: PLA's 18-grade Structure, 1979-1988

Grade
CMC Chairman (军委主席)
Vice Chairmen (军委副主席)
CMC Member (军委委员)
MR leader (正大军区职)
MR deputy leader (副大军区职)
<i>Bingtuan</i> leader (正兵团职)
<i>Bingtuan</i> deputy leader (副兵团职)
Corps leader (正军职)
Corps deputy leader (副军职)
Division leader (正师职)
Division deputy leader (副师职) / (Brigade leader)
Regiment leader (正团职) / (Brigade deputy leader)
Regiment deputy leader (副团职)
Battalion leader (正营职)
Battalion deputy leader (副营职)
Company leader (正连职)
Company deputy leader (副连职)
Platoon leader (正排职)
Platoon deputy leader (副排职)

Under the current system since 1988, officers are assigned one of 10 ranks as shown in Figure 1-5. Of particular note, the PLA does not have any 4-star flag officer ranks.

^z There is no official translation for *bingtuan*.

Figure 1-7: PLA Officer Rank Insignia

Category	PLA Ranks (All Services)
Flag-Rank Officer (将官) 	General (上将) (3 stars)
	Lieutenant General (中将) (2 stars)
	Major General (少将) (1 star)
Field-Grade Officer (校官) 	Senior Colonel (大校)
	Colonel (上校)
	Lieutenant Colonel (中校)
	Major (少校)
Company-Grade Officer (尉官) 	Captain (上尉)
	1 st Lieutenant (中尉)
	2 nd Lieutenant (少尉)

Under the current system since 1988, every PLA organization and officer is assigned a grade from platoon level to CMC to designate their position in the military hierarchy. As part of the PLA's 11th force reduction that began in 2016, the MR leader and MR deputy leader grades were renamed TC leader and deputy leader grades, respectively. Of particular note, every PLAAF organization, such as PLAAF HQ and each TCAF HQ, is assigned a corresponding grade. In addition, as of 2007, all officers wear ribbons that show their current grade and number of years served.^{aa} As shown in Table 1-7, under the current system, each grade from TC leader down has two assigned ranks, while some ranks, such as major general, can be assigned to up to four grades.^{ab} Unlike the U.S. military, which assigns numbers to grades, such as an O-1 to O-10, the PLA does not assign numbers to its grades except for special technical officers. On average, officers up to the rank of senior colonel are promoted in grade every three years, while they are promoted in rank approximately every four years. Rarely do personnel receive a rank and grade promotion at the same time. All promotions up to the division level are local promotions that are approved at the next higher level. Promotions at the corps and above level are overseen by the CMC-level departments. Promotions to the senior levels are based on a combination of billets, grades, and ranks. In December 2019, the CMC issued a *Notice on Adjusting the Policy Concerning the Promotion of Military Ranks of Officers* at and above the Corps Level.⁷⁵ However, no specifics were given. During December alone, each service had rank promotion ceremonies for one- and two-star flag officers, but no mention was made about the notice.

^{aa} The ribbons do not show awards.

^{ab} From 1988 to 1994, every grade from MR leader down to division Deputy leader had three ranks. In 1994, the PLA reduced the number of ranks per grade down to two.

Table 1-7: PLA's 15-grade and 10-rank Structure, 1988-Present

Grade	Primary Rank	Secondary Rank	Special Technical Officers and Civilian Cadre	Non-Special Technical Civilian Cadre	Civilian Cadre Grades
CMC Chairman (军委主席) Vice Chairmen (军委副主席)	N/A GEN / ADM (上将)	N/A	N/A		
CMC Member (军委委员)	GEN / ADM (上将)		Level 1		Special Grade, Grade 1
TC Leader (正战区职) Former MR Leader (正大军区职)	GEN / ADM (上将)	LTG / VADM (中将)	Level 2		Grade 1, 2
TC Deputy Leader (副战区职) Former MR Deputy Leader (副大军区职)	LTG / VADM (中将)	MG / RADM (少将)	Level 3	MR (TC) Deputy Leader Equivalent (按副大军区职待遇)	Grade 2, 1
Corps Leader (正军职)	MG / RADM (少将)	LTG / VADM (中将)	Level 4	Corps Leader Equivalent (按正军职待遇)	Grade 2, 3
Corps Deputy Leader (副军职)	MG / RADM (少将)	SCOL / SCPT (大校)	Level 5	Corps Deputy Leader Equivalent (按副军职待遇)	Grade 3, 2
Division Leader (正师职)	SCOL / SCPT (大校)	MG / RADM (少将)	Level 6	Department Leader (正局级)	Grade 4, 3
Division Deputy Leader (副师职) / (Brigade Leader)	COL / CPT (上校)	SCOL / SCPT (大校)	Level 7	Department Deputy Leader (副局长级)	Grade 4, 3
Regiment Leader (正团职) / (Brigade Deputy Leader)	COL / CPT (上校)	LTC / CDR (中校)	Level 8	Office Leader (正处级)	Grade 4, 5
Regiment Deputy Leader (副团职)	LTC / CDR (中校)	MAJ / LCDR (少校)	Level 9	Office Deputy Leader (副处级)	Grade 5, 6
Battalion Leader (正营职)	MAJ / LCDR (少校)	LTC / CDR (中校)	Level 10	Section Leader (正科级)	Grade 6, 5
Battalion Deputy Leader (副营职)	CPT / LT (上尉)	MAJ / LCDR (少校)	Level 11	Section Deputy Leader (副科级)	Grade 7, 6
Company Leader (正连职)	CPT / LT (上尉)	1LT / LTJG (中尉)	Level 12	Level 1 Staff Member (一级科员)	Grade 7, 8
Company Deputy Leader (副连职)	1LT / LTJG (中尉)	CPT / LT (上尉)	Level 13	Level 2 Staff Member (二级科员)	Grade 8, 7
Platoon Leader (排职)	2LT / ENS (少尉)	1LT / LTJG (中尉)	Level 14	Worker / Clerk (办事员)	Grade 9, 8

PLAAF Grade Structure

Table 1-8 shows the PLAAF's grade structure, which, other than changing the MR leader and deputy leader grades to TC leader and deputy leader grades, was largely unaffected by the PLA's 2016 reorganization. Pre-2016 nomenclature for the TC leader and deputy leader grades are included in parentheses.

Table 1-8: PLAAF Organizations and Associated Grades

Grade	PLAAF Organizations
TC (MR) leader	PLA Air Force HQ
TC (MR) deputy leader	TCAF (MRAF) HQ
Corps leader	Airborne Corps; Air Force Research Academy; some PLAAF academic institutions
Corps deputy leader	Bases; some PLAAF academic institutions
Division leader	Aviation and SAM divisions; pilot transition training Bases; Command Posts; some PLAAF academic institutions and research institutes
Division deputy leader (Brigade leader)	Aviation, SAM, AAA, airborne, radar, and communications brigades
Regiment leader (Brigade deputy leader)	Aviation, SAM, AAA, radar, and communications regiments; airfield stations; composite depots; training groups
Battalion leader	Flight and maintenance groups; SAM, AAA, airborne, radar, and communications battalions; some depots
Company leader	Flight and maintenance squadrons; SAM, AAA, airborne, radar, and communications companies; radar and communications stations

Central Military Commission Background

Although the CMC had several different names from 1925-1954, it served the same basic functions. The actual name for the CMC today is the Military Commission of the Central Committee (中央军事委员会 or 中央军委) of the CCP. While the Chinese term has not changed since its creation, the English translation has changed over the years. In the 1960s and 1970s, the commission was commonly referred to as the Military Affairs Commission (MAC).

Following the 4th Party Congress in 1925, the CCP Central Committee (CCP-CC) established a subordinate Military Department (军事部).⁷⁶ In October 1928, a Military Commission (军事委员会) was created under the Military Department. In 1930, the Military Department was renamed the CCP Central Committee Military Commission and a Military Commission Standing Committee was formed with several subordinate elements. In November 1931, the First Chinese Soviet Congress established the Chinese Soviet Republic Central Revolutionary Military Commission with a chairman and 14 vice chairmen.⁷⁷ The Military Commission was organized into several departments, including the General Staff Department. During the Long March, several different command organizations were formed in conjunction with the movement of the three front armies. In October 1936, a new Central Revolutionary Military Commission was established in Yan'an. In August 1945, the 7th Party Congress established a new Central Committee Military Commission. In October 1949, the People's Revolutionary Military Commission was established with Mao as the chairman along with five vice chairmen and 22 other members.

Under the CCP's 1982 constitution, a State CMC was appointed by the National People's Congress (NPC) and is institutionally co-equal with the PRC's executive branch, the State Council. Since it was established, the State CMC and the CCP CMC consist of the same personnel.

The CMC has evolved from a nondescript department under the CCP Central Committee in 1926 to one of the most powerful organizations in the CCP today. Concerning its responsibilities, the CMC directs and assumes unified command of the nation's armed forces.⁷⁸ As such, it determines the operational policy for military strategy and armed force; it leads and manages the PLA's "army building"; develops plans; approves weapons development and purchases; determines the PLA's organizational structure, missions, and responsibilities; approves promotions and awards for senior officers; and coordinates the PLA's budget with the State Council.⁷⁹

Chairmen of the CMC have included Mao Zedong, Zhou Enlai, Zhu De, Hua Guofeng, Deng Xiaoping, Jiang Zemin, Hu Jintao, and Xi Jinping. Since the PRC was created in 1949, there have been as many as 11 vice chairmen in 1954 and 38 members in 1970.⁸⁰ In 2012, the CMC had a chairman, two vice chairmen, and eight members; however, as discussed below, the CMC was downsized in 2017 and now consists of the chairman, two vice chairmen, and four members. Officially, CMC Members have been approved during each of the CCP Party Congresses, especially since the PRC was founded in 1949, but major changes in the membership have also occurred during periods of political turmoil, including Peng Dehuai's dismissal in 1959 and Lin Biao's death in 1971. The 1992 Party Congress saw the surprise departure from power of CMC first vice chairman Yang Shangkun and his half-brother Yang Baibing, who was the CMC Secretary General.

From 1949-2004, only two PLAAF Commanders, Liu Yalou and Zhang Tingfa, served as CMC Members.^{ac}

Service Commanders Added to CMC in 2004

Another important milestone in 2004 was the elevation of the 9th PLAAF Commander, Qiao Qingchen, along with the Commanders of the Navy and Second Artillery Force as CMC Members.⁸¹ Although the grade of the Navy, Air Force, and Second Artillery Force remained as MR leader grade, the three Commanders received a "policy promotion" (政策升级) to CMC Member grade.⁸² This was an important development because it was the first time the PLA made it a norm for the service Commanders to serve as CMC Members by virtue of their position, rather

^{ac} Liu Yalou, who was the Commander from 1949-1965, was a CMC Member from November 1956 to May 1965, and Zhang Tingfa, who was the Commander from 1977-1985, was a CMC Member from August 1977 to September 1982. Xu Qiliang replaced Qiao Qingchen on the CMC when Qiao retired in 2007.

than on the basis of personal stature or political connections.⁸³ Qiao's two successors, Xu Qiliang (2007-2012) and Ma Xiaotian (2012-2017), both served as CMC Members. In addition to assigning the PLAAF Commander as a CMC Member, the PLA also established a permanent billet in 2004 for a PLAAF officer as one of the Deputy Chiefs of Staff for the General Staff Department (later the Joint Staff Department). According to DOD's 2005 *Annual Report to Congress*, "The CMC expanded from eight to eleven members and added the Commanders of the PLA Air Force, Navy, and Second Artillery. Air Force and Navy officers were also appointed Deputy Chiefs of the General Staff, reflecting China's emphasis on joint capabilities and inter-service coordination."⁸⁴

Also of note, although Hu Jintao replaced Jiang Zemin as the CCP General Secretary and PRC President at the 16th Party Congress in 2002, Jiang retained the position as Chairman of the CMC until September 2004, at which time he stepped down and Hu became the Chairman.^{ad} Based on interviews by Ken Allen with PLA officers at that time, though not discussed in official sources, Jiang specifically negotiated with Hu to allow the PLAAF to have its own strategy and to have the three Commanders added to the CMC as a tradeoff for him to step down. As discussed in Chapter 2, the PLAAF did receive its own strategy in 2004.

The CCP's 18th Party Congress in November 2012 saw a major change in the PLA's leadership.⁸⁵ At the time of the Congress, the two logical people to become the vice chairmen were PLAAF Commander Xu Qiliang and PLAN Commander Wu Shengli; however, it appears that the Army was not pleased with not having an Army officer as a vice chairman, so some horse trading occurred.^{ac} Specifically, the Army would let one of them become a vice chairman but not both of them. As such, Wu Shengli most likely decided to remain as the PLAN Commander until he reached his mandatory retirement age of 62 so he could continue to make a direct impact on the PLAN. Second, if Xu Qiliang had remained as the PLAAF Commander until his mandatory retirement age, then Ma Xiaotian would have also reached his mandatory retirement age for his grade before the 19th Party Congress in October 2017 and would not have been selected as the next Commander.^{af} Finally, in order to assign an Army officer as a vice chairman, the Army broke the rules and allowed General Fan Changlong to "skip a grade" since he had yet to serve in a CMC Member grade billet.⁸⁶

Following the Party Congress, the CMC consisted of the chairman, two vice chairmen, and seven members: the Minister of Defense, Chief of the General Staff, Director of the General Political Department, Directors of the General Logistics Department, Director of the General Armament Department, and the Navy, Air Force, and Second Artillery Force Commanders.

Service Commanders Not Added to the CMC in 2017

The most significant difference between the CMC under the 19th CCP-CC is that none of the service Commanders were added as members and the Secretary of the CMC Discipline Inspection Commission was added as a member.⁸⁷ One reason the Director of the Discipline Inspection Commission was added to the CMC was so that he could oversee several high-level corruption investigations in the PLA. As noted above, since 2004, the Commanders of the PLAN, PLAAF, and PLARF (former Second Artillery Force) all served as CMC Members based on "policy promotions." When Shen Jinlong became the Commander of the PLAN in January 2017 and Ding Laihang became the Commander of the PLAAF in August 2017, their predecessors, Wu Shengli and Ma Xiaotian, respectively, remained on the CMC as members until they reached their mandatory retirement age at the 19th Party Congress in October. In addition, the PLARF received a new Commander, Zhou Yaning, in September 2017, but his

ad Hu had served as one of the CMC vice chairmen starting in September 1999.

ac This is the lead author's analysis of the situation at that time.

af General Ma Xiaotian, who served as a Deputy Chief of the General Staff since 2007 and received his third star in 2009, replaced Xu as the 11th PLAAF Commander, Party Deputy secretary, and CMC Member in 2012. While serving as a Deputy Chief of the General Staff, Ma received his third star in 2009 and had the intelligence and foreign affairs portfolios.

predecessor, Wei Fenghe, remained on the CMC. Wei was appointed as Minister of National Defense during the First Session of the 13th National People's Congress in March 2018 and remained on the CMC in that billet.

Of note, prior to the reorganization, the CMC's four General Departments (GSD, GPD, GLD, and GAD) served primarily as the Army HQ and secondarily as the Joint HQ and were dominated by Army officers⁸⁸; however, as part of the reorganization, the CMC created a new PLA Army (PLAA) HQ that took over all pure Army-related responsibilities for manning, equipping, and training the ground forces.⁸⁹ It also created 15 CMC organizations to replace the former four General Departments and to be responsible for all joint operations; however, they are still dominated by Army officers. Specifically, by the end of 2019, only one of the Directors for the 15 organizations—Admiral Miao Hua^{ag}—served as the Director of the General Political Work Department and concurrently as a CMC Member. As such, the CMC organizational structure has not truly become a joint organization. The 15 CMC organizations are listed below in protocol order along with their grades:

1. General Office (办公厅) (TC leader grade)
2. Joint Staff Department (联合参谋部) (CMC Member grade)
3. Political Work Department (政治工作部 / 政工部) (CMC Member grade)
4. Logistic Support Department (后勤保障部) (TC leader grade)
5. Equipment Development Department (装备发展部) (TC leader grade)
6. Training Management Department (aka Training and Administration Department) (训练管理部) (TC leader grade)
7. National Defense Mobilization Department (国防动员部) (TC leader grade)
8. Discipline Inspection Commission (纪律检查委员会) (CMC Member grade)
9. Politics and Law Commission (政法委员会) (TC leader grade)
10. Science and Technology Commission (科学技术委员会) (TC leader grade)
11. Office for Strategic Planning (战略规划办公室) (Corps leader grade)
12. Office for Reform and Organizational Structure (军委改革和编制办公室) (Corps leader grade)
13. Office for International Military Cooperation (国际军事合作办公室) (Corps leader grade)
14. Audit Office (审计署) (Corps leader grade)
15. Agency for Offices Administration (机关事务管理总局) (Corps leader grade).

In addition, prior to the reorganization, the seven MR HQ were staffed almost entirely by Army officers. The only non-Army personnel were the Commanders of the three PLAN fleets and the seven PLAAF MRAFs who served concurrently as an MR Deputy Commander. Some, but not all of the fleet and MRAF Deputy PCs, also served concurrently as an MR Deputy PC. The MR Joint Operations Command Center also had a few non-Army personnel. However, the reorganization converted the five TCs into truly joint organizations as discussed in Chapter 4.^{ah}

Because the PLAAF Commander was not added to the CMC, the PLA apparently did not consider it necessary to immediately assign a PLAAF officer as one of the Deputy Chiefs of the Joint Staff so they could accumulate time in the TC leader grade. As such, no PLAAF officer filled the empty PLAAF billet from August 2017 when Ding Laihang became the Commander and then Deputy Chief of the Joint Staff General Yi Xiaoguang became the Commander of the Central TC until July 2018, when Major General Chang Dingqiu, who had served as a Deputy Commander of the Southern TC since 2016, assumed the billet.

ag Of note, until he became the PLAN PC in December 2014, Miao Hua had been a career Army officer.

ah Each TC HQ has one permanent Army and Air Force Deputy Commander and the TC Navy and TC Air Force Commanders serve concurrently as a TC Deputy Commander. The three TCs with subordinate TC Navies (Northern, Eastern, and Southern) also have a permanent Navy Deputy Commander and the TC Navy Commanders also serve as concurrent TC Deputy Commanders. In addition, the Commander of the Southern TC is a Navy admiral and the Commander of the Central TC is an Air Force general.

Besides not adding the service Commanders to the CMC, the Directors of the CMC Logistic Support Department and Equipment Development Department were also not added as members, thus leaving the chairman, two vice chairmen, and only four CMC Members (Minister of Defense, Chief of the Joint Staff, Director of the Political Work Department, and Secretary of the Discipline Inspection Commission).

Ironically, although the service Commanders were added to the CMC in 2004 to help promote jointness, Xi Jinping, who has also advocated more jointness by creating the five Theater Commands, did not add the service Commanders to the CMC in 2017. This is a rough equivalent to the U.S. Department of Defense removing the service chiefs from the Joint Chiefs of Staff. Also of note, even though the reorganization created truly joint TC HQ with operational command of all subordinate units in their area of responsibility, none of the TC Commanders, who are the same grade as the service Commanders, were added to the CMC. Xi Jinping was apparently faced with two decisions: 1) to have a large CMC by adding the four service Commanders and the five TC Commanders, or 2) to have a small CMC composed of only four members and 15 subordinate organization. He apparently chose the second option.

Chapter 2.

The Evolution of PLAAF Strategy, Theory, and “Doctrine”

“We will have not only a powerful army but also a powerful air force and a powerful navy.” Mao Zedong, 1st Plenary of the Chinese People’s Political Consultative Conference (CPPCC), September 1949⁹⁰

“The air force is a strategic military service [that] has a vital position and plays a vital role in the overall situation of national security and military strategy.” Xi Jinping, inspection of PLAAF HQ, April 2014^{ai, 91}

“The people’s air force has passed through seventy years of a brilliant course [of history]... proving itself to be a force that the Party and the people can rely on.... The people’s air force stands at a new historical starting point... and [we] must strive to comprehensively build the people’s air force into a world-class air force.” Xi Jinping, PLAAF 70th anniversary celebration in Beijing, November 2019⁹²

This chapter reviews PLAAF strategy, theory, and “doctrine,” beginning in the decades prior to the PLAAF’s official founding in 1949 to the present. It is divided into four main sections:

- Strategy and “doctrine” in the PLA and PLAAF
- Origins of the PLAAF, 1924-1960
- Operationalizing air defense under uncertainty, 1960-1989
- The drive to become a strategic air force, 1990-present.

Introduction

In 2019, both the People’s Republic of China and the PLA, the armed wing of the CCP, celebrated the 70th anniversaries of their official founding in 1949.^{aj} As Chinese senior leaders, officials, and State media frequently recount, however, the PRC traces its lineage back thousands of years, linking current regime policies to linguistic, cultural, and geopolitical events that shaped ancient civilizations.^{ak, 93} Likewise, the PLA traces the wellspring of “the Chinese nation’s [military] strategic theory in ancient times” (中国古代战略理论) to the Spring and Autumn period over 2,500 years ago, with key developments in military strategy regarding the employment of both ground and naval forces.⁹⁴

Given the comparatively recent technological innovation of self-propelled, heavier-than-air piloted aircraft, the PLAAF’s inability to trace a similarly ancient lineage as its sister services does not substantially differ from other countries’ air forces. For example, the United States Air Force was officially founded in 1947 following its establishment as a component of the U.S. Army in 1907. However, the extent to which PLAAF strategy and

ai The full quote is: “Accelerate the construction of a powerful people’s air force that integrates air and space and is simultaneously prepared for offensive and defensive operations, provides staunch support for the realization of the China dream and the dream of a strong military... The air force is a strategic military service [that] has a vital position and plays a vital role in the overall situation of national security and military strategy.”

aj 1949 is actually the PLA’s more “recent” birthday, as the PLA dates its official founding back to 1 August 1927 as the armed wing of the CCP. See, for example, “Timeline of People’s Liberation Army (PLA) over Eight Decades,” *China Daily*, 1 August 2007, https://www.chinadaily.com.cn/china/2007-08/01/content_5446933.htm.

ak China’s leaders, diplomats, and other officials frequently reference “five thousand years” of Chinese history. As one example, Xi Jinping stated in a 2014 Politburo speech: “Several thousand years ago, the Chinese nation trod a path that was different from other nations’ culture and development... We should be more respectful and mindful of five thousand years of continuous Chinese culture.”

operations have been constrained by the CCP leadership's reluctance to employ airpower and by traditional ground force dominance within the Chinese military has resulted in the PLAAF's status as—arguably for the majority of its history—the least developed of China's military services from a strategy and doctrine perspective. This is in contrast to other militaries in which vocal strategists have successfully advocated for the strategic application of airpower.^{al,95}

As discussed in Chapter 1, formally established in November 1949 by incorporating the heritage of pre-PRC aerospace forces, the PLAAF saw action in the Korean War and participated in various skirmishes with Nationalist ROC forces, but the Communist Party leadership grew to harbor severe doubts about the PLAAF's "political reliability" (support for the regime) during the upheaval of the Cultural Revolution (1966-1976). As a result of this lingering legacy of mistrust, China's leaders often kept the PLAAF grounded in times of conflict. Even as memories of the Cultural Revolution began to fade, the PLAAF's subservient role—supporting the PLA Army and conducting air defense—was exacerbated by the traditional dominance of the ground forces within the PLA and the Sino-Soviet split, which decimated China's aviation industry and operations. Over the past 20 years (1999-2019), however, China's political and military leaders have endorsed a more independent and active PLAAF role, including both desired capabilities and concepts of employment for China's air force, that is much more expansive than its historic role of territorial air defense. In 2004, the CMC approved the PLAAF's first service-specific strategic concept, which directs the PLAAF to conduct an increasingly sophisticated range of missions denoted by "integrated air and space capabilities and coordinated offensive and defensive operations" (空天一体,攻防兼备).^{am,96} This has become known as the "strategic air force" (战略空军) concept.

Though the PLAAF was ultimately not successful in its bid to gain control of the space mission implied in this concept,^{an} China's air force is increasingly being called on to support the PLA's "new historic mission and tasks" of protecting China's overseas interests by operating beyond China's borders, training with other militaries, and conducting humanitarian assistance and disaster relief (HA/DR) missions to other countries. Within China, more sophisticated PLAAF strategy and employment of PLAAF units align with broader reforms transforming the PLA writ large. The PLAAF's strategic concept has fostered efforts to develop new or improve existing employment concepts, field more capable hardware, and achieve better integration in terms of joint operations.

Looking forward, as the PLA leadership seeks to realize a "world-class military," senior Chinese leaders have recently advocated for a "world-class air force" (世界一流空军) as well, a call that has set the PLAAF on a long-term trajectory for continued improvements in its overall capability. Despite these lofty aspirations, however, the PLAAF is starting from a relatively low base vis-à-vis other services—the Army, Navy, and Rocket Force. For foreign militaries currently engaging the PLAAF or that might engage the PLAAF in the future, the PLAAF's outward orientation as it transitions to a "strategic air force" may continue to lag that of the PLA Navy and, in some respects, the PLA Army for some time to come.

Methodology and Limitations of This Chapter

This chapter focuses on the PLAAF's strategy as articulated and debated by PLA and PLAAF leaders and analysts, along with PLAAF employment and lessons learned since 1949 relevant for PLAAF strategic concepts. The

al In this context and more broadly for the PLA and PLAAF, a "strategic" role for the PLAAF does not imply a nuclear role, but rather strategically important contributions to the PLA's warfighting capability, including offensive operations.

am The PLA is not consistent in how it translates this phrase into English. The English version of the 2015 white paper uses "building air-space capabilities and conducting offensive and defensive operations," while the 2019 edition has "integrating air and space capabilities as well as coordinating offensive and defensive operations." A 2018 article in Chinese State media describes the concept as "integrated air and space capability and balanced strength in both defensive and offensive operations." A 2019 article opted for "build a strategic force that integrates aviation and space power, and strike and defense capabilities."

an Instead, the PLA created a new organization, the Strategic Support Force (PLASSF), to integrate military capabilities across the space, cyber, and electromagnetic domains. The SSF is further discussed later in this chapter.

chapter seeks to address two main questions. First, how has the PLA's airpower strategy evolved over time? Second, what has the PLAAF's role been in advancing that approach within the PLA?

Following a brief discussion of terminology, the chapter is structured into three time periods: 1924-1960; 1960-1989, and 1990-present day. It finds that PLAAF strategy has been shaped, and often constrained, by domestic political, geopolitical, operational, and other factors over the decades. These PLAAF-specific factors have changed in importance over the decades, but have included the following at various points:

- Senior Chinese leaders' assessment of the PLAAF's uncertain political reliability, starting in the 1960s and lingering through at least the late 1990s.
- The overall ground force-dominant mentality within the PLA, including leadership, organization, and theory development, starting from the PLA's founding in 1927 as the Red Army, and is still somewhat present today despite major reforms that began in the 2000s.
- Analysis of global airpower theory and observations regarding the growing importance of airpower in modern warfighting, particularly following the First Gulf War (1990-1991).
- The state of China's aviation industry and broader resources available for military modernization, including geopolitical factors such the deterioration of Sino-Soviet relations in the 1950s and 1960s; societal upheaval due to the Cultural Revolution in the 1960s and 1970s; and prioritization of development of China's civilian economy over military modernization from the late 1970s to the late 1990s, which impacted the aviation industry's struggle to meet PLA requirements for modern aircraft through the 2000s.
- PLAAF operational limitations in supporting PLA operations, some examples of which include the limited operational range of PLAAF aircraft from the 1950s until the late 1990s; the ability to conduct "overwater" operations over the East China Sea, the South China Sea, and the Pacific; and the ability to conduct overseas activities in other countries.

Many of these factors have become more favorable in the years following the First Gulf War as PLA strategists have recognized the importance of airpower for modern warfare, and the PLAAF has increasingly focused on the ability to carry out offensive missions as well as missions beyond China's shores. However, some of these factors continue to remain relevant today and will shape the PLAAF's development for years to come. Chapter 8 discusses predictions for developments in the 2020s in detail.

The approach in this chapter has some limitations. First, based on the predominance of airpower in PLAAF thinking and the consistent focus on acquiring, fielding, and (in some periods episodically) employing aircraft throughout the PLAAF's history, this chapter reviews PLAAF strategy with a bias toward the theory and employment of aircraft, specifically manned fixed-wing aircraft.⁹⁷ As discussed in Chapter 3, though aviation is regarded as the PLAAF's "primary branch/arm," the other main PLAAF units include airborne, ground-to-air missile, radar, electronic countermeasure, and communications forces.⁹⁸ Perhaps the most important limitation of this approach is that this chapter does not focus more on Chinese ground-based air defense forces, many of which are PLAAF units and not only defend China's leadership in the Beijing capital region but are an important component of China's anti-access/area denial capability.⁹⁹ PLAAF aircraft additionally have an air defense mission along with the ground-to-air missile and radar branches/arms. Likewise, the theory and employment of unmanned aerial systems is also rapidly evolving within the PLAAF and the PLA more broadly, and deserves further attention as more information continues to emerge.¹⁰⁰

This chapter also does not provide in-depth analysis of major systems and platforms introduced and operated by the PLAAF during various periods, though the many studies and analyses available on PLAAF systems provide valuable additional details on the PLAAF's strategic approach, including manifestations of strategic choices made

by—and sometimes either denied to or forced upon—the PLAAF.¹⁰¹ Relatedly, this chapter does not delve deeply into China’s defense industry.¹⁰² Finally, the chapter does not focus on developments within PLAN Aviation¹⁰³; however, it notes some intersections between PLAN Aviation and the PLAAF, including joint operations and training.

Introduction to PLA and PLAAF Strategy and “Doctrine”

Key Points

- The PLA’s “military strategic guidelines” (MSGs) articulate overarching leadership guidance to the entire force regarding the likely form of future wars and how the PLA should be prepared to fight them, with the core of the MSGs described as the PLA’s concept of “active defense.”
- The PLAAF—and PLA more broadly—do not use the term “doctrine,” but focus on “strategy,” “theory,” and “thought,” which set the strategic course of the PLAAF.

Before exploring the evolution of the PLAAF’s strategy over its history, it is important to note that the PLA generally does not use the term “doctrine,” nor does it conceptualize its guiding military principles as such,¹⁰⁴ but often uses “strategy,” “theory,” and “thought” to articulate fundamental principles of warfighting. This is in contrast to the U.S. Armed Force’s use of the term doctrine. For example, according to *Air Force Doctrine Volume 1*:

*“Air Force Basic Doctrine... discusses the fundamental beliefs that underpin the application of Air Force capabilities across the range of military operations. It provides guidance on the proper employment of airpower, sets the foundation for educating Airmen on airpower, guides the development of all other doctrine, and provides insight where personal experience may be lacking. As a whole, Air Force doctrine describes the various operations and activities that underpin the Service’s ability to provide global vigilance, global reach, and global power, which allows us to anticipate threats and provide strategic reach to curb crises with overwhelming power to prevail.”*¹⁰⁴

The following section briefly explores these terms and some conceptual differences between U.S. and Chinese framing of military thought.

Strategy and the PLA’s Military Strategic Guidelines

The 2011 *PLA Military Terminology* dictionary, the most recent edition available, defines “military strategy” (军事战略) as “principles and plans for preparing for guiding the overall situation of war; [which] can be divided into offensive strategy and defensive strategy.”¹⁰⁵ Following the end of the Chinese civil war, the process of developing and promulgating high-level strategic guidance throughout the PLA was formalized in the military strategic guidelines (MSGs or 军事战略方针). As M. Taylor Fravel describes, the MSGs “cover both general principles about the whole process of military operations and concrete or specific principles for certain types of operations.”¹⁰⁶ A fundamental component of each of the nine MSGs since 1949 is “active defense” (积极防御), a concept that has evolved over time but is focused on conducting military operations on the “strategic defensive” when facing a superior opponent.¹⁰⁷ As Fravel notes, “changes in China’s material power in the past decade raise serious questions about the meaning of active defense in the future because China will no longer be in a position of material or technological inferiority.”¹⁰⁸

ao As one example, the word “doctrine” in English only appears one time each in both the 2011 *PLA Military Terminology* dictionary (“training doctrine” or 教令, 302) and the *China Air Force Encyclopedia* (“doctrine of modern air defense” or 现代防空轮, 41).

ap A 2020 Defense Department report notes that active defense can include seizing the initiative, and a 2020 RAND study notes that active defense has evolved to incorporate offensive operations, particularly at the operational and tactical levels.

Major developments and shifts in the MSG occurred in 1956, 1964, 1980, and 1993, while minor adjustments took place in 1960, 1977, 1988, 2004, and 2014. These shifts in the overall direction and focus of the PLA have played a key role in shaping the PLAAF's strategic thought as well as the priorities of other PLA services and forces.^{aq, 109} For example, until the 1993 revision of the MSG, the PLA's ground forces were the predominant force in PLA strategic thinking and employment, with naval, air, and missile forces relegated to supporting ground force operations. The promulgation of the 1993 MSG formally signaled senior leadership support for more expansive thinking about the employment of the non-ground services, and the deprioritization of the ground forces was publicly codified in China's 2004 *Defense White Paper*.¹¹⁰

The elements of its service-specific strategic principles have become increasingly important within the PLAAF, although the PLAAF does not codify official strategic visions, concepts, or principles in a public document like the USAF's *Global Vigilance, Global Reach, and Global Power* concept from 2017, which clearly lays out the U.S. Air Force's five missions, or other strategic documents the USAF releases.^{as, 111} Still, the PLAAF's "strategic" focus is evident in authoritative PLA texts and media following the advent of a PLAAF-specific strategic concept in 2004.

Theory, Thought, and Systems

A system of "theory" and guiding "thought" also helps articulate fundamental military principles within the PLA and PLAAF.^{as, 112} "Theory" (理论) is usually defined as a "system" (体系) of understanding on a given topic, and theory is one of the building blocks for the "system of systems" the PLA is building to conduct systems confrontation and system destruction warfare, in which the PLA seeks to paralyze, disable, or destroy the opponent's entire system of warfighting rather than attrit individual weapon systems or capabilities.¹¹³ In the authoritative *2011 PLA Military Terminology* dictionary (中国人民解放军军语), "military theory" (军事理论) is a "rational system that recognizes and [produces] knowledge on problems of war and national defense"; the system "arises from military experience, guides military experience, and is tested by military experience."¹¹⁴ As a Marxist-Leninist regime, China therefore has a Marxist military theory system that covers the range of military issues, including war, troops, and questions or problems of national defense.¹¹⁵

As M. Taylor Fravel notes, "strategic thought" (战略思想) "serve[s] as the foundation for Chinese writings on strategy."¹¹⁶ "Military thought" (军事思想) has a similar definition to military theory, though it is not described as a system; a sub-definition links military thought to academic research as "a discipline that studies the formation and development of military thought."¹¹⁷

While PLA and PLAAF writings on "strategy," "theory," and "thought" articulate PLAAF strategy, campaigns, and missions, they are not equivalent to U.S. joint or service-level doctrinal publications. A 2011 RAND Corporation study assessed the closest analogues to these U.S. publications within the PLA are "guidance" (纲要) and "combat regulations" (战斗条令), but both sets of documents are typically classified.¹¹⁸

For readers familiar with doctrinal concepts within the U.S. Armed Forces and U.S. Air Force, a brief comparison may put PLA terms in context. Table 2-1 summarizes the differences between U.S. and Chinese definitions, including air force service-specific characteristics for both militaries.

aq The 2011 *PLA Military Terminology* dictionary defines "air force strategy" (空军战略) as "plan and guide the overall guidelines (方针) and strategy for the air force's construction and employment; subordinate to military strategy. Includes the air force's strategic objectives, operational guidelines, means of employment, force construction, and other content."

ar However, Chinese State media, PLA media, and PLAAF analysts have discussed the PLAAF's focus on acquiring "bright eyes, strong fists, and long arms" (亮眼, 重拳, 长臂), which appears to reference the USAF's "global vigilance, global reach, global power" concept.

as For example, the PLA typically translates the U.S. concept of "doctrine" as "operational theory" (作战理论). The 2005 *China Air Force Encyclopedia* includes additional relevant terms, including "air force strategy" (55-7), which expands on the 2011 *PLA Military Terminology* dictionary's definition to note that aviation forces are the primary force of the air force, and provides a short history of global and Chinese air force strategy developments. There is also the "science of air force strategy" on researching air force construction and employment (57-60), "air force strategic thought" (60), and "air force strategic mission" (61), which does not list specific PLAAF missions but notes the PLAAF's role in joint operations and that the PLAAF has peacetime missions as well.

Table 2-1: Comparison of Current U.S. and Chinese Terminology

	United States Armed Forces	Chinese People's Liberation Army
Terms	Joint doctrine; doctrine	Military strategy (军事战略); theory (理论); thought (思想)
Definition	<p>2020 DOD Dictionary on joint doctrine: “Fundamental principles that guide the employment of United States military forces in coordinated action toward a common objective and may include terms, tactics, techniques, and procedures.”¹¹⁹</p> <p>2016 DOD Dictionary on doctrine (this non-joint definition is somewhat more analogous to PLA terms): “Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application.”¹²⁰</p>	<p>Military strategy: “Principles and plans for preparing for guiding the overall situation of war.”¹²¹</p> <p>Military theory: A “rational system that recognizes and [produces] knowledge on problems of war and national defense”; the system “arises from military experience, guides military experience, and is tested by military experience.”¹²²</p> <p>Military thought has a similar definition, though is not described as a system; a secondary definition links military thought to academic research as “a discipline that studies the formation and development of military thought.”¹²³</p>
Air Force Specifics	<p><i>Air Force Doctrine (AFDD) Volume 1</i> (2015): “Air Force doctrine describes the various operations and activities that underpin the Service’s ability to provide global vigilance, global reach, and global power, which allows us to anticipate threats and provide strategic reach to curb crises with overwhelming power to prevail.” It also focuses on the unique value and tenets of airpower to “creating effects from and within the air, space, and cyber” domains and using airpower to conduct the full range of military operations in a joint environment.¹²⁴</p> <p><i>Air Force Doctrine Note 1-20 on Joint All-Domain Operations</i> (2020): “Air Force Components support JADO by conducting operations principally in, from and through the domains of air, space, cyberspace and the electromagnetic spectrum (EMS) to enable convergence of effects in all domains” and present “capabilities to the joint force in ways that can be effectively integrated across all domains.”¹²⁵</p>	<p>Since 2004, the PLAAF has been charged with becoming a “strategic air force” (战略空军) and transitioning from territorial air defense to the “integration of air and space and preparation for simultaneous offensive and defensive operations” (空天一体, 攻防兼备).</p>

Missions

As the U.S. Air Force’s doctrinal website explains, for the U.S. Armed Forces, Title 10 of the U.S. Code differentiates between the missions of combatant commanders and functions of DOD departments and services.¹²⁶ The PLA does not have a clear delineation of missions and functions in the way that the U.S. Armed Forces do, although reforms in recent years seek to clarify commanders’ and service leads’ responsibilities. In January 2016, the CMC released the “Opinion on Deepening the Reform of National Defense and the Armed Forces,” detailing a large number of PLA reforms to be completed by 2020.¹²⁷ The reforms redefine the roles of national-level, theater-level, and service-level organizations within the PLA, with the new responsibilities defined as “the CMC manages, the Theater Commands focus on warfighting, and the services focus on building [the forces]” (军委管总, 战区主战, 军种主建). The role for the services is thus force “building” (建设), namely manning, training, and equipping the armed forces.

However, this increasing division of labor is not reflected in PLAAF discussions of its missions. PLA writings often employ the terms “strategic missions” or “strategic tasks” (战略任务) and “strategic objectives” (战略目标) as part of the same phrase, and do not appear to differentiate between “missions” versus “objectives.” As a 2012 U.S. NDU study notes, there is also no agreed-upon concept of what a PLAAF “mission” (使命) is, its difference from a “task” (任务) or even an “operation” (行动), or how the PLAAF views either in relation to its overall strategy and thought.¹²⁸ There is also no public list of missions for the PLAAF, though some PLA texts provide general descriptions as discussed later in this chapter.¹²⁹ Overall, PLA and PLAAF writings since the 1990s indicate an evolution in PLAAF

missions that reflects the adoption of the “strategic air force” concept, including more offensive and independent roles, along with more sophisticated joint roles.

Important differences in PLA and PLAAF terminology versus U.S. military terminology extend to the operational and tactical level. Of particular relevance for this chapter is the PLAAF’s frequent use of the term “command of the air” (制空权), meaning “control of a given air space over a given period of time.”¹³⁰ Though “command of the air” can “restrict” an opponent’s ability to conduct operations, it is less expansive than “air superiority” or “air supremacy.”^{at, 131} At the campaign level, the USAF has what it calls offensive counter air (OCA) and defensive counter air (DCA) campaigns, but the PLAAF also does not use those terms.

Origins of the PLAAF, 1924-1960

Key Points

- PLA civil war-era (1927-1949) military theory centered on the ground forces, as Communist Chinese forces did not employ airpower in a significant way prior to the founding of the PRC in 1949.
- The PLA gradually obtained aircraft, airfields, aviation schools, and pilots and other personnel by the late 1940s, setting the stage for the official founding of the PLAAF in November 1949.
- Communist China obtained key agreements with the Soviet Union that allowed the PLA to field significant quantities of aircraft during the Korean War.
- Strategic guidance to the air force focused on air defense of mainland territory and direct support for ground operations. However, the PLAAF was largely unsuccessful in conducting support for ground operations, especially during the Korean War.
- Airpower employment during this period therefore focused on air defense of key cities and airfields.

1924-1949: Civil War and the Founding of the People’s Republic

The first Communist Chinese military flights predate the official founding of the PLA as the Red Army in 1927, but aircraft independently employed by the CCP-led military did not take to the air over China until the 1930s.^{au, 132} By 1941, a school was teaching basic aviation theory, even though the Communist forces had no significant quantities of aircraft fielded.¹³³

The “Red Army of Workers and Peasants” (the PLA’s name when established in 1927) did not employ air forces in an operationally significant way. Based on M. Taylor Fravel’s review of pre-1949 warfighting strategies and military strategic guidelines, air and naval forces were not a significant factor shaping PLA strategy prior to 1949, as the PLA’s emphasis was on harnessing mobile, positional, and guerrilla warfare, primarily with light infantry forces, to defeat the Nationalists during the first and second phases of the Chinese Civil War (1927-1937; 1945-1949), as well as during the Second Sino-Japanese War (1937-1945), when the CCP and Nationalists (KMT) episodically worked together against Japan.¹³⁴ The strategic emphasis on ground maneuver and attack shaped the non-ground forces’ development, including the PLAN as well as the PLAAF, during the civil war and into the early founding years of the PRC.

at The *China Air Force Encyclopedia* states that “air superiority” (空中优势) is a term used by “the United States, the United Kingdom, and other countries” (41). As Brendan Mulvaney has pointed out, air superiority as defined in U.S. doctrine is “that degree of dominance in the air battle by one force that permits the conduct of its operations at a given time and place without prohibitive interference from air and missile threats” (Joint Publication 3-01), while air supremacy is “that degree of air superiority wherein the opposing force is incapable of effective interference within the operational area using air and missile threats” (Joint Publication 3-01).

au PLA texts trace the PRC’s military aviation history back to 1911. Nationalist-Communist collaboration in 1924 created the first Chinese aviation organizations when the Guangzhou Revolutionary Government under Sun Yat-sen established an aviation bureau and academy; some early PLA aviators also trained in the Soviet Union. Non-PLA scholars identify additional milestones – not reflected in official histories – prior to the PRC’s founding, starting as early as 1905.

Even if the PLA had been well-resourced enough to acquire and field significant quantities of aircraft, antiaircraft systems, or other air-related systems during the civil war as well as in sporadic fighting against the Japanese, its overall warfighting approach during this period was by definition unique compared to those of many other significant militaries of the period. Red Army forces frequently had to abandon the territory, weapons, and other assets they held in order to melt away from the numerically superior KMT military. Growing strategic and operational employment of airpower required not only aircraft but trained pilots and other personnel, fuel, airfields, and other fixed infrastructure, and robust supply chains—all of which the PLA was not capable of maintaining until 1945, when Communist forces acquired captured Japanese aircraft from Manchuria and began training pilots using Japanese personnel.¹³⁵ A school with aircraft followed in 1946; Chapter 5 and Appendix C provide further details about this school.

After the CCP had captured Beijing and was on the precipice of officially founding the PRC, Mao Zedong and other Chinese leaders recognized the importance of developing aerial and maritime capability within the PLA. Mao stated in September 1949 at the first plenary of the CPPCC that “we will have not only a powerful army but also a powerful air force and a powerful navy,” listing the PLAAF ahead of the PLAN.¹³⁶ (Today, however, the PLAN is listed prior to the PLAAF in protocol order.^{av})

As previously mentioned, prior to 1949, air forces were not a significant factor shaping PLA strategy, as the PLA’s emphasis was on infantry employing mobile, positional, and guerrilla warfare to defeat the CCP’s enemies.¹³⁷ Three statements by PLA and PLAAF leaders the following year appear to have given the PLAAF its initial guiding thought and described its efforts going forward. First, Mao’s inscription for the first issue of *People’s Air Force* magazine called on the PLAAF to “create a powerful people’s air force, eliminate the defeated enemy [of the Nationalist forces], and consolidate national defense”—lofty ambitions, but not very specific ones.¹³⁸ Second, PLA Commander-in-Chief Zhu De at a PLAAF political work meeting put forward tasks for the PLAAF to take Taiwan, Hainan, and defeat bandits, and achieve command of the air over sufficient airspace and waters so that the PLAAF could then focus on air force modernization.¹³⁹ Third, the first PLAAF Commander, Liu Yalou, formally set the PLAAF’s direction as “constructing” (or “building”) “the air force on the foundation of the ground forces” (陆军)—which the PLAAF Party Committee subsequently endorsed.¹⁴⁰ To summarize, the PLAAF’s main near-term tasks were to support the ground forces in unification work, conduct air defense, and build up its capability aligned with the broader PLA ground force-dominated force building underway.

1949-1960: Collaboration, “Construction,” and Confrontation

Building a Partnership and an Air Force

Prior to the PLAAF’s official founding on 11 November 1949, PLA leadership was already seeking out external support to rapidly improve the PLA’s air capability, while putting the initial organizational building blocks in place to field air units.^{aw, 141} In August 1949, Liu Yalou led a two-month trip to the Soviet Union and obtained an agreement to acquire over 400 aircraft and assistance in establishing pilot schools.¹⁴² Soviet aid for PLA modernization began in full force in the spring of 1951. The Soviet Union supplied fighter and bomber aircraft to the PLAAF while also helping develop China’s defense industry, including aircraft and ordnance factories built in the 1950s.¹⁴³ Ultimately, the Soviet Union sent nearly 600 military advisors and over 7,000 experts to China in the 1950s, and provided 44 factories that supported production of various PLA equipment.¹⁴⁴ In addition to the Soviet Union’s support and the Japanese personnel and aircraft Communist forces had captured earlier in Manchuria, the PLA also benefited from former KMT personnel; in 1949, 85 percent of the PLA’s aircraft mechanics were “accepted” from Nationalist

av It is not clear when the switch in protocol order occurred.

aw Chinese histories indicate the CCP sent personnel early on to the Soviet Union to study aviation in the 1920s and 1930s.

forces—along with an even greater percentage of technical personnel.¹⁴⁵ The Soviet advisors also trained PLAAF forces.¹⁴⁶

Organizationally, the PLAAF's first flying squadron was established in 1949.¹⁴⁷ The first MRAF HQ was established by the end of 1950.¹⁴⁸ In 1949, PLA air defense units were established and a PLA Air Defense HQ, separate from the PLAAF, was established in 1950; the Air Defense Force was officially established in 1955.¹⁴⁹ The Airborne Force was established in 1950.¹⁵⁰ A PLAAF history notes that the PLAAF's first development plan in August 1950 included training 25,400 technical troops, establishing nearly 100 aviation regiments, repairing over 100 airfields, setting up eleven aircraft repair factories, and increasing the size of the PLAAF to 290,000 personnel—most of which was completed in 1953.¹⁵¹

Overall, however, as M. Taylor Fravel has noted, the PLA's perspective through the 1950s was focused on “finding ways to use inferior equipment to defeat superior adversaries,” and the PLAAF was no exception.¹⁵² Despite rapid expansion from a handful of airframes and personnel to a substantial force within only a few years, the PLAAF recognized early on that it lacked the operational experience and advanced aircraft to match those of a sophisticated adversary—a challenge it soon found itself confronting in the Korean War.

PLAAF Missions and Lessons Learned through 1960

Strategic evolution of China's air forces and airpower thinking was shaped at the top by the PLA's revolutionary-era leadership, all of whom were infantry commanders who had served during the civil war. PLAAF Commanders were selected from previous ground force officers and PCs through 1985.¹⁵³ Organizationally, the PLAAF (and PLAN) were considered completely subordinate to the PLA's ground force-dominated leadership until major organizational reforms beginning in the mid-2000s through 2016—there was no separate ground force leadership organization within the PLA's organizational structure, and the Commanders of the Navy, Air Force, and Second Artillery Force were not added as members to the CMC until 2004. In the PLAAF's first enlarged Party Committee meeting in 1951, PLAAF leadership enshrined “air force construction on the foundation of the ground forces” as the PLAAF's guiding principle.¹⁵⁴ Leaders sought to improve the air force's capability, but not to the extent that the PLAAF would become an independent force. As PLAAF Commander Liu Yalou wrote in 1951, “the PLAAF must oppose two erroneous tendencies. The first tendency is to believe the PLAAF is a new service that can disregard the legacy of the Army. The second tendency is to be complacent with just some of the Army's experience. Both of these tendencies are wrong and will impede development.”¹⁵⁵

Operational necessities drove PLAAF employment, as ROC Nationalist forces bombed CCP-controlled cities on mainland China, resulting in the PLAAF's first operational mission in 1949 to conduct air defense of large cities, including Beijing and Shanghai.¹⁵⁶ The PLAAF was not successful in meeting the leadership's requirements of directly supporting ground operations during the Korean War, however, a deficiency that persisted for decades despite continued calls for the PLAAF to carry out this mission. (See Chapter 1 for more information about the Korean War.) For example, the 1956 military strategic guidelines allocated a significant role for the PLAAF in that the strategic orientation was for the PLA to defend coastal China from an attack or invasion by the United States, primarily in the northeast direction.¹⁵⁷ Specifically, the PLA was to “use the ground forces as the main element, complemented by coordination with the air force and the navy, to annihilate the main force of the enemy's attack in the coastal areas of our national territory.”¹⁵⁸ As M. Taylor Fravel notes, the PLAAF's role in supporting the MSG was to “defend against the initial U.S. bombing campaigns and protect the ground forces,” with the ground forces given top billing as the “bulwark of defense.”¹⁵⁹ In order to be able to fulfill this mission, a report on the MSG instructed the PLA to “give particular attention” to air force and air defense force development.¹⁶⁰

A 1960 minor revision to the MSG, summarized as “resist in the north, open in the south,” had the same overall approach,¹⁶¹ though the revision featured a growing importance of Mao thought as ideology gained greater prominence in PLA day-to-day activities leading up to the Cultural Revolution.¹⁶² Like the guidance issued in 1956, the MSG advocated for continued equipment modernization and planning and prioritization of the PLAAF over the PLAN.¹⁶³

Two further developments should have increased the PLAAF’s theory and strategy development in the 1950s. First, a reorganization placed the PLA’s key air defense units under the PLAAF when the Air Defense Force, previously a separate service officially founded in 1955 with AAA units and radar and searchlight troops, merged with the PLAAF in 1957.¹⁶⁴ In 1958 the air defense units also received their first surface-to-air missile systems (SAMs) from the Soviet Union.¹⁶⁵ See Chapter 3 for more information about this merger.

Second, the 1956 MSG increased the PLA’s focus on “military science research,” particularly by the Advanced Military Academy, which was renamed to the Academy of Military Sciences (AMS) in 1958.¹⁶⁶ The PLA’s military science research organizations began receiving new tasks to advance PLA strategic thought. For example, China translated Soviet and U.S. field regulations and manuals and used them through much of the 1950s. In 1958, “blind copying” was denounced as dogmatic and not suitable for China’s specific military needs, and AMS was assigned the task of drafting new ones.¹⁶⁷ Within the PLAAF, the PLAAF College (中国人民解放军空军学院) was founded in 1958 out of the PLA Military College Air Force Department, then located in Nanjing.¹⁶⁸ See Chapter 5 for the background on the PLAAF College, which is now the PLAAF Command College. The PLAAF also stood up a Regulation Editing Committee (条令编审委员会) in 1959 that churned out hundreds of regulations and training documents on PLAAF and non-PLAAF topics through the mid-1960s¹⁶⁹. However, PLAAF documents from the 1980s indicate that during its first few decades, PLAAF strategists did not make much headway on uniquely Chinese applications of airpower, or even (in some areas) codifying strategic principles. One PLAAF educational text stated that the PLAAF used Soviet campaigns and tactics through the mid-1960s. Other military publications in the late 1980s sought to establish initial principles for an air defense strategy and formalize the role of military airlift.¹⁷⁰

The following sections briefly evaluate PLAAF operational employment in support of its missions of air defense, direct support for ground forces, and Mao’s guidance in 1950 to “create a powerful people’s air force, eliminate the defeated enemy, and consolidate national defense.” It also compares PLAAF missions and roles to those of the PLAN.

Conquering the Interior

The PLAAF played a minor role in the CCP’s territorial consolidation that led to the KMT’s exodus to Taiwan in 1949, likely due to the fact that it was still establishing its operational forces and basing infrastructure in the late 1940s and early 1950s. During the invasion of Tibet (1950-1951) after Mao Zedong ordered the PLAAF to support the operation, the PLAAF played a support role by air dropping supplies to the invasion troops.¹⁷¹ The PLAAF also helped suppress “bandits” in Sichuan and Gansu provinces using small numbers of fighters and bombers in addition to transport aircraft from 1952 to 1953.¹⁷²

Korea

During the Korean War (1950-1953), the PLAAF’s air defense mission was expanded to conduct air defense of northeastern China, but its original primary mission in the war was to directly support ground forces.¹⁷³ In late 1950, the PLAAF was ordered to prepare to conduct tactical support for a spring 1951 PLA ground offensive. The PLAAF reportedly flew sorties beginning in 1950, but Western sources note that Soviet pilots disguised as Chinese pilots began combat operations in late 1950 and also flew many sorties against UN forces throughout the war.¹⁷⁴ Protected

by the prohibition on UN forces to cross into Chinese territory, the PLAAF was eventually successful in operating up to 300 aircraft each from multiple airfields directly across the Yalu River.¹⁷⁵ After receiving the ground support order in late 1950, the PLAAF Commander decided to construct airfields inside North Korea to extend the limited range of the PLAAF's MiG-15s.¹⁷⁶ As it stood up its operations, the PLAAF developed a ground-controlled intercept (GCI) system and even a combined North Korea-PLAAF operations center.¹⁷⁷ See Chapter 1 for additional information.

Ultimately, however, the PLAAF was unable to provide direct support for ground forces.¹⁷⁸ In June and November 1951, two PLAAF air packages were severely damaged in attempts to provide direct air support to ground troops.¹⁷⁹ The U.S. Far East Air Forces (FEAF) also repeatedly bombed Chinese airfields in North Korea, so the PLAAF was not able to employ them.¹⁸⁰ Following a CMC assessment that the PLAAF was not capable of providing direct support, the PLAAF's mission was changed in late 1951 to providing indirect support to ground forces by protecting supply lines and military targets and commanding the air over northwestern Korea.¹⁸¹ Still, the PLAAF's combat experience during the Korean War did help it develop basic air defense strategy and tactics, set up a command organizational structure, and train officers, pilots, maintenance, and logistics personnel.¹⁸²

The PLA's study of the Korean War affirmed that modern contests against sophisticated adversaries had evolved from ground-focused operations to a three-dimensional contest on land, in the air, and in the sea.¹⁸³ One PLA general's memoirs reflected that that the PLA would not be able to conduct active defense in a future conflict if it could not seize local command of the air.¹⁸⁴ Given the PLAAF's failure to do so against UN forces to support PLA ground forces' campaign on the Korean Peninsula, even with significant support from the Soviet Union, some sources indicate the PLA ultimately did not view Chinese air power as strategically decisive in the war.¹⁸⁵

Cross-Strait Tensions and Campaigns against the ROC

Despite the rapidly evolving situation in the early 1950s that led to Chinese participation in the Korean War, beginning in 1949 through the late 1950s, the PLA and PLAAF were focused on building capability to both defend and go on the offensive against Nationalist forces on Taiwan, particularly after a failed invasion of ROC-held Jinmen in 1949. The Korean War disrupted PLA preparations in Fujian and Guangdong province across the Taiwan Strait from the Nationalists,¹⁸⁶ but following the armistice, cross-Strait tensions rose and the PLA mounted an attempt to take control of offshore islands held by the ROC. As part of these efforts, in 1955, the PLAAF participated in the Yijiangshan campaign to seize islands held by ROC forces off the coast of mainland China. Yijiangshan is the PLA's only combined ground, naval, and air campaign to date, and is also a rare combat operation to have involved both PLAAF and PLAN Aviation aircraft.¹⁸⁷ The PLAAF's missions were to support the ground troops by gaining command of the air and bombing ground and naval targets, support the amphibious landing, and conduct reconnaissance flights.¹⁸⁸ PLAAF aircraft did not encounter ROC aircraft during the campaign and were fairly successful at bombing ground targets in support of the landing operation, but encountered difficulty in hitting naval targets, presumably due to lack of overwater flying experience and experience flying during poor weather.¹⁸⁹ Yijiangshan also provided the PLAAF an opportunity to study amphibious assault theory.¹⁹⁰ As a 2011 RAND study noted, "the Yijiangshan experience became a model for the PLA's concept of the role airpower would play in future small-scale conflicts. This was summarized as 'air defense first, followed by [command of the air], and then offensive air support.'"¹⁹¹ See Chapter 1 for additional information about the Yijiangshan campaign.

The PLAAF continued building up basing and forces in southeastern China in the mid-1950s and the 1958 Taiwan Strait crisis is PLAAF aviators' most recent large-scale direct combat experience.¹⁹² After the PLA began shelling more ROC-held offshore islands, the PLAAF participated in multiple battles against ROC air forces to gain command of the air; PLAN Aviation participated as well. PLAAF "operational command philosophy" for the fight provided vague high-level guidance to PLAAF units, such as using small numbers of forces to achieve great victories.

However, some guidance came directly from top PLA leadership, as the CMC provided explicit rules of engagement (ROEs) to the PLAAF in order to manage escalation given U.S. forces were directly supporting ROC operations.¹⁹³ Ultimately the PLAAF was able to strengthen its control over mainland airspace vis-à-vis the Nationalists, though the Nationalists controlled the airspace over the Strait. However, the PLAAF was unsuccessful in gaining enough command of the air to help the ground forces take the islands, and PLAAF aircraft were outmatched by new ROC aircraft and missiles provided by the United States, leading to unfavorable exchange ratios.¹⁹⁴ The air defense stalemate that the PLAAF achieved over mainland China was a relative success—in that the Nationalists no longer controlled airspace to the extent that they could carry out air raids on mainland cities like they had in the 1940s—but with respect to broader political and military objectives, the PLAAF’s achievements represented a minimal success.

Factors that may have shaped PLAAF employment in the Strait during the 1950s include “political considerations” about employing fighters offensively, as well as the short range of the MiG-17.¹⁹⁵ Leadership was also reluctant to employ PLAAF bombers apart from the limited bomber employment that took place during the Yijiangshan campaign. In at least two cases during the 1950s, a senior CCP leader counselled against employing PLAAF bombers against foreign targets. A planned 1952 bomber run during the Korean War that was cancelled by Zhou Enlai; and another one was planned for Jinmen during the 1958 crisis, which Zhou also counselled against.¹⁹⁶ Political concerns about the PLAAF, both at the pilot and leader level, would come to dramatically shape the air force in the 1960s and 1970s.

The PLAAF in Relation to the Rest of the PLA: First Among the Unequals

The ground forces had clear leadership over the PLA and its organizational hierarchy during this period, including over the air force and navy. However, compared to the PLAN, the PLAAF was the favored service through the late 1950s, and potentially through as late as the mid-1960s.^{ax} The Air Force was listed ahead of the Navy in protocol order by top political and military leaders, including Mao Zedong, and in the PLA’s first 5-year plan proposed in 1952, both ground and air forces were prioritized over the development of the PLA Navy.¹⁹⁷ Although this 5-year plan was not fully implemented due to the onset of the Korean War, the prioritization of air over naval forces continued to be evident in the leadership’s wartime decision making, such as in February 1952 when Mao redirected ship acquisition funds in order to obtain aircraft for the war.¹⁹⁸ The PLAN itself gained an Aviation Branch/Arm in 1952, which grew from 80 to 470 aircraft by 1958, but PLAN Aviation’s missions did not overlap with PLAAF missions, as PLAN Aviation focused on supporting its sister branches/arms by conducting anti-surface and anti-submarine operations.¹⁹⁹

In the 1956 MSGs, the PLAN again had a secondary role compared to the ground and air forces, while growth in PLAAF personnel in the 1950s resulted in more than twice the number of PLAAF personnel compared to PLAN personnel.²⁰⁰ In the late 1950s, the PLAN was assigned the tasks of disrupting and countering amphibious assaults against China and patrolling the Chinese coast to protect shipping and mainland fishermen, which later became known as “near-coast defense” (近岸防御).²⁰¹ However, PLAN leadership were also explicitly constrained by the “three obeys” (三个服从), one of which gave priority to PLAAF and Air Defense Force development over PLAN development.²⁰² Senior Chinese leaders continued to prioritize air forces over maritime forces in their preparations for potential future conflicts.

ax This list does not include the missile force, today known as the PLA Rocket Force, which was officially founded in 1966 and assigned a lower grade level than the PLAN and PLAAF until its promotion to a full service in 2016.

Conclusion

Formally founded in 1949, the PLAAF rapidly developed force structure, trained personnel and fielded new equipment in the 1950s. Established “on the foundation of the ground forces,” early PLAAF employment hewed closely to the needs of the infantry-centric ground forces. Ironically, however, the PLAAF was largely unsuccessful in performing in its primary mission, direct support of ground force operations, due to limited operational capability. Still, the PLAAF gained notable experience and lessons learned during the 1950s, and its future—and status within the PLA—looked promising as 1960 approached. A series of geopolitical and domestic political events were to rapidly erode these conditions, however, with lingering effects on the PLAAF well through the 1980s.

Operationalizing Air Defense under Uncertainty: 1960-1989

Key Points

- The Sino-Soviet split, the Cultural Revolution, and political tarnishing of the PLAAF’s leadership ushered in a dark age for the PLAAF until the 1980s.
- PLAAF employment, particularly of fixed-wing aviation, was restricted to control escalation, due to concerns about the PLAAF’s political reliability, and as due to atrophied capability stemming from the Cultural Revolution’s impact on the PLA.
- During this period, PLAAF largely focused on improving key point air defense, but was still encountering challenges in conducting air defense over important PRC locations through at least the late 1970s.
- In the 1980s, PLAAF leadership and strategists began to advocate for a more offensive PLAAF role and advance strategic concepts for PLAAF employment.

Triple Threats: The Impact of the Sino-Soviet Split, the Cultural Revolution, and Leaders’ Concerns about Political Loyalty on the PLAAF

The Sino-Soviet Split

Tensions between Chinese and Soviet leadership manifested in the 1950s and began to directly impact the PLA and especially the PLAAF in 1960 when the Soviet Union withdrew all of its advisors from China.^{203, 204} China’s fractured relationship with the USSR posed severe immediate challenges for China’s military aviation industry in the 1960s. China’s heavy reliance upon the Soviet Union for purchasing aircraft as well as aircraft designs, production technology, and providing technical support to manufacture aircraft within China—combined with a Western embargo—negatively impacted China’s aviation industry through 1977.²⁰⁵ The Great Leap Forward (1958-1962) further disrupted aircraft production.²⁰⁶ As one example of the efforts that China was willing to go to obtain advanced military aircraft technology by the second half of the 1960s, China reportedly stole Soviet airframes during the Vietnam War from supplies the Soviet Union provided to North Vietnam.²⁰⁷ Neither the PLAAF nor the Soviet air force participated during the 1969 border conflict between China and the Soviet Union.²⁰⁸

The Cultural Revolution

The 1964 adjustment to the MSGs radically altered the direction provided to the PLA until 1980. Amid his growing fears of revisionism within the CCP, Mao Zedong repudiated the previous strategic guidelines focused on resisting attacks via fixed positions, primarily in the north. Mao’s new guidance did not assign a primary strategic direction, instead focusing on “luring the enemy in deep” into Chinese territory via a protracted campaign involving mobile and guerrilla warfare.²⁰⁹ As domestic political events set the stage for the Cultural Revolution (1966-1976), they had significant implications for defense industry as well. Beginning in 1964, the Third Front (三线建

设) movement funneled State resources into shifting national defense production into China's interior, including aviation industry infrastructure.²¹⁰ The 1964 MSGs also required local party officials to make military preparations and (re)kindle revolutionary spirit, which included militarizing at the local level. Each locality needed to develop its own defense forces, with explicit guidance for local authorities that “it is insufficient to just rely on the People's Liberation Army.”²¹¹

When the upheaval of the Cultural Revolution hit the PLAAF, air force units were periodically deployed for internal missions—in some cases, for factional purposes, such as in 1967 when Lin Biao and Wu Faxian deployed the airborne troops to Wuhan to subdue a regional uprising.²¹² Like other CCP and PLA organizations, PLAAF leadership carried out “cleaning among the ranks” and “Party consolidation” rectification sessions in 1968.²¹³ The Cultural Revolution's impact on the PLA writ large was a significant reduction in readiness and capability, stemming from a political purge of experienced commanders, lack of clear guidance from senior leaders (with 42 members on the CMC at one point), a focus on domestic, internal missions (军管), agricultural and industrial production, and a reduction of operational and tactical training in favor of political training.²¹⁴ Overall, PLAAF historians assess the Cultural Revolution as a period of atrophy within the PLAAF, including for strategy development.²¹⁵ Most of the PLAAF's Second Aviation School was “sent down” (deployed to the countryside to learn from farmers and workers), and the PLAAF College was closed. Chapters 1 and 5 provide more details on developments.

Political Reliability Concerns

As the chaos of the Cultural Revolution deepened, the PLAAF leadership's close ties to political leaders denounced by Mao resulted in deep suspicions regarding the PLAAF's political loyalty, and airpower came to be viewed as a threat to regime stability. Other Chinese leaders perceived Lin Biao, the defense minister, as having taken control of the PLAAF during the Cultural Revolution while gaining significant political power more broadly. Lin attempted to flee China but died in an airplane crash over Mongolia in mid-September 1971, after a supposed failed coup attempt against Mao.²¹⁶ Following these events, PLAAF Commander Wu Faxian, who had previously served as the PLAAF political commissar, was arrested and the PLAAF was stood down from operations entirely for three months immediately after Lin's death.²¹⁷ In 1972, PLAAF senior leaders were forced to attend a Lin Biao criticism meeting.²¹⁸ A new PLAAF Commander did not succeed Wu Faxian until May 1973.

The PLAAF began to undergo at least a minor political rehabilitation in the mid- to late 1970s, when the Aviation Engineering Department was rehabilitated in 1976, and the PLAAF also had apparently gained enough trust to support earthquake relief operations within China in 1976.²¹⁹ Along with the other services, the PLAAF began a five-year program of rejuvenating military training and education.²²⁰ In 1978, the PLAAF held meetings on organizational standards with the aim of reprofessionalizing its operations, focusing on aircraft missions, strategic research, safety, logistics, draft operational regulations, joint exercises, and budgets.²²¹ The PLAAF also began to engage with foreign air forces. Beginning in 1977, this included select travel overseas, including academic engagements—reflecting at least some degree of leadership confidence in PLAAF leaders.²²² See Chapter 7 for more details on PLAAF engagement with other militaries.

Deng Xiaoping endorsed improving the PLAAF's capabilities after coming to power in 1978, but also sought to keep tight political control of what some leaders viewed as the most politically problematic service.²²³ The PLAAF was not allowed to leave the country to conduct combat operations during the PLA's short invasion of Vietnam, as discussed later in this chapter.^{ay, 224} See Chapter 1 for further information.

On the training front, the PLAAF did not practice direct support for combat operations in 1981's Exercise 802, the PLA's largest exercise in decades.²²⁵ Exercise 802 focused on campaign-level ground operations and airborne and anti-airborne operations, with 285 aircraft participating. However, the exercise organizer, Zhang Zhen, one of

ay Skirmishing with Vietnam continued through late 1980s, primarily involving shelling.

the deputy Chiefs of Staff of the General Staff Department, assessed that the exercise's air-ground coordination was "not done very well."²²⁶

Political reliability within the PLAAF remained a concern through at least the late 1980s, in part substantiated by over a dozen defections by pilots and crew members from the PRC between 1960 and September 1989.²²⁷ After a defector reached Taiwan in 1989, his MiG-19 was found to be equipped with an "anti-defection device" reportedly installed in PLA planes in late 1987.²²⁸ The device sought to restrict the aircraft's speed and fuel "if a pilot depart[ed] from a preset direction or exceed[ed] a predetermined distance," though at least one pilot was able to defeat the system.²²⁹

PLAAF Theory, Missions, and Operations in the 1960s-1980s: Airpower is Not to be Trusted

The 2008 *Defense White Paper* summarizes the PLAAF's experience during the 1960s and 1970s as the air force "established the guiding thought of focusing on the development of air defense forces, and gradually developed into territorial air defense-type air force."²³⁰ However, by its own metrics, the PLAAF was not capable of conducting nationwide territorial air defense through at least the end of the Cultural Revolution, and arguably through the 1990s. Even the PLAAF's ability to conduct key point air defense was limited by aircraft and ground-based system ranges and focused on defending major cities.

As previously mentioned, PLAAF historians reference the Cultural Revolution as a period of overall atrophy, including for strategy development, for the air force. As discussed later in Chapter 5, aviation schools were closed, and theory was not taught in favor of flight training preparation for imminent war. The PLAAF's aircraft were largely grounded or played non-combat roles during conflicts through the Sino-Vietnam War in 1979. As noted in Chapter 1, the PLAAF was able to draw on lessons learned by ground air defense units sent to support Vietnam and Laos to codify principles for AAA employment, but does not appear to have drawn similar lessons learned regarding airpower or modern warfare writ large from that effort.²³¹

Support to North Vietnam and the Cultural Revolution

As discussed in Chapter 1, PLAAF operations during this period involved few direct combat operations by aviation units. In 1962 amid fears of ROC invasion, the PLAAF placed almost 700 planes on alert over the summer, with 1,000 total prepped for a ROC invasion threat.²³² PLAAF aircraft also did not participate in the 1962 Sino-Indian War. In 1965 during the Vietnam War, North Vietnam requested support from Chinese pilots (aircraft), but China only sent ground-based air defense and support units.²³³ The newly-rebranded PLAAF air defense units, previously their own separate service, deployed to North Vietnam from 1965 to 1969 and also to Laos from 1970 to 1973.²³⁴ From 1963 to 1965, the CMC directed Chinese pilots to not engage U.S. aircraft operating over Vietnam if they flew into Chinese airspace, in an apparent effort to control escalation.²³⁵ However, these rules of engagement (ROE) were changed to permit attacks after U.S. flights in Hainan airspace, and PLAAF and PLAN Aviation pilots reportedly shot down some U.S. aircraft over or near Chinese territory, but did not directly support combat operations in Vietnam.²³⁶ As previously mentioned, during the 1969 Zhenbao conflict with the Soviet Union, neither the PLAAF nor the Soviet air force participated. During the 1974 Battle of the Paracel Islands, local PLAAF units whose training had been decimated by the Cultural Revolution were not able to support PLA operations, forcing the PLAAF to rapidly send qualified pilots southward.^{az, 237}

az Lewis and Xue note that during the war, "the lack of well-trained pilots was so consequential that the air force could not assign a single organic squadron to provide air cover during the Sino-South Vietnamese armed conflict, January 15–20, 1974. As an emergency measure, the air force had to transfer qualified commanders from different squadrons on an ad hoc basis to fly these missions."

PLAAF airborne troops have only been used twice, and in both cases during periods of internal upheaval. The first time occurred during the Cultural Revolution in Wuhan in 1967 and the second was during the Tiananmen crisis and military crackdown in 1989.^{238, 239}

The 1979 Sino-Vietnam War

Overall, the PLA performed poorly in China’s 1979 war with Vietnam—a battle-hardened opponent—due to poor leadership, inadequate tactical coordination, and little to no training thanks to the Cultural Revolution.²⁴⁰ Based on CMC and General Staff Department guidance that the PLAAF was not allowed to leave the country to conduct combat operations, PLAAF aircraft performed no direct combat operations during the PLA’s short invasion of Vietnam.²⁴¹ (In 1979, the PLA ground forces fighting in Vietnam requested air support, but the request was denied.²⁴²) The PLAAF only had 45 days to prepare prior to the outbreak of the Sino-Vietnam War, exposing challenges in rapidly mobilizing, deploying, and staging forces in southern China.

The PLAAF stationed 948 aircraft at 15 airfields in southern China; out of those aircraft, over 700 were deployed there from other locations.²⁴³ In total, about 20,000 PLAAF troops were involved in the conflict.²⁴⁴ However, neither China nor Vietnam flew their aviation forces in direct support of ground combat operations, and there were no sorties by fighter-bomber or bomber aircraft whatsoever from either side.²⁴⁵ As Chapter 6 discusses, limited training hours for pilots during the Cultural Revolution severely hampered PLAAF aviation units’ capability, along with a lack of airfields close to the border and the limited range of the J-6 fighter. The PLAAF did transport supplies and troops to the border and Chinese helicopters participated; the PLAAF also conducted reconnaissance, early warning, and rescue operations, though reconnaissance and early warning operations were identified as weak points of PLAAF operations during the war.²⁴⁶ Despite its relative lack of action, the PLAAF was able to reconstitute some organizational and logistical infrastructure as a result of its mobilization for the war.²⁴⁷ Following the war, the PLA writ large started to develop a policy, planning, and budgeting system linking strategy, resources, and missions.²⁴⁸ As Chapter 1 notes, few PLAAF books discuss the war in detail.

Key Point Air Defense

As previously mentioned, contemporary authoritative Chinese documents portray the 1960s and 1970s as a period in which the PLAAF became capable of conducting “territorial air defense” (国土防空). However, this period is better characterized by the PLAAF’s progress toward achieving a precursor to territorial air defense, which the PLA refers to as “key point air defense” (要点防空) over specific locations on the Chinese mainland. Table 2-2 below summarizes both concepts.

Table 2-2: PLAAF Air Defense Concepts and Milestones

Concept	Definition	Implementation Timeline	Notes
Key point air defense (要点防空)	“Air defense to safeguard the security of the country’s important targets,” which include political and economic centers, senior leadership organizations, key military facilities, important engineering projects, the industrial base, and transportation hubs. ²⁴⁹	Major operational milestones achieved by defending important cities like Shanghai, curtailing U.S. and ROC flights over mainland China. ²⁵⁰ These milestones occurred beginning in the late 1940s through the early 1970s.	Described as a main component of territorial air defense and, in the modern era, becoming more closely linked with area air defense (区域防空) or theater air defense.
Territorial air defense (国土防空)	“A unified, organized nationwide air defense in order to safeguard the country’s territory from air raids.” ²⁵¹	Organizational strides achieved in the 1950s by merging the PLAAF and the Air Defense Force, but operationally, the PLAAF did not achieve consistent nationwide territorial air defense until after well after the Cultural Revolution.	

As the table notes, the PLAAF became more capable of conducting key point air defense particularly in the 1950s and 1960s. Some examples include the PLAAF gaining control of airspace over the southern provinces opposite Taiwan following the Second Taiwan Strait Crisis in 1958, while U.S. and ROC strategic reconnaissance flights over the Chinese mainland halted in the first half of the 1970s.²⁵² However, senior PLA leadership statements indicate that the PLAAF was still working to achieve key point air defense by the end of the Cultural Revolution and imply that the PLAAF had not yet achieved territorial air defense. In 1978, the CMC stated that “the air force must enhance domestic air defense capability with air defense of strategic points as a center and strengthen its capability to provide support in land and naval battles.”²⁵³

More specifically, as defined in the *China Air Force Encyclopedia*, territorial air defense requires the PLAAF have a much more comprehensive capability across the entire mainland. The encyclopedia defines the basic principles of territorial air defense as 1) comprehensive, detailed intelligence on the enemy to inform air defense planning; 2) constructing and refining a stable air defense system (系统); 3) bringing together personnel, equipment, and multiple types of air defense weapons to cover multiple altitudes and ranges; 4) strong early warning capability and quick response times from units; and 5) integrating air defense on the battlefield and civil air defense to “strike back” against enemy attacks.²⁵⁴ By these standards, the PLAAF did not achieve the ability to conduct territorial air defense of the Chinese mainland prior to the end of the Cultural Revolution, and arguably not prior to the 1990s.^{ba,255} Lack of training time and an increase of political activities during the Cultural Revolution limited the PLAAF’s effectiveness, as well as the short range of aircraft in PLAAF inventories.

Nuclear Role

Despite concerns about the PLAAF’s political reliability, some bomber forces within the PLAAF had a nuclear role, with the U.S. Intelligence Community assessing that “the organization, deployment, and training of the intermediate-range bomber force suggest that it has a dual role of conventional and nuclear bombing.”²⁵⁶ While the U.S. Intelligence Community judged China had some nuclear-capable bombers in the 1970s training to perform nuclear missions, however, China did not have a “dedicated strategic bomber force” in the same vein as the United States or the Soviet Union.²⁵⁷ PLAAF aircraft also supported nuclear testing in the 1960s and 1970s. Modifications completed in 1964 enabled some H-6 bombers to drop nuclear weapons, and a Q-5 attack aircraft demonstrated a live nuclear air drop in January 1972.²⁵⁸ Altogether, at least 11 tests were conducted by aircraft—ten by H-6s and one by the Q-5—between 1965 and 1976.²⁵⁹ One 2015 study notes that any PLAAF nuclear delivery capability had “atrophied at some point later in the Cold War,” potentially due to the PLA recognizing that its H-6s could not defeat the current generation of air defense systems or due to political reliability concerns.²⁶⁰ Only four of the 11 known airdropped tests occurred after the 1971 Lin Biao incident.²⁶¹

The PLAAF in Relation to the Rest of the PLA: An Untrustworthy Player

The PLA’s capability declined during the Cultural Revolution. By 1975, Deng Xiaoping viewed the PLA as “overstaffed, lazy, arrogant, ill-equipped, and ill-prepared to conduct modern warfare.”²⁶² As previously mentioned, Deng sought to modernize the air force while keeping tight political control over its activities. At the same time, China’s leaders wanted to reduce defense spending as a share of the central government spending to free up

ba As one example of the gaps between aspirations and reality, in 1962, the PLAAF’s Regulations Committee published draft PLAAF Combat Regulations (中国人民解放军空军战斗条令). Ken Allen points out in a 2003 study that these combat regulations detailed two concepts for achieving command of the air (制空权): (1) strategic command of the air (战略制空权); and (2) campaign and tactical command of the air (战役战术制空权). The PLAAF views strategic command of the air as “the ability to influence a war by conducting [command of the air] for the entirety of the war or for a specific period of time at a particular location or for locations over a sustained period of time.” It defines campaign and tactical command of the air as “the ability to influence a battle by conducting [command of the air] over a critical or limited area for a short period of time.” The study notes that during the 1950s and 1960s, tactical command of the air “pertained primarily to areas around China’s airfields, since its aircraft did not have long legs and its SAM coverage was limited.”

resources for economic reform.^{bb, 263} This led the PLA to demobilize personnel across the force in 1980, though the 6.4 percent reduction to the PLAAF was less than cuts faced by other services.²⁶⁴ The PLAAF also lost most of its helicopters to the ground forces in the mid- to late 1980s, though the PLAAF regained some helicopter units over time, largely in support of the Airborne Force. See Chapter 1 for more information about developments in the PLAAF's force structure over the years.

Bernard Cole writes that similar to the PLAAF's experience, the Cultural Revolution delayed the PLAN's development by about two decades.²⁶⁵ From the late 1970s to 1985, however, a number of developments led to a greater focus on China's periphery and therefore a larger role required for the PLAN, which in contrast to the PLAAF was also not hindered by a debilitating loss in political confidence. At the strategic level, the CCP no longer regarded the Soviet Union as an existential threat likely to conduct a major land invasion of China.²⁶⁶ Chinese leaders were also interested in building maritime capability relevant for Taiwan- and South China Sea-related contingencies.²⁶⁷ In the early 1980s, the PLAN's advocacy was bolstered by Liu Huaqing, who became the PLAN Commander and successfully argued to expand the PLAN's strategic role and modernize its systems.²⁶⁸ In 1985, Chinese leaders approved the PLAN's shift from coastal defense to a service strategy of "near seas defense" (近海防御).^{bc, 269} This entailed more robust presence and operations farther beyond China's shores (with near seas or off-shore waters defined at various points as between 150 and 600 nautical miles from the Chinese coast) as well as coordination with the ground and air forces.²⁷⁰ However, the PLAN harkened back to the PLA's revolutionary roots of positional, mobile, and guerilla warfare to characterize its posture, which would be robust near shore and focus on mobility at sea, including guerilla-style attacks.²⁷¹

The PLA undertook its eighth force reduction in 1985, where it cut one million personnel in order to streamline command organizations and allot funds for weapons and equipment.²⁷² Possibly reflecting successful advocacy surrounding the PLAN's new strategic concept, the PLAAF faced a larger percentage cut than the navy and experienced a 19.6 percent reduction in personnel.²⁷³ As the PLA began reorganizing its ground forces, leaders' guidance to the PLAAF remained consistent: "each branch/arm and unit of the PLAAF must establish the philosophy that they support the needs of the ground forces and that the victory is a ground force victory."²⁷⁴ In the 1980s, the PLA and PLAAF made two administrative changes to enable ground and air forces to operate more closely together. First, MR and MRAF borders were aligned for the first time in 1985—a change which strengthened command and control over air defense by putting ground and air forces in the same locations under ground and air force commanders in the same region.²⁷⁵ Second, for the first time, the seven MRAF Commanders became concurrent MR Deputy Commanders in 1988, amid broader PLA reforms such as reestablishing an officer rank system and trimming the number of officer grades. Chapter 3 discusses these organizational reforms in greater detail.

Lessons Learned and Reforms

This section discusses two issues that emerged toward the end of the Cultural Revolution and into the 1980s: the PLA's growing recognition of airpower's importance in modern war and developments in PLAAF theory and strategic concepts.

Growing Recognition of Airpower's Importance in Modern War

Toward the end of the Cultural Revolution as the PLA studied the use of military force in recent external conflicts around the world, PLA leaders absorbed lessons learned regarding the strategic importance of airpower.

bb As one example of the magnitude of these reductions, "PLA capital construction expenditures in 1981 were reduced by over 25%" from the year before.

bc M. Taylor Fravel in *Active Defense* notes that the PLAN Party Committee officially adopted the strategy in January 1986 under the title of "active defense, near seas defense," linking the PLAN's concept not only to the 1980 MSGs in general but the PLA's overall strategy. Debates surrounding PLAAF advocacy for its own strategic concept in the 1990s would revisit whether a service-specific concept was needed for the PLAAF given the overall strategy of active defense.

A 1974 PLA delegation to Egypt and Syria to study the 1973 Arab-Israeli War took away the importance of anti-air as well as anti-tank operations.²⁷⁶ As senior PLA leader Su Yu advocated for adapting the PLA's strategy to trends in modern warfare, he noted the importance of command of the air in a 1975 article, and a 1978 lecture report he authored referenced the value of air forces.²⁷⁷

A major shift in the MSG in 1980 realigned the strategic focus away from “luring the enemy in deep,” which was deemed “not appropriate” for the wars that China might face in the future, to “active defense” in an overall consistent approach with the 1956 MSG, but this time with a focus on the Soviet Union.²⁷⁸ China could potentially face combined-arms warfare, multi-dimensional warfare, and total war (合同战, 立体战, 总体战), including in the air domain. The PLA would defend the northern border from tank and air operations; this forward defense required a layered network of fixed positions and combined-arms operations (合成作战).

Drawing on the ground forces' experience in the Sino-Vietnam War, in 1982, the PLA formally established requirements for the PLAAF's support for ground forces, assigning the PLAAF the dual roles of territorial air defense and ground support via a CMC-PLAAF unified command for sensitive Chinese locations to protect. For other locations, PLAAF troops were to be assigned to ground units to coordinate the PLAAF support.²⁷⁹ However, as noted in Chapter 6, the PLAAF has rarely ever practiced close air support for ground forces.

In 1988, the PLA made a minor adjustment to its MSGs, characterizing the PLA's mission as fighting “local wars” with more focus toward the southern border and the South China Sea than the primarily northward focus of 1980.²⁸⁰ The focus on the periphery included different types of possible local wars, focused on small-scale border conflicts, territorial seas and islands, surprise air attacks, defense against a limited invasion, and punitive counterattacks by China.²⁸¹ In 1989 and 1990, the PLA rolled out a new *Outline of Military Training* program for each service and the missile forces.²⁸²

PLAAF Theory Begins to Take Flight

PLAAF and PLA writings on the role of the PLAAF during the 1980s show innovation and exploration of a more active role for the PLAAF, but this more active role appears not to have been defined or endorsed by senior CCP and PLA leaders during this period. Documents from this period indicate a continued focus on traditional ground-centric operations and PLAAF support for those operations. In the early 1980s, the PLAAF began formally compiling mission statements.²⁸³ Five regulations for the PLAAF were issued following these requirements, though they did not include airlift until 1989.²⁸⁴ The PLAAF Command College's Research Department established its Military Systems Research Office in the mid-1980s.²⁸⁵

In 1987, the then-PLAAF Commander Wang Hai called for the PLAAF to pursue “moving from defending the country's airspace to building an air force with simultaneous offensive and defensive capabilities.”²⁸⁶ In 1987, AMS published the first iteration of the *Science of Military Strategy (SMS)* and the *Science of Campaigns Outline*, two of the PLA's premier strategic- and campaign-level professional military education texts.²⁸⁷ Wang Hai's concept was identified in the 1987 *SMS* as the PLAAF's long-term goal. Specifically, “based on the Air Force's strategic tasks and employment requirements, the Air Force's development in the future must, over a fairly long period of time, remain primarily on air defense weapons. On this foundation, step by step **advance toward to the developmental direction of simultaneous offensive and defensive capabilities** [emphasis added].”²⁸⁸ *SMS 1987* goes on to articulate required air defense weapons, specifically high-altitude SAMs and “mid-to long-range, all-weather combat capable” fighters, while the PLAAF should also develop early warning, electromagnetic confrontation and automated command systems (系统), bombers capable of launching cruise missiles, and counterspace weapons.²⁸⁹ *SMS 1987* also articulated some offensive missions for the PLAAF, including independent or coordinated strikes with other services and attacking an opponent's forces and backlines.²⁹⁰

While *SMS 1987* appears to endorse elements of Wang Hai's proposed shift, the PLA's thinking in the text overall remained extremely ground-centric, continuing to describe future warfare using the civil war-era paradigm of positional, mobile, and guerrilla warfare,²⁹¹ while the PLAAF's current mission was listed as territorial air defense and supporting ground force and naval operations.²⁹² Likewise, *SMS 1987* focused on the PLAAF's then-current capability as a defensive force with relatively limited range and capability; a primary focus of the joint strategic air defense operations the PLAAF was called on to conduct were focused on key point defense of limited areas within China's borders.²⁹³

Related PLAAF writings followed similar assumptions. After four years of effort involving PLAAF Command College researchers, the PLAAF released *Science of Air Force Campaigns* in 1988. *Science of Air Force Campaigns* is noteworthy in being one of the first PLA books covering the PLAAF that focuses on PLAAF-specific concepts and developments rather than on analysis of foreign air forces. Describing a growing recognition within the PLA for a more active air force role given the air forces' large-scale involvement in modern warfighting, *Science of Air Force Campaigns* overviews the PLAAF's role in air defense campaigns, aerial offensive campaigns, and "combined-arms" (合同) campaigns across the PLA.^{bd, 294} However, *Science of Air Force Campaigns* remains in alignment with other PLA publications in its portrayal of the PLAAF's subordinate role to the ground forces, repeating the longstanding hierarchal phrase of the PLAAF "established on the foundation of the ground forces" (陆军) and the PLAAF's primary mission to conduct air defense operation and support ground force and naval operations.²⁹⁵

PLAAF analysts also struggled to build out more detailed concepts for the PLAAF's traditional missions. The PLAAF Command College was charged with revising the PLAAF's air defense strategy, but appears to have not made much headway by the late 1980s, as a 1988 article by the PLAAF's SAM and AAA Applied Research Center titled "First Exploration of an Air Defense Strategy" noted that "to date, the PLAAF's theoretical research has not yet formulated an air defense strategy."²⁹⁶ These efforts imply a limited evolution in PLAAF operational regulations and therefore requirements to expand the coverage and capability of air defense forces.

Ultimately, transformative doctrinal shifts were not yet underway during this period. A 1995 RAND report assessed that contemporary PLAAF theory did not incorporate modern warfighting concepts employed by Western militaries like offensive counter-air, close air support, battlefield interdiction, or sophisticated airborne C2; nor was the PLA planning or developing an air campaign for the PLAAF aligned with the PLA ground campaign.²⁹⁷ The same 1995 report also did not find evidence that joint or combined-arms operations were raised to a "doctrinal or conceptual level" within the PLAAF until the 1980s.²⁹⁸

Conclusion

The PLA as a whole lost combat effectiveness, professionalism, and expertise during the Cultural Revolution, but no service was more negatively impacted than the PLAAF. As foreign conflicts began to spark debate within the PLA regarding the changing conditions of modern warfare, PLAAF leaders and analysts sought to advance PLAAF strategic concepts—a slow-burning effort that was to achieve major success beginning in the late 1990s.

bd Specifically, these are broken out into the "theater air defense" and "multiple theater air defense" campaigns and aerial offensive campaigns to contest command of the air, weaken the enemy's war potential, isolate the battlefield, and annihilate enemy forces, along with the PLAAF's role in "combined" (合同) campaigns.

The Drive to Become a Strategic Air Force: 1990-Present

Key Points

- As CCP and PLA leaders grew to recognize the importance of airpower for modern warfighting, the need for China's air forces to operate offensively, independently, and beyond China's borders necessitated an evolution of PLAAF strategy and role within the PLA.
- Receiving the blessing of then-CCP General Secretary and CMC Chairman Jiang Zemin in 1999, the PLAAF obtained its service-specific strategic concept in 2004 to become a "strategic air force" that "integrates air and space and is simultaneously prepared for offensive and defensive operations."
- PLAAF strategists view the concept as requiring significant advances in PLAAF operational capability via organizational reforms, improvements to training and readiness, and fielding new weapon systems and platforms—reforms which are still underway as of 2020.
- Aligned with the current CCP General Secretary and CMC Chairman Xi Jinping's call for the PLA to become a "world-class" military by the middle of this century, the PLAAF also has a requirement to become a "world-class" air force—the specifics of which have yet to be publicly articulated.

1990-1999: Setting the Stage

Following the U.S. and coalition forces' rapid defeat of Iraq in the First Gulf War, also known as Operation Desert Shield and later Operation Desert Storm, the PLA assessed that a transformation in the mode of modern warfare had occurred, characterized by a history by the Academy of Military Sciences (AMS) as a "shift from mechanized to information war."²⁹⁹ This transformation overturned PLA assumptions about the dominance of ground operations relative to other domains and about quantity of forces over quality.³⁰⁰ The AMS report also noted the success of the United States in integrating operations in land, sea, and air domains, while PLA leaders sought to derive specific lessons learned regarding electronic warfare, air defense, troop mobility, and air and sea coordination in the First Gulf War.³⁰¹ Following Operation Desert Storm, 60 Chinese airpower specialists participated in a study group to research independent air campaigns as well as integrated offensive and defensive capabilities.³⁰² Jiang Zemin also concluded that China's military technology was "backwards" and therefore inadequate for conducting modern warfare. An enlarged CMC meeting in 1995 determined that the PLA should improve a number of capabilities relevant for the PLAAF, including air defense, long-range strike, Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) capabilities, electronic warfare, and precision-guided munitions.³⁰³ A new CMC General Armament Department was also established in 1998 to more rapidly field new weapon systems.

At a 1993 CMC meeting, Vice Chairman Liu Huaqing stated that fixed defense was inadequate and that "active defense" needed to truly be active, including by organizing "active offensive operations."^{be,304} Vice Chairman Zhang Zhen also raised the concepts of integrated joint operations and key point strikes. The resulting 1993 major shift in the MSG reoriented the PLA away from countering an invasion deep into Chinese territory and toward preparing for potential conflicts on China's periphery, necessitating a focus on building up joint operations capability and elevating the role of the non-ground services within the PLA. Under the new guidelines, summarized as "winning local wars under modern especially high-tech conditions," joint operations became the new focal point of the PLA's approach to carrying out active defense.³⁰⁵ With then-CMC vice chairman Liu Huaqing advocating for a transition to joint operations that featured "increased air and naval warfare," the PLA's new approach replaced the old ground-centric dichotomy of positional, mobile, and guerilla warfare that had shaped active defense since 1927.³⁰⁶ Jiang Zemin's speech announcing the 1993 MSGs also indicated that the "focal point of military struggle" lay in preventing

^{be} Despite being regarded as the "father of the modern Chinese navy," Liu Huaqing wore an Army uniform while holding this position. Uniformed non-ground force leaders did not join the CMC until 2004.

Taiwan independence.³⁰⁷ For the PLAAF, this began a call for growth in missions and capabilities, though probably still tempered by lingering political concerns such as pilot defections in the early 1990s, a lack of high-tech aircraft, and inadequate pilot training.^{bf, 308} However, the PLAAF rarely flew over water until the late 1990s. Chapter 1 discusses the increase in PLAAF flight activity over the Taiwan Strait beginning in 1996 and near the centerline for the first time in 1998.

The PLA also studied airpower lessons learned from U.S. operations in the late 1990s and 2000s during Kosovo, particularly the value of air strikes and enablers.³⁰⁹ A PLA NDU study of the Iraq War observed that “defeat in the air can cause defeat on the land (or on the sea),” and an AMS report noted the successful air-to-ground coordination during the conflict.³¹⁰ Another study argued that U.S. participation in local wars since the 1980s had created a new type of operational model in which the application of air power could achieve the strategic objective of a local war, concluding that modern local wars had revealed “the subduing function of the position of air warfare.”³¹¹ Overall, lessons learned studies in this time period concluded that China should adopt the requirements for winning future high-tech local wars as the basis for “greatly strengthening national defense and modernization building” to improve the PLA’s warfighting capabilities, with particular appreciation for the role that “high technology air strikes” play in modern warfare.³¹²

The Debate over a PLAAF Strategy in the 1990s

Science of Air Force Strategy, published in 1995, provides insights into the struggles and the debates within the PLA over adopting an air force-specific strategic concept for the PLAAF.³¹³ First, *Science of Air Force Strategy* notes the relatively late timeframe when PLAAF strategy began to advance within the PLA. Zhang Zhen, then the commandant of the PLA National Defense University, proposed and established air force strategy theory as a specialty within the university in 1986, and PLAAF Commander Yu Zhenwu proposed launching an air force strategy research program within PLAAF leadership and research organizations in 1995.³¹⁴

Second, *Science of Air Force Strategy* captures debates about the utility of a PLAAF-specific strategic concept following Deng Xiaoping’s 1985 “strategic decision.”³¹⁵ These viewpoints, all against developing a new PLAAF-specific concept, are summarized below:

- **One country, one strategy (i.e., “active defense”):** A country’s national strategy and military strategy set the foundation for air force strategic concepts, and for China the former manifests as the PLA’s “active defense” strategy. If there is both an air force and broader military strategy, that would make the air force the sole tool to realize the national political and military objectives, leading to air force strategy replacing “active defense.” (It is unclear if proponents of this argument squared this line of reasoning with the PLAN’s adopting of its service-specific strategic concept in the mid-1980s.)
- **No strategic weapons:** Because the PLA does not have a strategic air force with strategic weapons, it is not qualified to have an air force strategy and therefore does not need an air force strategic concept.^{bg}
- **No strategic tasks:** Strategic tasks determine whether a strategy is required. The PLAAF’s only task as provided by the CMC is territorial air defense and support the ground troops, which is not a strategic task and therefore can only be considered half of an air force strategy.
- **No command authority:** Strategic command authority determines whether a strategy is required, and because PLAAF Commanders only carry out others’ orders, they don’t have command or decision authority. Therefore, an air force strategy is not required.

bf Taiwan finally ended its defection reward program in 1991.

bg “Strategic weapons” in this context likely refers to long-range and/or offensive weapons rather than nuclear weapons.

- **Already has an (unwritten) strategic concept:** Strategic concepts and content have already been developed, and everything that PLAAF command organizations oversee can be regarded as air force strategy, so the point is moot. (This viewpoint appears diametrically opposed to the other four.)

1999-Present: Adopting the PLAAF's First Service-Specific Strategic Concept

Advocates of formalizing a greater offensive role for the PLAAF received an important endorsement in 1999 when Jiang Zemin declared the need to “build a powerful, modernized air force that is simultaneously prepared for offensive and defensive operations” (攻防兼备).^{bh, 316} PLA thinking in this direction continued to be reinforced by foreign conflicts, including U.S. air operations in Kosovo in 1999 as well as the accidental U.S. bombing of the PRC embassy in Belgrade in 1999.³¹⁷ In the early 2000s, leaders began to push for the integration of air and space (空天一体), and called for a national air and space security system (空天安全体系)³¹⁸ with the argument that “space control is a reasonable extension of air control.”³¹⁹

In *SMS 2001*, PLA theorists noted a significant increase in roles and responsibilities for the Navy and Air Force, including “opportunities... to independently accomplish strategic tasks... and... objective requirements at the strategic level to plan sea and air operations” and modernize both services.^{bj, 320} In order to meet these opportunities, the *SMS 2001* authors stated the PLAAF “needs to establish the... strategy... of offensive air defense.”³²¹ The concept of “offensive air defense” represented a step outward for the PLAAF in two important ways. First, it expanded the PLAAF’s mission set from the Cold War-era missions of defending China’s territory writ large and supporting PLAA operations. Second, it gave the PLAAF perhaps its first real opportunity to improve its status within the PLA by demonstrating key contributions to PLA warfighting since the Lin Biao incident had bequeathed the service with a legacy of suspicion and mistrust over two decades prior.

Two strategy takeaways from *SMS 2001* are its depiction of the PLAAF as employing offensive air power in an expanding range of contexts in response to the changing demands of modern warfare, as well as the PLAAF’s role in integrated joint operations.^{bk} First, the authors note that, in past wars, air offensives were carried out primarily in “coordination” with strategic offensive actions by the other services, particularly the Army.³²² However, the “high-tech conditions” of modern warfare created new incentives for China to employ the PLAAF for “independent strategic offensive” operations without a corresponding ground campaign, akin to NATO’s use of air power in the 1999 Kosovo War.³²³ *SMS 2001* also describes important roles for the PLAAF in defensive operations, strategic maneuver, and what it describes as strategic air raid (SAR) and defense against air raid (DAAR).^{bl} These missions are discussed in greater detail in a later section of this chapter. Second, given the requirements of high-tech warfare, *SMS 2001* stresses that “the victory of war depends on the comprehensive confrontation capacity of the whole combat system,” particularly the ability to integrate forces from multiple branches/arms and services in order

bh *SMS 2013* notes that in 1997, Jiang Zemin stated: “The Air Force needs to strengthen its aerial offensive forces and the corresponding construction of sets [of equipment], and to gradually realize the transformation from a territorial air defense-type to a type with both offensive and defensive operations” (220), but the *China Air Force Encyclopedia* dates Jiang’s official endorsement to the 50th anniversary celebration of the PLAAF’s official founding in 1999.

bi The lead author of this book, Ken Allen, saw another example of PLAAF attempts to receive senior leaders’ endorsement for greater leadership roles in the late 1990s and early 2000s. In 1997, the National People’s Congress enacted *The People’s Air Defense Law*, passed to guide and regulate China’s air defense work. The law stipulates a focus on “protection for key points,” primarily for cities, but did not specify the types of forces and units to be employed. Based on the lead author’s discussions with PLA officers in 2002, the PLAAF may have sought to become the lead element in a national air defense organization, which could have been a stepping stone to gaining greater command authority and better advocate for an air force component of the military strategic guidelines down the line. However, the PLAAF was ultimately not successful in securing leadership of this organization.

bj This and subsequent sections on *SMS 2001* and *SMS 2013* build upon Cristina L. Garafola, “The Evolution of the PLA Air Force’s Mission, Roles and Requirements” in Joe McReynolds, ed., *China’s Evolving Military Strategy*, used with permission. This volume also explores similar evolutions in strategic thinking with respect to the PLAN, PLARF, electronic and information warfare, network warfare, space, intelligence, and other topics.

bk In discussion of “strategic offensive... patterns” in *SMS 2001* (299–304), air forces play a role in a number of them, such as “unidirectional assault” and “aerial assault,” but two patterns—strategic nuclear assault and space offensive—do not mention specific air roles. *SMS 2001*, 303–304.

bl The terms SAR and DAAR are used within *SMS 2005*, although they do not appear in *SMS 2001* (the 2005 version of *SMS* is an English translation of *SMS 2001*). See Peng Guangqian and Yao Youzhi, eds., *Science of Military Strategy* [in English], (Beijing: Academy of Military Sciences Press, 2005). Hereafter referred to as *SMS 2005*.

to improve overall combat effectiveness.³²⁴ *SMS 2001* describes the PLAAF's role in integrated joint operations including offensive missions such as long-range strikes that can be carried out as a part of strategic offensive operations requiring stand-off strategic air raids or "surgical strikes."³²⁵ The PLAAF can also conduct air-to-sea and air-to-land maneuvering assaults against enemy forces, while protecting Chinese territory, including counterattacks in the areas of China's land borders in concert with ground forces, and coastal operations with the PLAN to achieve "local command of the air" as well as joint air and maritime operations to seize "command of the sea."³²⁶

SMS 2001 foreshadowed broad shifts underway within the PLA that formalized the PLAAF's strategic role during the mid-2000s. In 2004, Hu Jintao announced the PLA's new historic mission and tasks, which directed the PLA to defend China's growing overseas interests.^{bm} A 2004 adjustment to the MSG added informatization and the requirement for joint operations at a higher level of sophistication, i.e. integrated joint operations.³²⁷ The 2004 *Defense White Paper* stated that priority in development was to be given the other services over the ground forces. Among organizational reforms, the CMC approved the PLAAF's first service-specific strategic concept in 2004.³²⁸ While the details of that CMC directive are not publicly available, authoritative PLA sources describe the concept as "integrated air and space capabilities and coordinated offensive and defensive operations" (空天一体, 攻防兼备), and the concept has been referred to in official State media and other sources as constituting a "strategic air force."^{bn} As multiple PLA writings articulate, the "integrated and coordinated" concept is a "transition" of the PLAAF's "tasks" away from focusing on territorial air defense.³²⁹

Two other reference points for the pervasiveness of this concept are continued references to it in government white papers as well as in statements and speeches by PLAAF Commanders. Following the authorization of the PLAAF's strategic air force concept in 2004, every subsequent defense-related PRC government white paper has discussed the PLAAF's pursuit of integrated offensive and defensive capabilities and related missions. The 2004 *Defense White Paper* articulates the PLAAF's shift from "territorial air defense" to "both offensive and defensive operations" to "meet the requirements of informationized air operations" from the 2004 military strategic guidelines; the 2006 *Defense White Paper* also references this transition. The 2008 *Defense White Paper* states the PLAAF is a "strategic service of the PLA" (空军是人民解放军的战略军种) and "the main force for carrying out air operations," noting that the PLAAF "now has relatively strong capabilities to conduct air defensive and offensive operations, and certain capabilities to execute long-range precision strikes and strategic projection (战略投送) operations."³³⁰ The 2011 and 2013 *Defense White Papers* refer to requirements to conduct both offensive and defensive operations, while the 2015 and 2019 *Defense White Papers* directly reference the PLAAF's strategic requirements of "integrating air and space capabilities and coordinating offensive and defensive operations." Likewise, published speeches by every PLAAF Commander since at least Qu Xiliang (Commander from 2007-2012) include references to the PLAAF's strategic role and the full "integrated and coordinated" concept.³³¹

PLAAF analysts continued work on the concept through the 2000s, with the PLAAF publishing an important, though unofficial, volume on the strategic air force concept in 2009 called *Strategic Air Force* (战略空军论), which contains about 50 individual articles written by different authors.³³² Several articles discuss "integrated air and space capabilities" as well as offensive roles for the PLAAF.³³³ *Strategic Air Force* is not considered an authoritative publication because it was not part of a specified plan and it did not have a forward written by a senior PLAAF leader, but reflects evolving debates and discussions in the PLAAF analytic community.

bm The historic mission and tasks are: "(1) providing an important guarantee of strength for the party to consolidate its ruling position, (2) providing a strong security guarantee for safeguarding the period of important strategic opportunity for national development, (3) providing a powerful strategic support for safeguarding national interests, and (4) playing an important role in safeguarding world peace and promoting common development." James Mulvenon, "Chairman Hu and the PLA's 'New Historic Missions,'" *China Leadership Monitor*, No. 27, 9 January 2009.

bn For more on the "strategic air force" concept, please see Chase and Garafola, "China's Search for a 'Strategic Air Force.'" As one example of the linkage between "strategic air force" and the "integrated air and space, offensive and defense" concept, a *China Daily* article on the PLAAF's 70th anniversary defines "空天一体, 攻防兼备"战略空军架构 as "a strategic air force that integrates aviation and space power, and strike and defense capabilities." ["Daily Vocab Word | World-Class Air Force"] ["每日一词 | 世界一流空军 World-Class Air Force"], *China Daily*, 12 November 2019, <https://cn.chinadaily.com.cn/a/201911/12/WS5dca0358a31099ab995eb4af.html>.

The most recent version of *Science of Military Strategy* published in 2013 delves into the PLAAF's strategic concept in the context of carrying out strategic- and campaign-level missions that reflect China's interests as a rapidly developing military power.^{bo,334} *SMS 2013* describes the basic objective of the PLAAF's strategy as realizing national "reunification" and safeguarding national territory (as well as China's "maritime rights and interests"), conducting active defense of Chinese territory, helping construct an integrated deterrence posture within the PLA, and honing the PLAAF's comparative advantages at conducting rapid and flexible response operations within the PLA.³³⁵

In 2014, the PLA's top strategic guidance, the MSG, was further adjusted to winning informatized local wars and emphasizing the maritime component of the PLA's strategic orientation.³³⁶ The PLA Navy's strategic concept also shifted from "near seas" (近海) defense to a mix of "near seas" and "far-seas" (远海) defense.³³⁷ In recent years, the PLAAF's overwater role has grown as well.³³⁸ As noted in Chapter 6, the PLAAF has added units to support its growing overwater operations, including maritime search and rescue. In 2014, PLAAF Commander Ma Xiaotian traveled to see the "Air Force's first maritime unit." While receiving an update on the construction of a maritime training base and visiting with PLAAF ship crews, he emphasized the importance of improving the PLAAF's maritime search and rescue capability.³³⁹ Ma stated that the PLAAF must "continuously improve the air power system in the maritime domain by focusing on the problems," including by "striving to enhance the air offensive and defensive system-of-systems operations in distant seas areas... and continuously improv[ing] the basic support for the use of Air Force power."³⁴⁰

As the PLAAF celebrated the 70th anniversary of its founding in November 2019, authoritative State and PLA media commentaries as well as interviews with PLA experts noted the PLAAF's progress in developing offensive capabilities and lauded the PLAAF's modern, indigenous weapon systems (glossing over continued challenges with some components such as aircraft engines); increasingly sophisticated training; growing partnerships with foreign air forces; and expanding international activities in support of Chinese broader policy objectives.³⁴¹ As one commentary noted, "all of these achievements have demonstrated that the PLAAF aviation force is becoming the landmark power of the strategic transformation of the PLAAF."³⁴²

PLAAF Campaigns and Missions

PLA texts' description of PLAAF campaigns have remained relatively consistent since the late 1990s, usually listing some variation of an offensive campaign, a defensive campaign, an air blockade campaign, and airborne campaign, along with support for various joint campaigns. These campaigns are summarized below in Table 2-3.^{bp,343}

In order to carry out these campaigns, the PLAAF performs multiple tasks or missions, and the *China Air Force Encyclopedia* describes "basic tasks" (基本任务) for a country's air force as "the important responsibilities that an air force assumes in order to carry out its missions."³⁴⁴ The PLAAF also has missions outside of these campaigns, such as support for domestic humanitarian assistance and disaster relief.

This section summarizes descriptions of PLAAF missions from a variety of PLA and PLAAF texts through 2013 and China's *Defense White Papers* through 2019. The PLAAF's identified missions and roles are less straight-forward than campaigns for two reasons. First, as previously noted, there is no agreed-upon concept of what a "mission" (使命) is, its difference from a "task" (任务) or "operation" (行动), or how the PLAAF views either in relation to its overall strategy and thought.³⁴⁵ Second, there is also no detailed public list of missions for the PLAAF, and the available high-level discussion of PLAAF missions is not always consistent.³⁴⁶ That said, PLA and PLAAF writings since the 1990s indicate an evolution in PLAAF missions that reflects the adoption of the "strategic air force" concept, including

bo It is important to note that *SMS 2013* is less focused than its predecessor on specific campaigns, so it is difficult to directly compare both texts regarding the PLAAF's role in various campaigns.

bp The PLAAF plays a role in additional joint campaigns, such as the joint firepower strike campaign, that are not always openly included in lists of offensive campaigns, likely due to the perceived sensitivity of explicitly discussing offensive activities. More broadly, firepower strikes are an important component of systems confrontation and system destruction warfare.

more offensive and independent roles, along with more sophisticated joint roles. The most recent authoritative public text from the PLA that covers this topic, published in 2013, appears to introduce some clarity by identifying five “strategic missions” for the PLAAF—though two additional mission areas may be folded into these five or potentially remain separate from them.

Table 2-3: PLAAF Campaigns and Support for Joint Campaigns

Year and Text	PLAAF-Specific Campaigns	PLAAF Roles in Joint Campaigns
Summary of late 1990s texts ³⁴⁷	<ul style="list-style-type: none"> • Air offensive campaign • Air blockade campaign 	<ul style="list-style-type: none"> • Support for ground operations (including air defense) • Joint coordination, including unified command at the theater level³⁴⁸
2000 <i>Science of Campaigns</i> ³⁴⁹	<ul style="list-style-type: none"> • Air force offensive campaign • Air defense campaign • Air blockade campaign 	<ul style="list-style-type: none"> • Blockade campaign • Amphibious landing campaign • Anti-air raid campaign • Border counterattack campaign • Airborne campaign • Anti-landing campaign
2005 <i>China Air Force Encyclopedia</i> ³⁵⁰	<ul style="list-style-type: none"> • Air offensive campaign • Air blockade campaign • Air defense campaign • Airborne campaign 	“Combat operations in coordination with other services”
2006 <i>Science of Campaigns</i> ³⁵¹	<ul style="list-style-type: none"> • Air offensive campaign • Airborne campaign^{bq} • Air defense campaign 	<ul style="list-style-type: none"> • Blockade campaign • Amphibious landing campaign • Anti-air raid campaign
2011 <i>PLA Military Terminology</i> dictionary ³⁵²	<ul style="list-style-type: none"> • Air offensive campaign • Air defense campaign • Air blockade campaign • Airborne campaign 	N/A

By the late 1990s, primary PLAAF campaigns included air offensive, blockade, and support for ground operations, including air defense.³⁵³ The PLAAF stated its secondary role was to support the ground forces, but as noted earlier in this chapter, it had never successfully carried out this mission; a 1995 RAND study found that the PLAAF officially stated it could “only support [the ground forces]... indirectly in the future.”³⁵⁴ Some additional published secondary missions reflected the PLA’s status as the armed wing of the Communist Party, including socialist construction and domestic missions, such as air support for HA/DR within China’s borders and artificial rainmaking for farmers.³⁵⁵ There also was still no integrated air defense system (IADS) doctrine.³⁵⁶ However, the PLA began discussing the “combat methods” (战法) of the “three attacks and three defenses” in the late 1990s, some of which are highly relevant for PLA IADS missions. The modern “three attacks” concept for IADS refers to attacks against stealth aircraft, cruise missiles, and armed helicopters, and the updated “three defenses” originally referred to defense against chemical, biological, and nuclear attacks, but in the late 1990s was reformulated as defense against precision strikes, electronic jamming, and electronic reconnaissance and surveillance.^{br, 357}

China’s eleven *Defense White Papers* since 1995 trace the PLAAF’s growing offensive role and its missions.^{bs} The 1995, 1998, and 2000 *Defense White Papers* have little discussion of airpower contribution to PLA warfighting,

bq Although the Airborne Corps belongs to the PLAAF, as previously mentioned, the 2000 *Science of Campaigns* identified the airborne campaign as a joint campaign; however, the 2006 version of *Science of Campaigns* identified the airborne campaign solely as a PLAAF campaign. This change may have resulted following discussions between the PLAAF and other organizations within the PLA.

br The PLAAF sometimes reverses the order to the “three defenses and three attacks.” Both concepts were updated in the late 1990s; the original “three attacks” were against tanks, aircraft, and airborne forces, while the original “three defenses” referred to defense against chemical, biological, and nuclear attacks.

bs For those looking to download and analyze the *Defense White Papers* collectively, Andrew Erickson’s website is a valuable resource. Andrew Erickson, “China *Defense White Papers*—1995-2019—Download Complete Set + Read Highlights Here,” andrewerickson.com, 23 July 2019, <http://www.andrewerickson.com/2019/07/china-defense-white-papers-1995-2019-download-complete-set-read-highlights-here/>.

but beginning with the 2002 *Defense White Paper*, the PLAAF's "primary missions" include not only air defense but "organizing relatively independent air offensive operations" as well as combined and joint offensive and defensive operations.^{bt, 358}

Missions in the 2001 Science of Military Strategy

The 2002 *Defense White Paper* may reflect PLA views of the First Gulf War, Kosovo, and the 1995-1996 Taiwan Strait crisis as well as coalescing views on the PLAAF's growing offensive role seen in the 2001 edition of the *Science of Military Strategy*.^{bu, 359} The 2001 SMS discusses PLAAF roles in offensive and defensive operations, strategic maneuver, and strategic air raid (SAR) and defense against air raid (DAAR). As previously mentioned, SMS 2001 states that, due to the "high-tech conditions" that now dominate warfare, China could employ the PLAAF for "independent strategic offensive" operations without a corresponding ground campaign, akin to NATO's use of air power in the 1999 Kosovo War.³⁶⁰ If the PLA is already dominating and an adversary is forced to retreat, air power can compound that advantage through aerial assault, air mobility, and airborne assault, noting that coalition forces conducted an "air and ground vertical pursuit" of retreating Iraqi forces during the 1991 Gulf War.³⁶¹ The PLAAF is also expected to assist in the enforcement of strategic blockades by "cutting off the external connections of the enemy" such as communication and transportation hubs.³⁶² Finally, the authors of *SMS 2001* envision that "vertical landing offensives" could be carried out simultaneously by the PLAAF and PLAN to "project strategic power and seize the land, shore, or large island of the opposing side," an allusion to PLAAF planning for operations during a Taiwan crisis scenario.³⁶³

Likewise, the PLAAF has an important role to play in defensive operations, particularly in countering enemy air raids.³⁶⁴ To counter an air raid, air defense forces (which include aircraft, SAM, AAA, radar, and ECM troops) from the PLAAF as well as other services conduct both air defense operations and air operations. While a main force defends key areas within the country, all services and branches/arms would then launch counterattacks, particularly against C4ISR systems, airports, and missile launch sites.³⁶⁵ If China were to face a blockade, SMS 2001 states that the PLAAF and other services should conduct coordinated operations to "win the local command of the air and... sea in important areas."³⁶⁶ In the event that a retreat were required, the PLAAF would be called upon to provide air cover.³⁶⁷ Finally, the PLAAF has additional roles that result from the unique structure of the PLA, including airborne missions.³⁶⁸

The PLAAF's role in SAR and DAAR is the most extensive coverage of the PLAAF's role in *SMS 2001*. These missions were deemed particularly important for the threat environment envisioned by the authors, to the extent that under specific conditions they could "replace ground operations... in dominating a war," with "the success or failure of the SAR or DAAR directly influencing and constraining the course and outcome of war."³⁶⁹ SAR is also the only operation described in *SMS 2001* as conducted mainly by the Air Force in coordination with other services and branches/arms.³⁷⁰ As envisioned at the time, an idealized Chinese SAR operation featured the use of high-tech weaponry such as precision-strike missiles and stealth aircraft, with coordination among all services and arms as well as the employment of information and electronic warfare. Precision strike operations, including at night, would minimize enemy air defenses to "paralyze the adversary in one stroke."³⁷¹ PLA forces engaged in SAR operations include both aviation and ground-based forces, most of whom come from the PLAAF. The air units

bt The 1995 white paper (which primarily focuses on arms control) and China's first overall national *Defense White Papers* in 1998 and 2000, have very limited discussion of military strategy, missions, and tasks; there is little discussion of air power or naval power. The 1995 paper merely notes that China's national defense policy includes defending Chinese sovereignty over land, sea, and air. The 1998 paper describes the PLAAF's place in the PLA's organizational hierarchy but does not delve further into its missions and roles. The 2000 paper highlights the PLAAF's various service branches and hardware modernization efforts, and vaguely asserts that China's air force has "acquired an all-weather, all-aerospace and round-the-clock operational capability of a rather high level."

bu Although the white papers are published by the State Council Information Office, a civilian organization, AMS and other PLA entities have historically participated in drafting and coordinating them.

“should be focused on the main direction of strike with the units in small formations (小编队) as the backbone of the strike forces,” whereas ground units should be “quickly assembled for the convenience of command, support, and coordination of strategic strikes against scheduled targets.”³⁷²

SMS 2001 characterizes strategic DAAR as requiring the ability to conduct sudden operations with only a short warning time that an enemy attack is incoming, and thus implies relatively high readiness over a large operational space. Since the enemy will be seeking to knock out PLA defensive and other systems in “one blow,” electronic warfare capabilities, an effective doctrine of joint operations, and the organizational and C4ISR systems necessary for coordination between units are all essential for successful DAAR.³⁷³ The DAAR mission set incorporates early warning, command and control, strikes and counter-strikes, fortified defensive works, operational support, and civil defense.³⁷⁴

Missions after 2004

As previously mentioned, each *Defense White Paper* from 2004 onward has discussed the PLAAF’s pursuit of integrated offensive and defensive capabilities and related missions, including specific offensive roles in PLAAF campaigns. The white papers from 2004 to 2019 reference key PLAAF roles as conducting air strikes, IADS, information operations, intelligence, surveillance, and reconnaissance (ISR) missions such as early warning and reconnaissance, strategic projection or airlift, support, and (referenced in the *2010 Defense White Paper*) domestic and overseas military operations other than war (MOOTW). While 2013 through 2019 white papers are not explicit about the PLAAF’s role in MOOTW, the 2015 and 2019 *Defense White Papers* add airborne operations to the list. Recent white papers additionally note a growing overwater role for the PLAAF, with the 2010 white paper including the PLAAF’s defense of coastal areas, the 2013 white paper referencing PLAAF “patrols at sea” (海上空域警巡), and the 2019 white paper discussing PLAAF “combat patrols in the South China Sea and security patrols in the East China Sea” as well as operations in the Western Pacific.

A 2012 NDU study examined six areas of air and space missions for the PLAAF: conventional deterrence, offensive operations, defensive operations, airlift, airborne operations, and blockades.³⁷⁵ The first three areas are briefly explored below. First, PLA research has argued that air and space forces are increasingly effective for conventional deterrence operations.³⁷⁶ A notable example includes the PLAAF’s H-6 bomber encirclement operations around Taiwan that began in 2015 and are discussed in Chapter 6.³⁷⁷ PLA and PLAAF analysts describe what a Western analyst calls a “ladder of intensity” for air deterrence missions, ranging from signaling and other nonviolent operations at the low end, to tests and establishing no-fly zones, to initiating near-combat or combat operations during wartime.³⁷⁸

Offensive operations are an integral component of “offensive and defensive operations” (攻防兼备), and analysts note that they can be politically decisive.³⁷⁹ *Science of Campaigns 2006* states three “basic tasks” (基本任务) for offensive operations are to destroy or disable enemy forces to achieve “command of the air”; support ground and maritime campaigns; and achieve the state’s strategic goals by striking an opponent’s military or non-military targets.³⁸⁰ Aligned with the PLA’s overarching focus on systems confrontation and system destruction warfare, in which the PLA seeks to paralyze, disable, or destroy the opponent’s entire system of warfighting rather than attrite individual weapon systems or capabilities, PLAAF offensive operations are expected to target a variety of systems, including C4ISR, Airborne Warning and Control System (AWACS) aircraft, and information operations in addition to more traditional targets like enemy aircraft and IADS.³⁸¹ Chinese publications view suppression of enemy air defense (SEAD / 空中突防) as one of the most difficult tasks of the offensive mission, but crucial to executing the overall mission.³⁸² The PLAAF should use stealth and “storm assaults” to penetrate enemy air defenses and conduct rapid battle damage assessment to support follow-on attacks.³⁸³ *Science of Campaigns 2006* also sees China’s success or failure in defending against enemy air raids as important for China’s sovereignty.³⁸⁴

Defensive operations include three types: defensive or protective (防护), resistance/intercepts (抗击), and counterattacks (反击).³⁸⁵ Counterattacks can involve preemption and there are also “active counterattacks” (积极反击).³⁸⁶ Some PLA scholars additionally discuss precision strikes in a defensive context.³⁸⁷ The *2013 Defense White Paper* notes that China’s air defense system has “six sub-systems of reconnaissance and surveillance, command and control, aerial defense, ground air defense, integrated support and civil air defense,” for which the PLAAF is the “mainstay” service.

“Strategic Tasks” in the 2013 Science of Military Strategy

The *2013 Science of Military Strategy* published by AMS adopts a different formulation for air force missions and roles than the white papers and the 2012 NDU study, stating the PLAAF has five “primary strategic tasks” (主要战略任务)—which it notes have both peacetime and wartime components.

Table 2-4: The PLAAF’s Five “Strategic Tasks” from SMS 2013

1.	Participate in the primary “strategic direction”
2.	Conduct homeland air defense
3.	Safeguard China’s border and maritime “rights and interests”
4.	Conduct emergency and disaster relief operations; assist with maintaining domestic stability
5.	Conduct foreign exchanges

First, the PLAAF will participate in the primary “strategic direction” (in many contexts this is assessed to be Taiwan, a key contingency of focus for the PLA³⁸⁸) by conducting operations such as warning strikes, contingency operations, joint firepower strikes and other joint operations, blockade operations, island-landing operations, and organizing theater air defense operations.³⁸⁹ This mission appears to incorporate elements of the PLAAF’s already-defined concepts of strategic offensive and strategic air raid. Second, the PLAAF is to engage in homeland air defense “organized with the capital as the center, [and] with the coastal areas as the key points.”³⁹⁰ *SMS 2013* also notes that the PLAAF should “expand the scope of air monitoring and activities to effectively uphold the nation’s territorial airspace security and sovereignty.”³⁹¹ This responsibility has included conducting patrols within the Air Defense Identification Zone (ADIZ) established in the East China Sea in November 2013, and would likely include patrols in any future ADIZs if additional ones were established.^{bv, 392}

The third mission noted is the PLAAF’s role in safeguarding border and maritime “rights and interests,” as well as coastal defense operations. *SMS 2013* does not elaborate on the PLAAF’s role beyond coordinating operations with the Navy and Army. Fourth, the PLAAF has a role in conducting emergency and disaster relief.^{bw} The PLAAF has participated in emergency and disaster response both domestically and abroad, including after the Chengdu earthquake in 2008. More recently, in the first half of 2020, PLAAF transport aircraft delivered COVID-19-related medical supplies overseas to other countries’ militaries, including a sweep to 20 countries over a few days in early June.³⁹³ The PLAAF also has a role in maintaining domestic stability, including “striking at terrorism.”³⁹⁴ This may indicate a role for the PLAAF in conducting operations within China’s borders, including drone operations, in addition to strikes abroad.^{bx, 395}

bv *SMS 2013* does not specifically mention the term ADIZ, but other PLA sources discuss PLAAF ADIZ operations.

bw *SMS 2013* discusses some examples of using aviation troops to conduct MOOTW (157) and the role of air assets in law enforcement operations and indirectly in aid operations (162-163). It notes that MOOTW operations can cover a wide area (165), which may indicate a special role for the PLAAF given that *SMS 2013* describes the advantages of the PLAAF as being able to operate over large territories and distances. On coordination mechanisms, *SMS 2013* states the CCP and CMC can empower relevant HQ command organs of the PLAAF or other services to coordinate and command MOOTW activities (166).

bx Chinese drones operate in the East China Sea and are also deployed to Hainan Island, presumably for South China Sea operations. China has considered conducting overland drone operations beyond China’s borders, such during a 2013 manhunt for a Burmese drug lord who was wanted for the deaths of 13 Chinese sailors in 2011. A Public Security Bureau official stated that “one plan was to use an unmanned aerial vehicle to carry 20kg of TNT to bomb the area, but the plan was rejected because we were ordered to catch him alive.”

Finally, the PLAAF participates in international military exchanges and cooperation activities. These are primarily conducted by aviation units at events such as the Russian Aviadarts international pilot competition, which is the aviation component of the International Army Games, the Shanghai Cooperation Organization’s combined military exercises and bilateral exercises, and performances by the PLAAF’s “Bayi” (八一, a reference to the date of the PLA’s founding) acrobatic team at home and abroad, as discussed in Chapters 6 and 7.

Other Missions: Nuclear and Space

Neither *SMS 2013* nor the *Defense White Papers* discuss two mission areas in which the PLAAF has longstanding interests and past roles, namely regarding the reestablishment of a nuclear mission for the PLAAF as well as the bureaucratic competition within the PLA for leadership over the space domain. The PLAAF’s emerging nuclear mission and its potential role in space could potentially fall within the five “strategic missions” as outlined in *SMS 2013* or be categorized separately.

The Reemergence of the PLAAF’s Nuclear Mission

In the mid to late 2010s, the PLAAF was reassigned a nuclear mission.³⁹⁶ In 2016, then-PLAAF Commander Ma Xiaotian publicly discussed a stealth bomber program, which the U.S. Department of Defense in 2020 noted could debut over the next decade.³⁹⁷ The PLAAF has developed several modernized H-6 bomber variants in recent years, most recently unveiling the H-6N refuelable bomber during the 1 October 2019 PLA parade. Both the stealth bomber and the non-stealthy H-6N have been identified as dual-capable (conventional and nuclear) platforms, and DOD has also stated that the PLA is developing two air-launched ballistic missiles (ALBMs), one of which may be nuclear.³⁹⁸ When deployed and integrated into the force, the nuclear ALBM would give China a triad of nuclear land, sea, and air systems for the first time in the PLA’s history.

Space: Integral, But Not Fully “Integrated”

Drawing inspiration from the PLAN extending its area of operational focus to greater distances from China’s shores, the PLAAF began undertaking a similar study in 2000 focused vertically on future space roles.³⁹⁹ The 2004 strategic concept was explicit in calling for the integration of air and space (空天一体) as a core area of leadership for the PLAAF. In 2009, then-PLAAF Commander and current CMC Vice Chairman Xu Qiliang publicly advocated for the PLAAF to take a leadership role in space:

“Competition among armed forces... is extending from the aviation domain to near space and even deep space.... In ground operations, the commanding heights are to be found on the hilltop; in three-dimensional operations, the commanding heights are to be found in the air. Since the air force’s ‘sphere of activity is high up in the heavens,’ it is heaven’s favored one.... The people’s air force must establish in a timely manner the concepts of air and space (空天) security, air and space interests, and air and space development.”⁴⁰⁰

However, during the PLA-wide reforms enacted in 2015 and 2016, the PLAAF failed to gain authority over the space mission set (nor did its main competitors, the former Second Artillery Force and the former General Armament Department). Instead, the PLA created a new organization called the Strategic Support Force (PLASSF), its first true joint entity, to lead both the military cyber and space portfolios.⁴⁰¹

Despite this failure, the PLAAF’s use of space-based systems and assets continues to grow given the PLA-wide focus on leveraging information across the joint force both to fight and to deny information to adversaries. 2020 analysis by the China Aerospace Studies Institute found that “the PLAAF is able to use information gathered from

space assets, such as intelligence information, to help make tactical decisions, and to be able to use space assets as communications relays between ground assets, such as Command Posts and command vehicles, and aircraft pilots, surface-to-air missile operators, and radar sites.”⁴⁰² One key question for 2029 and beyond is if (or how) the PLAAF decides to retool its strategic concept to reimagine “air and space integration” in a post-PLASSF world.

Modernizing to Achieve a “Strategic Air Force”

As previous sections of this chapter have indicated, the PLA is focused on building systems and capabilities that holistically defend against another military’s operations while confronting, denying, degrading, and destroying the opponent’s system. In line with that focus, *SMS 2013* calls for the building of “one system” (系统), “five forces” (力量), and “seven operational capabilities” (作战能力) to carry out the PLAAF’s strategic missions and tasks.^{by} The authors’ framework provides an indication of likely focus areas for PLAAF force building and modernization. In particular, assessing improvements to the seven operational capabilities, all but one of which appear linked to the “five forces,” can provide further insights into the PLAAF’s progress toward achieving air and space integration and offensive and defensive capability described in the strategic air force concept.

Table 2-5: PLAAF System, Forces, and Capabilities in *SMS 2013*

One System	Five Forces	Seven Operational Capabilities
Command information system	Air offensive forces	Medium- and long-range precision strike
	Air defensive/anti-missile forces	Air defense antimissile system-of-systems with “three-line control” structure
	Reconnaissance, early-warning, and surveillance forces	[Noted as essential for carrying out the PLAAF’s various operational capabilities]
	Information operations forces	Information assistance support capability
	Strategic transport forces	Electronic warfare and network warfare capability
		Air strategic projection capability
		Airborne force operational capability
	Comprehensive support capabilities	

Informatization and Joint Operations: One System to Integrate Them All

Informatization and joint operations are integral to carrying out the PLAAF’s “air and space integration” and “offensive and defensive capability” concepts. *SMS 2013* explains the need for the PLAAF to focus on air and space integration through the contextual lens of worldwide trends in “air-space-network integration.”⁴⁰³ The “one system” described in *SMS 2013* is a reference to the “command information systems” that “cover the Air Force’s strategic activity space.” It encompasses space-based information platforms that integrate the air, space, and land domains into a “three-level network” for the strategic, campaign, and tactical levels of warfare.⁴⁰⁴ This system-of-systems includes platforms such as Chinese-designated 4th-generation aircraft (U.S.-designated 5th-generation aircraft), aerial refueling, long-range reconnaissance aircraft, airborne early warning and command (AEW&C / 空中预警指挥) aircraft, unmanned aerial vehicles (UAVs), and guided munitions (such as air-launched cruise missiles and anti-radiation missiles), including relevant operations and support components. Future systems to incorporate could include a stealth strategic bomber and “air and space integrated equipment.”^{”bz. 405}

by This section is discussed in *SMS 2013*, 222-4. *SMS 2013* additionally describes six “basic modes” (基本方式) as strategic reconnaissance and early warning, air and space deterrence, air defense and anti-missile, air and space attack, strategic projection, and air and space security cooperation (227). It is not clear how the “basic modes” relate to the five “strategic tasks” or the “one/five/seven” system outline above.

bz For the latter, specific examples listed are “air and space operational aircraft, near-space strike weapons, and airborne laser weapons.”

Force #1: Offensive Strike

Under this framework, the PLAAF should have an “air offensive force” that has been adapted to conduct both air offensive operations and offensive air defensive operations under informatized conditions. This includes a better medium- and long-range air precision strike system for Chinese-designated 3rd- and 4th-generation aircraft. To do this, *SMS 2013* calls for the PLAAF to streamline technical and other standards and focus on “remote combat capabilities.” The term “remote” is defined as 3,000 kilometers beyond China’s borders, “so that the platform radius or the platform radius plus the firepower radius reaches the second island chain” in support of larger air defense areas or zones (防空区域).^{ca, 406} To improve its ability to conduct medium- and long-range precision strikes, the PLAAF has extended its area of operations by fielding new aircraft and missiles and increasing its use of aerial refueling.⁴⁰⁷ The PLAAF is also conducting long-range training activities, particularly over water. For example, as discussed in Chapter 6, Chinese media reported that the PLAAF conducted four long-range exercises over the western Pacific in 2015, completing dozens of total flights in recent years.⁴⁰⁸ As previously mentioned, these long-range strike capabilities likely include a role for the PLAAF in China’s nuclear strike capabilities.^{cb}

As its command information systems grow in reach and sophistication, the PLAAF was expected to expand its offensive and defensive operations to the air, “near-space,” “outer-space,” and “network-space,” reflecting the PLAAF’s ultimately unsuccessful bid for ownership of the space portfolio in the 2000s and 2010s. Therefore, *SMS 2013*’s discussion of the PLAAF actively participating in “air and space military struggle” to “gradually develop the deterrent role of controlling space from the air” (逐步发挥以空制天的威慑作用) may not be realized, or at least needs to be squared with the PLAAF’s roles and missions.^{cc, 409} However, *SMS 2013*’s analysis that once war has broken out, “air strikes under space-based information support will be the primary manner of strategic application of the Air Force” appears to remain valid as the PLAAF continues to be a space consumer that incorporate C4ISR platforms ever more deeply into its operations.⁴¹⁰ As one example, Chinese State media, PLA media, and PLAAF analysts have discussed the PLAAF focus on acquiring “bright eyes, strong fists, and long arms” (亮眼, 重拳, 长臂), which appears to draw from the U.S. Air Force’s “global vigilance, global reach, global power” concept.⁴¹¹ As a 2018 RAND Corporation report noted, the Chinese concept “is clearly focused on building greater capacity to gain situational awareness, deploy assets, and project power over greater distances,” including via space-based systems.⁴¹²

Another increasingly important element of both offensive and defensive operations is electronic warfare, including both soft kill (electronic interference and deception) and hard kill (antiradiation destruction, electronic warfare, firepower, and attacking electrical infrastructure).⁴¹³

Force #2: Defense of the Homeland

Also important is the development of an air defense antimissile force to “ensure the stability” of the national air defense system and resist air raids under informatized conditions. The PLAAF requires an air defense antimissile system-of-systems that balances the needs and requirements of territorial air defense and “multidirectional operations.” Improvements required include filling gaps in coverage by building more ground stations and using AEW&C aircraft. *SMS 2013* notes that “the resources invested in air defense will be much greater than those for offensive means.”⁴¹⁴ Compared to the early 2000s, the PLAAF today fields larger numbers of new and long-range surface-to-air missile (SAM) systems, including the HQ-9, SA-10, SA-20, and SA-21 (S-400), of which China has purchased four to six battalions from Russia.⁴¹⁵ The PLAAF is also fielding more AEW&C aircraft, including the new KJ-500 system in addition to its older KJ-200 and KJ-2000 programs.

ca Note that this term is not the same as the one used for an ADIZ (that term is 防空识别区).

cb *SMS 2001* notes that conventional weapons in the air and other domains are a component of overall strategic deterrence (236). *SMS 2013* has discussion about how deterrence plays a role in safeguarding maritime sovereignty rights and interests, facilitated by air strength projection, to create a sea-air strength system (146).

cc It is also unclear what “controlling space from the air” refers to exactly. The literal translation of the phrase is “using air to control space.”

With these and future air defense systems, *SMS 2013* states that the PLAAF should build a “three-line control” (三线控制) air defense structure to optimize its posture and “battlefield [force] construction.” The three lines radiate outwards from China’s borders: territorial airspace is the area of “reliable control,” beyond China up to the First Island Chain and the main periphery countries is a “limited control and security cooperation area,” and between the first and second island chains is a “long-range surveillance and limited deterrence area.” Scenario-based analysis by the RAND Corporation assesses that growing numbers of sophisticated SAM systems, combined with defense counter-air patrols by increasingly capable interceptor aircraft, may have enabled a layered defense structure out to the First Island Chain by 2017.⁴¹⁶ *SMS 2013* also states that other improvements needed to bolster China’s air defense system are “operations research-based planning” for using terminal antimissile systems as well as countering stealth combat aircraft and unmanned systems in the event that an adversary contests Chinese control over key areas of the mainland’s airspace.

Force #3: Eyes in the Sky

A reconnaissance, early-warning, and surveillance force will bolster both attack and defense within the PLAAF’s operational space by integrating air, space, and land assets, providing strategic warning, and “maintaining battlefield transparency.” The PLAAF’s strategic reconnaissance and early warning capability should evolve from air reconnaissance and early warning to air and space integrated early warning that is regularly employed for operations.⁴¹⁷ As mentioned previously, China has fielded increasingly capable AEW&C aircraft, including the KJ-200, KJ-2000, and the KJ-500 program. Other components could include elements of China’s satellite network, ground-based radar systems, maritime patrol aircraft to guard against enemy submarines, and unmanned aerial vehicles (UAVs).⁴¹⁸

Force #4: Strategic Airlift

A strategic air transport force will facilitate maneuver and air landing operations. *SMS 2013* notes that the need for the development of a strategic air transport system is “an important mark of a strategic air force,” particularly the development of “medium and large-size, long-range, multifunctional transport planes” to move equipment and troops. Relevant capabilities include an air strategic projection capability and an air-landing operational capability to deploy airborne troops and special operations forces.⁴¹⁹ The Y-20 large military transport aircraft, which entered service in 2016, will play an important role in bolstering the PLAAF’s transport of equipment and forces to support PLA-wide contingency operations.

Force #5: Cyber and Support Forces

Finally, *SMS 2013* states that the PLAAF should have an information operations (IO) force capable of “effective suppression and destruction” via both soft-kill and hard-kill of an opponent’s information systems, as well as an integrated “information protection capability.” These include an information assistance support capability “covering the Air Force’s operational space” and an electronic warfare and network warfare capability that combines both air and ground. Additionally, the PLAAF should have a comprehensive support capability that is “adapted to large-scale, high-intensity sustained operations.”⁴²⁰

Comparison to Other Recent PLA Texts

Since *SMS 2013* was published, two versions of another strategic-level text have also been published that describe similar desired requirements and capabilities for the PLAAF. Both the 2017 and 2015 editions of the National Defense University’s version of *Science of Military Strategy* (which are not part of the same series as the 2013

book published by the Academy of Military Science) also review operational requirements, trends, and key areas in PLAAF modernization.^{cd} In addition to highlighting the importance of air and space integration, offensive and defensive capabilities, and informatization in the PLAAF, the NDU SMS describes five areas in which the PLAAF must become proficient. These areas largely track with the “five forces” discussed in *SMS 2013* by including an air offensive force, an air defense antimissile force, an ISR force, and a strategic projection force.⁴²¹ Only the information operations force is not explicitly mentioned, but the description of this section on the PLAAF is characterized as “capability requirements for an air force under conditions of informatization,” and information elements are weaved into multiple elements within the five forces. Both the 2017 and 2015 versions of the NDU SMS additionally delve into the need for a robust “base protection force” to ensure the continuity of air operations under informatized conditions.⁴²² Also, and similarly to *SMS 2013*, a section on trends in Air Force force modernization focuses on offensive strikes, precision strike, and a system of systems to enable high-tech warfighting, while additionally discussing the importance of stealth and unmanned systems in modern warfighting.⁴²³

Conclusion

Over 15 years into the adoption of its first-ever service-specific strategic concept, the PLAAF has expanded its capability to conduct offensive and defensive missions while also integrating space-based assets and a variety of information platforms into its operations. PLAAF operations, particularly overwater patrols and overseas activities, have likewise grown in quantity and sophistication following CCP directives for the PLA to develop capabilities to protect China’s interests abroad. A 2017 RAND study notes that “the PLAAF has made incremental progress in its ability to carry out overseas operations, including organizing and deploying a long-distance strategic airlift unit capable of carrying out various non-war missions around Asia and as far as Africa.”⁴²⁴ New systems and platforms are additionally augmenting the PLAAF’s range, offensive and defensive capability, and ability to conduct overseas operations.

Strategy Developments in the PLAAF: Conclusion

Constrained by political factors, foreign policy, technological and operational limitations, and an organizational hierarchy that has been led by the ground forces since the PLA’s inception, it is only since the late 1990s that Chinese leaders have endorsed PLAAF exploration of a strategic role for Chinese airpower in warfare. Since the mid-2000s in particular, the PLAAF has achieved milestones in developing strategic concepts, reforming its organizational structure and personnel and education systems, improving the sophistication of PLAAF training and operations, increasing its activities with other countries, and fielding new weapon systems and platforms. The delegation leader for a May 2019 trip to the United States by the PLAAF Command College summarized the PLAAF’s expanding role to U.S. counterparts: “We used to be mainly a territorial air defense air force. Now, with the expansion of our interests, we definitely cannot just take care of the house, but we must safeguard our territory, our oceanic rights and interests, and our sovereignty.”⁴²⁵

The expectations of China’s leaders—and therefore the stakes for the PLAAF—are now much higher as well. Just as Xi Jinping has directed the PLA to achieve milestones in 2020 and 2035 that enable it to become a “world-class” military by 2049, so has PLAAF leadership sought to operationalize Xi’s and PLA leaders’ guidance by outlining a series of requirements for the PLAAF to become a world-class air force by the middle of this century, as this example articulated by a PLAAF senior official in late 2018 indicates:

cd The 2017 edition is a revised version of the 2015 edition, though no significant differences were found in the content discussed here.

- By 2020, the PLAAF will “build a strategic force that integrates aviation and space power, and strike and defense capabilities.”
- By 2035, improve and modernize “strategic capabilities.”
- By 2049, achieve “the Air Force’s full transformation into a world-class force.”⁴²⁶

Although today the PLAAF’s trajectory increasingly puts it on path to conducting a scope and scale of operations that few other air forces can match, significant challenges remain in fully achieving “integrated air and space capabilities and coordinated offensive and defensive operations.” First, over 15 years after adopting its “integrated and coordinated” concept, the gap between aspiration and reality is still apparent. As one example, the *2019 Defense White Paper*, consistent with nearly every *Defense White Paper* since 2004, continues to describe the PLAAF as “accelerating” its transition away from a territorial air defense force to a force that fulfills the PLAAF’s strategic concept. Second, PLAAF operational capabilities, particularly those of its aviation forces, have not been tested in conflict in many decades.

For foreign air forces seeking to better understand their Chinese counterparts’ strategic concepts, the PLAAF’s limited progress in levying “strategic” effects beyond China’s borders has implications too. Opportunities to engage the PLAAF outside China are relatively limited, as Chapters 6 and 7 detail—the PLAAF is still a minor player on the international stage compared to its sister services the Army, which participates in international peacekeeping operations and staffs the bulk of all attaché offices in Chinese embassies, or the Navy, which has leverages regular overseas missions for port calls and other exchanges.^{ce} As the PLAAF works to develop its vision of a world-class air force, the extent to which PLAAF leaders and scholars assess the PLAAF has achieved its vision of becoming a strategic air force should illuminate major milestones reached in PLAAF strategic thought, thereby outlining the way ahead for the next generation of PLAAF theory and employment.

ce The PLARF, which was recently elevated to a full service, has historically had relatively limited external engagement, likely constrained by strategic considerations on the PLA’s side regarding its dual nuclear-conventional role, as well as a lack of foreign counterparts.

Chapter 3:

PLAAF Organizational Structure

This chapter discusses the changes in the PLAAF's organizational structure since it was created in November 1949. It is divided into the following nine sections plus three appendices:

- PLAAF Party Congress and Party Committee structure
- Overview of the PLAAF's organizational structure
- Theater Command HQ structure
- PLAAF HQ organizational structure
- MRAF and TCAF HQ organizational structure
- The shift from Air Corps to Bases and Command Posts
- PLAAF branches/arms, specialty units, and elements
- Military Unit Cover Designators
- PLAAF Research Academy.

The chapter does not discuss the organizational structure of the PLAAF's academic institutions, which is covered in Chapter 5.

Party Congress and Party Committee Structure

Key Points

- The PLAAF's embedded CCP apparatus carries out political work within the PLAAF and ensures Party control over the air force.
- The PLAAF's Party structure is led by the PLAAF's Party Standing Committee, which meets on a regular basis and is part of the which is part of the Party Committee, which meets about twice a year.
- The Party Committee is part of the Party Congress, which meets every five years.
- Lower-level PLAAF units down to the company level also have Party organizations that carry out political work throughout the PLAAF.
- Not only the headquarters, but also every functional (业务) and administrative (行政) organization within the headquarters, has its own Party Committee system.
- The PLAAF's PC, not the Commander, generally leads the PLAAF Party structure as the Party Secretary, while the Commander holds the Deputy Secretary position.
- Although pilots have traditionally had a clear path for movement up their career ladder from Flight (Squadron) Deputy Commander to Division Commander, the shift to a brigade structure has completely changed this pattern because there is a three-year gap between being a Flight Commander and a Brigade Deputy Commander, so officers can be taken out of the direct command structure for that period.

This section examines the history and composition of the PLAAF's 13 Party Congresses (空军党代表大会) since 1956. The 13th Party Congress was held from 17-19 June 2019 in Beijing.⁴²⁷ The PLAAF's Party Committee (党委), which has a plenary session about every six months, and the Party Standing Committee (党委常务委员会 or 党委常委),

which meets on a regular basis and oversees everything the PLAAF does, are the key components of the PLAAF's decision-making system. The PLAAF Standing Committee is ultimately responsible to the CCP CMC.

According to PLA writings, the PLA's political work (政治工作) system is the means through which the CCP is guaranteed absolute control over the military, which is a Party military and not a State military.⁴²⁸ Structurally, the CCP's absolute leadership over the military is achieved through the Party Committee system.⁴²⁹

Party Committees in the PLA exist in every HQ, including operational, support, academic, and research organizations, at every level down to the company level, which are identified generically as "unit Party Committees" (部队党委). Various types of Party Committees also exist in every 1st-, 2nd-, and 3rd-level functional and administrative department (部门) down to the regiment level, which are identified generically as "department Party Committees" (机关党委). Permeating throughout every level in the PLA, the Party Committee system consists of several types of Party organizations:⁴³⁰

- Party Committees (党委) are established at the regiment level and above.
- Grassroots Party Committees (基层党委) are established at the element (分队) battalion level and in 2nd-level functional and administrative departments based on their size.
- Party General Branches (总支部) are established in functional and administrative departments at the regiment level and above, when the number of Party members is too small for a directly-subordinate Party Committee, but too large for a Party branch.
- Party Branches (党支部) are established at the element company level or in some 2nd- and 3rd-level PLA functional and administrative departments based on their size.
- Party small groups (党小组) are generally established at the platoon level and for ad hoc organizations at any level that are created for specific purposes and have three or more Party members.

As a general rule, the Political Commissar (PC / 政委) normally serves as the Secretary (党委书记) of the Unit Party Committee and the Commander (司令员) serves as the Deputy Secretary (党委副书记). Concerning department Party Committees, the department Director serves as the Secretary and one of the Deputy Directors serves as the Deputy Secretary. However, there are two exceptions. The first exception is if the Commander has ever served as a political officer, then he or she becomes the Secretary. For example, Qiao Qingchen served as the PLAAF PC from February 1999 to May 2002 and then as the Commander until he retired in October 2007. He was the Party Secretary for the entire time.⁴³¹ While he was the Commander, the PC, Deng Changyou, served as the Deputy Secretary. However, when Qiao retired as the Commander, Deng became the Secretary and the new Commander, Xu Qiliang, became the Deputy Secretary.⁴³² The second exception concerns the PLAAF's Logistics Department and Equipment Department, each of which has a Director and a PC. As such, the PC serves as the Secretary and the Director serves as the Deputy Secretary.

Table 3-1 below provides an example of how the unit and department Party Committees are organized from PLAAF HQ down to the company level.

Table 3-1: PLAAF Party Committee Structure

Organization	Type of Committee	Secretary	Deputy Secretary
PLAAF HQ	Party Committee	Political Commissar	Commander
1st-level Staff Dept	Party Committee	Chief of Staff	A Deputy Chief of Staff
1st-level Logistics Dept	Party Committee	Political Commissar	Director
2nd-level Bur	Party General Branch	Director	A Deputy Director
3rd-level Div	Party Branch	Director	A Deputy Director
Corps, Division, Brigade, Regiment HQ	Party Committee	Political Commissar	Commander
Battalion HQ	Grassroots Party Committee	Political Director	Commander
Company HQ	Party Branch	Political Director	Commander

According to the *China Air Force Encyclopedia*, every PLAAF organization at the regiment level or regiment-level equivalent organizations^{cf} and above holds a Party Congress every five years; however, only a few examples were found for Party Congresses held for organizations other than PLAAF HQ, which are noted later.⁴³³

PLAAF Party Congresses are theoretically the highest-level organizations in the PLAAF’s Party Committee system; however, the PLAAF Standing Committee is actually the highest leadership body. The PLAAF Party Congress elects and approves Party Committee members and Discipline Inspection Commission (DIC) members during the 1st Plenary Session of each Party Committee, while another voting session is also held to decide the Standing Committee Members, and Secretary and Deputy Secretary of the Standing Committee, as well as the Secretary and Deputy Secretary of the DIC. The final lists of the Party Standing Committee Members and the DIC Members will also be submitted to the CMC for final approval through the former General Political Department (GPD) and, most likely, through the current CMC Political Work Department.⁴³⁴ The Party Congresses are also the key decision-making entities for Party issues within units at each level and they approve the unit’s or department’s Party Committee report and the report for the DIC at that level. They also discuss and make decisions on key issues, and select and approve the members of the next Party Committee, Party Committee Standing Committee, and DIC. However, it is important to note that Party Congresses are not where key billets of the PLAAF are determined.

Each Party Congress lays the foundation for the next five years. For example, during the 13th Party Congress conference, “the delegates discussed how to thoroughly implement Xi Jinping’s thought on strengthening the military and the military strategy for the new era. They reviewed the work related to the Party building and military building of the Air Force over the previous five years, and drafted major plans for the next five years. The congress is aimed at mobilizing service personnel to push forward the building of a strong and modern air force, and to accomplish the missions and tasks of the new era.”⁴³⁵

The Party Committee for each organization involves all of the organization’s leaders and is the main decision-making body. Every Party member in the PLA belongs to one or more of these organizations. Members can also be chosen to represent their Party Committee at higher level Party Congresses (党的各级代表大会). Participants at each Party Congress are shown below:

^{cf} In the PLA, a battalion-level organization, such as an independent reconnaissance Flight Group, can be organized like and treated as a regiment with a Commander, Deputy Commanders, political officer, a Staff Department, Political Work Department, and Support Department because of its mission not just its size.

- PLAAF HQ and TCAF HQ (former MRAF) Party Congresses include regiment and above representatives.
- Corps HQ Party Congresses include battalion and above representatives.
- Division, brigade, and regiment HQ Party Congresses include company and above representatives.

As shown in Table 3-2, since the PLAAF was created in November 1949, it has held 13 PLAAF HQ Party Congresses. Each Party Congress has taken place in Beijing. Table 3-2 includes the CCP Party Congress number and dates, the PLAAF Party Congress number and dates, and the number of days they were held. Although the first five Party Congresses were not held on a regular basis during the Great Leap Forward (1958-1962) and the Cultural Revolution (1966-1976), each Party Congress has been held approximately every five years since the 5th PLAAF Party Congress in 1978. In addition, the 6th to 13th PLAAF Party Congresses were held from 13 to 20 months after the CCP Party Congress. Unfortunately, no information was found concerning the key issues discussed or implemented during the Party Congresses.

Table 3-2: The PLAAF's 13 Party Congresses, 1956-2019

CCP Party Congress	Month/Year	PLAAF Party Congress	Month/Year	Days
8th	Sep 1956	1st	May-Jun 1956	13
		2nd	Apr 1959	8
		3rd	Sep 1962	11
9th	Apr 1969	4th	May-Jun 1969	20
10th	Aug 1973			
11th	Aug 1977	5th	Apr-May 1978	12
12th	Sep 1982	6th	Nov 1983	6
13th	Nov 1987	7th	Dec 1988	6
14th	Oct 1992	8th	Dec 1993	4
15th	Sep 1997	9th	Feb-Mar 1999	3
16th	Oct 2002	10th	May 2004	3
17th	Oct 2007	11th	May 2009	3
18th	Oct 2012	12th	Jun 2014	3
19th	Oct 2017	13th	Jun 2019	3

PLAAF Party Congress Plenary Sessions and Party Standing Committee Meetings

Whereas the PLAAF Party Congresses since 1978 have met only once every five years, the PLAAF HQ Party Committee holds an average of two Plenary Sessions (全体会议 or 全会) per year to oversee the PLAAF's work, such as reviewing the training plan for the previous six months and setting goals for the next six months. Each session lasts about two days. The first Party Committee plenary session occurs at the end of the Party Congress and the final meeting takes place a couple of days before the next Party Congress convenes.^{cg} With the exception of the timing for these two sessions, there does not appear to be a set pattern determining when the Plenary Sessions are held each year. The Plenary Sessions are attended by the Standing Committee, other Party Committee Members, and special guests. Each session focuses on specific topics.

Despite the lack of a set pattern, the plenary sessions often coincide with other key meetings. For example, the January 2008 meeting was immediately followed by a PLAAF training conference. Between Party Committee plenary sessions, the unit's Standing Committee meets regularly to make decisions that guide the unit's activities,

^{cg} The PLAAF's 10th Party Congress is identified as 空军第十次党代表大会 and the 10th Party Committee's 3rd Plenum is identified as 空军党委十届三次全体会议.

including training, exercises, and personnel. Quite often, various PLAAF regulations or guidance are issued under the name of the PLAAF's Party Committee. For example, the PLAAF's "training guiding thought" is issued by the Party Committee.⁴³⁶

Party Congress Members

The key leaders of the Party Congress are the PLAAF's Party Standing Committee, which consists of the following personnel:

- Political Commissar (Party Secretary)
- Commander (Party Deputy Secretary)
- Deputy Commanders
- Deputy PC
- Chief of Staff (Director, Staff Department; former Headquarters Department)
- Director, Political Work Department (former Political Department)
- Director, Logistics Department
- Director, Equipment Department (former Engineering Department, Aeronautical Engineering Department, and Equipment Technical Department)^{ch, 437}
- Secretary, Discipline Inspection Commission, who was added in 2016.

Note that, since the PLA began its latest reorganization in 2016, the only remaining Logistics Department and Equipment Department in the PLAAF are in PLAAF HQ. These two departments have been merged into a Support Department at all other lower levels beginning with the five TCAF HQ. In addition, the Logistics, Equipment, and Support Departments all have a Director, who serves as the department's Party Deputy Secretary, and a PC, who serves as that department's Party Secretary; however, it does not appear that any Logistics Department or Equipment Department PCs have ever served on PLAAF HQ's Party Standing Committee. This is most likely the case for all other PLAAF Party Standing Committees as well.

It should also be noted that none of these key leaders have assumed their billets at the Party Congress. They either held their position prior to the congress or assumed their position sometime after the congress; however, the attending Party Committee Members always voted unanimously for the existing leaders during the congress. The three tables in Appendix 3-1 provide a list of all of the key leaders in each of the 13 Party Congresses.

Overview of the PLAAF's Organizational Structure

Key Points

- The PLAAF's grade system is the organizing construct for relationships between PLAAF organizations.
- Select versions of the China's *Defense White Papers* provide an overview of the PLAAF's organizational structure.
- Over the past 20 years, the PLAAF has been organized as branches/arms and specialized units, with the main forces usually listed as aviation, ground-based air defense, radar, airborne, communications, and electronic

ch When the PLAAF was founded in November 1949, it created an Air Force Engineering Department (空军工程部) to manage aircraft maintenance; however, in September 1969, it was abolished, leaving the PLAAF with only three first-level departments. Because of significant aircraft maintenance problems during the Cultural Revolution, the PLAAF created the Aeronautical Engineering Department (空军航空工程部) in May 1976 as the fourth first-level department with the responsibility of managing aircraft maintenance and providing representatives at aviation-related factories. In 1992, the name was changed to the Air Force Equipment Technical Department (空军装备技术部), but it still had the same responsibilities. At the same time the CMC created the General Armament Department in 1998, the PLAAF changed the name to the Equipment Department (空军装备部 or 空装). Prior to 1998, the Logistics Department was responsible for maintenance for all non-aviation equipment and weapon systems. With the exception of vehicle maintenance, which remained under the Logistics Department, the Equipment Department took responsibility for maintenance for all equipment and weapon systems in 1998.

countermeasures forces. The most recent major organizational change was the merger of SAM and AAA forces into a single branch/arm as of 2008. In addition, in 2017, the PLAAF changed the name of the 15th Airborne Corps/Force to just Airborne Corps/Force.

- The PLAAF has a tiered, subordinated command structure based on the grade level of each unit headquarters.

PLAAF Organizations and the 15-Grade Structure

In order to understand the underlying framework of these organizational changes, an appreciation of the PLAAF’s grade system as well as its command, control, and coordination structure will be useful. See Table 3-3 below. In addition to assigning grades to individuals and billets, the PLA also assigns grades to every organization, with the grade for all PLAAF organizations the same as that of their respective Commanders and political officers. For example, each Air Division Commander and PC are “division leader-grade” officers; conversely, each air division is also a “division leader-grade” organization.

Table 3-3: PLAAF Organizations and Associated Grades⁴³⁸

Grade	PLAAF Organizations
TC leader	PLAAF HQ
TC deputy leader	TCAF HQ
Corps leader	Airborne Corps; Air Force Research Academy; some PLAAF academic institutions
Corps deputy leader	Bases; some PLAAF academic institutions
Division leader	Aviation and SAM divisions; pilot transition training Bases; Command Posts; some PLAAF academic institutions and research institutes
Division deputy leader (Brigade leader)	Aviation, SAM, AAA, airborne, radar, and communications brigades
Regiment leader (Brigade deputy leader)	Aviation, SAM, AAA, radar, and communications regiments; airfield stations; composite depots; training groups
Battalion leader	Flight and maintenance groups; SAM, AAA, airborne, radar, and communications battalions; some depots
Company leader	Flight and maintenance squadrons; SAM, AAA, airborne, radar, and communications companies; radar and communications stations

One of the major problems affecting the shift from a Base/Command Post-division-regiment-battalion structure to a base-brigade-battalion structure in recent years has been that officers in each career path who serve as a Battalion Commander were previously able to then become a Regiment Deputy Commander and Commander and then a Division Deputy Commander and then a Division Commander or Command Post Deputy Commander and then a Command Post Commander. However, Table 3-4 below shows the career path for a pilot under the new structure, whereby the pilot who serves as a Battalion Commander cannot immediately become a Brigade Deputy Commander because it is two grades above a battalion leader grade. As such, those officers must become a staff officer or possibly a Deputy Chief of Staff in the brigade for three years before having the opportunity to become a Brigade Deputy Commander. As a result, the current generation of mid-level officers is competing for fewer slots during promotion.

Table 3-4: PLAAF Pilot Career Paths

Grade	Division-Regiment Billet Structure	Base-Brigade Billet Structure
Corps deputy leader	Command Post Commander	Base Commander
Division leader	Division Commander; Command Post Commander or Deputy Commander	Base Deputy Commander
Division deputy leader (Brigade leader)	Division Deputy Commander	Brigade Commander
Regiment leader (Brigade deputy leader)	Regiment Commander	Brigade Deputy Commander
Regiment deputy leader	Regiment Deputy Commander	No command billets (Staff Officer, Brigade Deputy Chief of Staff, or “regular pilot” only)
Battalion leader	Flight Group Commander	Flight Group Commander
Battalion deputy leader	Flight Group Deputy Commander	Flight Group Deputy Commander
Company leader	Flight Squadron Commander	Flight Squadron Commander
Company deputy leader	Flight Squadron Deputy Commander	Flight Squadron Deputy Commander

Organizational Changes Identified in the PRC Defense White Papers

Since 1998, the China State Council Information Office has published ten versions of the *Defense White Paper*, but it was not until 2002 that the paper had a separate section covering the PLAAF’s history and structure. At that time, it was fairly revealing for an open publication. Whereas the 2002, 2004, 2006, and 2010 *Defense White Papers* each had one paragraph discussing the PLAAF, the 2008 had nine paragraphs covering history, organizational structure, personnel, education, and missions. This particular white paper was quite helpful in trying to understand the PLAAF’s organizational structure. In hindsight, the 2008 *Defense White Paper* was the first document to indicate that the former SAM and AAA Branches/Arms had been merged into a single Ground Air Defense Branch/Arm (地面防空兵), which is also called the Ground-to-Air Missile Branch/Arm (as of 2019). The last time that any white paper laid out the organizational structure was in 2010. Unfortunately, neither the 2015 nor 2019 *Defense White Paper* provide any information about the PLAAF’s reorganization to the Theater Command air force (TCAF) structure.

The information from the 2002, 2010, and 2012 white papers concerning the overall PLAAF structure is provided below and lays the foundation for the rest of the chapter. It is important to note up front that the PLA and PLAAF use certain terms for various organizations but the U.S. Department of Defense (DOD) translates them differently.⁴³⁹ For purposes of this book, the DOD translations will be used unless they are part of a quotation from an official PLA document. The two key organization structure terms are shown below:

- *Junqu* (军区) and *zhanqu* (战区): The PLA has always used the term military area command (MAC) but DOD has always translated this as Military Region (MR).⁴⁴⁰ In 2016, the PLA reduced the number of MRs to five and renamed them Theater Commands (TC / 战区). Both the PLA and DOD use this term.⁴⁴¹
- *Junqu kongjun* (军区空军) and *zhanqu kongjun* (战区空军): The PLAAF has always translated this as Air Force Under Military Area Command (no acronym) but DOD has always translated it as Military Region Air Force (MRAF).⁴⁴² In 2016, the PLAAF also reduced the number of MRAFs to five and renamed them as Theater Command Air Forces (TCAF / 战区空军). Both the PLA and DOD use this term.⁴⁴³

One of the most authoritative sources for identifying changes in the PLAAF’s organizational structure has been the PRC’s *Defense White Papers*; however, not every one of them has provided information about the structure. The three key reports for this topic have been the 2002, 2010, and 2012 reports as shown below. All three reports identify the seven MRAFs in protocol order; however, only the 2002 report notes the pilot-to-aircraft ratio and

the 2012 report identifies the total number of PLAAF personnel. Although, as discussed later, the PLAAF made several adjustments to its branches/arms and specialized units from 2002 to 2012, the 2012 report only identifies the reorganized branches/arms and did not identify the specialized units. The relevant sections of each report are included below.

According to the 2002 *Defense White Paper*, which provided the most information in any single white paper:⁴⁴⁴

“Adopting a system of combining aviation with ground-to-air defense forces, the Air Force consists of the aviation, surface-to-air missile, antiaircraft artillery and airborne units, as well as communications, radar, electronic countermeasures (ECM), chemical defense, technical reconnaissance and other specialized units. The Air Force has an air command in each of the seven military areas of Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou, and Chengdu. In the major direction and target zones, there are Air Corps or corps-level Bases. The Aviation Branch/Arm is composed of fighter, attacker, bomber, reconnaissance, transport, and support units, usually in the organizational order of division, regiment, group, and squadron. An aviation division generally has under its command two to three aviation regiments and related stations. The aviation regiment is the basic tactical unit. Due to differences in weaponry and tasks, the number of aircraft in an aviation regiment ranges from 20 to 40. The ratio of aircraft to pilots (aircrew) is usually 1:1.2. The ground-to-air missile force and antiaircraft artillery force are usually organized into divisions (brigades), regiments, battalions and companies, and the Airborne Force (空降兵) into corps, divisions, regiments, battalions and companies.”

According to the 2010 *Defense White Paper*:⁴⁴⁵

“The PLAAF has under it an air command in each of the seven military area commands of Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou and Chengdu. It also has under its command an Airborne Corps. Under each air command at military area level are aviation divisions, ground-to-air missile divisions (brigades and regiments), antiaircraft artillery brigades (regiments), radar brigades (regiments), electronic countermeasures (ECM) regiments (battalions), and other units. An aviation division has under its command aviation regiments and related stations.”

According to the 2012 *Defense White Paper*:⁴⁴⁶

“The PLAAF is ... primarily composed of aviation, ground air defense, radar, airborne and electronic countermeasures (ECM) arms.... The PLAAF now has a total strength of 398,000 officers and men, and an air command in each of the seven MACs of Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou and Chengdu. In addition, it commands one Airborne Corps. Under each air command are Bases, aviation divisions (brigades), ground-to-air missile divisions (brigades), radar brigades and other units.”

The PLAAF's Chain of Command for Territorial Air Defense

Concerning the PLAAF's air defense chain of command, the 2012 *Defense White Paper* also states:

“The PLAAF is the mainstay of national territorial air defense, and in accordance with the instructions of the CMC, the PLA Army (PLAA), PLA Navy (PLAN), and People's Armed Police Force (PAPF) all undertake some territorial air defense responsibilities. In peacetime, the chain of command of China's air defense runs from the PLAAF headquarters through the military area commands air commands to air defense units. The PLAAF

exercises unified command over all air defense components in accordance with the CMC's intent. China's air defense system is composed of six sub-systems of reconnaissance and surveillance, command and control, aerial defense, ground air defense, integrated support and civil air defense. China has established an air defense force system that integrates reconnaissance and early warning, resistance, counterattack and protection. For air situation awareness means, air detection radars and early warning aircraft are the mainstay, supplemented by technical and ECM reconnaissance. For resistance means, fighters, fighter-bombers, ground-to-air missiles and antiaircraft artillery troops are the mainstay, supplemented by the strengths from the PLAA air defense force, militia and reserves, as well as civil air defense. For integrated protection means, various protection works and strengths are the mainstay, supplemented by specialized technical protection forces.”⁴⁴⁷

As noted later, however, this structure changed after the 2016 reorganization, whereby PLAAF HQ was taken out of the operational chain of command, even though it still does have some directly subordinate operational units. The following sections will examine each component of the PLAAF's organizational structure from a historical perspective.

Tiered Leadership and C3 Structure

Historically, the PLAAF has always had and still has a five-tiered vertical command, control, and coordination (C3) structure for its aviation (aircraft) and air defense troops (SAM, AAA, and radar), based on the grade structure.⁴⁴⁸ Specifically, a headquarters can only command another headquarters that has a lower grade and can only coordinate with another headquarters that has the same grade. This rule applies to the C3 structure within each service and during joint operations and training between two or more services.^{ci} The section below on the Air Corps, Base, and Command Post level will provide examples of where this has caused problems for the PLAAF. Table 3-5 shows the five-tiered structure, including the past and present key organizations, each of which will be discussed in this chapter. The Air Corps, Bases, and Command Posts identified in the table are headquarters organizations that are structured like any other headquarters with a Commander, PC, deputies, and first- and second-level “departments.” Each organization, in turn, has an internal command post that is subordinate to the Chief of Staff (i.e., Director of the Headquarters / Staff Department).

Table 3-5: Aviation and Air Defense Command Structure

Grade	Pre-2003	2004-2011	2012-2016	2016-Present
Military Region / Theater Command leader	PLAAF HQ	PLAAF HQ	PLAAF HQ	PLAAF HQ
Military Region / Theater Command deputy leader	MRAF HQ	MRAF HQ	MRAF HQ	TCAF HQ
Corps leader and deputy leader	Air Corps and Bases	Command Posts	Bases and Command Posts	Bases and Command Posts
Division leader and deputy leader and Regiment leader	Units	Units; Command Posts	Units; Command Posts	Units; Command Posts
Battalion leader down to Platoon leader	Elements	Elements	Elements	Elements

The following sections provide an overview of each tier.

^{ci} For the PLA, “joint” (联合) refers to two or more services working together, but the PLA also uses it for bilateral and multilateral training with foreign countries, which the U.S. calls combined. Unfortunately, the PLA is not consistent and often uses the term for two or more branches/arms, which is actually combined arms (合成/合同).

Theater Command Headquarters Structure

Key Points

- Since the 2016 reforms, operational command for all subordinate Theater Command services and units has now been firmly established within the TCs, not the services; however, some units, such as the Airborne Force and nuclear forces, are still directly subordinate to the service headquarters.
- The PLA's five TCs have been endowed with joint command.
- PLAAF representation in top TC command billets is growing.

Following the 2016 reorganization, the five TC HQs have begun to become truly joint organizations. The next section explains this change in further detail. During the first year of “above the neck” reorganization, very few changes were made to the Commander and PC billets, such that all of the Commanders and PCs were Army officers and merely changed their title from MR Commander and PC to TC Commander and PC. However, major changes occurred when Vice Admiral Yuan Yubai, who was the North Sea Fleet Commander, became the Southern TC Commander in January 2017, and PLAAF General Yi Xiaoguang, who was one of the Deputy Chiefs of Staff in the CMC Joint Staff Department (JSD), became the Central TC Commander in August 2017.⁴⁴⁹ In August 2017, PLAAF General Fan Xiaojun became the Northern TC PC.

Since early 2016, all five TC HQs have had one permanent Army and Air Force Deputy Commander. The three TCs (Eastern, Northern, and Southern) that have a TC Navy (TCN) HQ (former Fleet HQ until early 2018) have also had a permanent Navy Deputy Commander.⁴⁵⁰ For the latter, each TC Army (TCA), TCN, and TCAF HQ Commander serves as a concurrent TC Deputy Commander.⁴⁵¹ Of note, the PLA did not create any TC Rocket Force HQs and none of the TCs have a permanent Rocket Force Deputy Commander.

In addition, one of the permanent Deputy Commanders also serves concurrently as the Chief of the Joint Staff (i.e., Director of the Joint Staff Department) for each TC HQ and it appears that one of the Deputy PCs also serves concurrently as the Director of the Political Work Department under each TC HQ. Still, all personnel in the TC Joint Operations Command Centers (JOCC) fill permanent, as opposed to rotational, billets for each of the services, including the PLAA, PLAN, PLAAF, and PLARF.

PLAAF Headquarters Organizational Structure

Key Points

- The highest leadership organization within the PLAAF, PLAAF HQ is equivalent to the U.S. Air Force's Air Staff.
- PLAAF HQ's structure has evolved in a similar fashion to that of the PLA ground forces, with four main functional (业务) and administrative (行政) departments (机关/部门) divided into the Staff, Political Work, Logistics, and Equipment Departments.
- Subordinate HQs through the regiment level have a similar structure, with the exception that the Logistics and Equipment Departments at the TCAF and below levels have been merged into a single Support Department.

PLAAF HQ (空军) is the highest leadership organization in the PLAAF. Under the leadership of the CMC, the PLAAF HQ's primary missions prior to the 2016 force reduction and reorganization were to manage and oversee Air Force reform and modernization and to execute direct operational command authority over some PLAAF units, such as the 15th Airborne Corps and the 26th Air Transport Division in Beijing.^{cj, 452} Following the reorganization,

^{cj} The use of the word “some” probably indicates that PLAAF Headquarters had control over certain operational units, such as the 15th Airborne Corps and 26th Air Division, that are directly subordinate to PLAAF Headquarters, while the MRAF Headquarters have operational control over the aviation, SAM, AAA, radar, and communications units in their areas of operations.

the CMC Chairman, Xi Jinping, declared that a three-tier combat command system from the CMC to the TCs to the units (e.g., corps, divisions, brigades, and regiments) would be created.⁴⁵³ But this system would be separate from the administrative chain of command which presently runs from the CMC to the four service (军种) headquarters, i.e. Army (PLAA), Navy (PLAN), Air Force (PLAAF), and Rocket Force (PLARF), to the units. The PLA's nuclear forces are still directly subordinate to the service headquarters and the CMC. Under this new system, service headquarters are responsible for “force building” functions, such as organizing, manning, equipping, and training units, while the TCs are responsible for operational command. However, PLAAF HQ still exercises command over directly subordinate units, including special mission (intelligence, surveillance, and reconnaissance) aviation units, one transport division, one transport and search and rescue brigade, and the Airborne Corps.^{ck} As discussed in Chapter 1, although the Navy, Air Force, and Rocket Force (former Second Artillery Force) Commanders were added as CMC Members in 2004, they were all not added to the CMC at the 19th CCP Party Congress in October 2017. No specific information was found as to why the Commanders were not added.

This subsection discusses the PLAAF HQ structure after 11 November 1949 creation. The subsequent sections discuss the organizational structure for subordinate headquarters, including the MRAF / TCAF, corps, division, brigade, and regiment headquarters levels. Of note, the PLA does not have a term for headquarters at any level. The context of the information makes it clear, however, whether it is about the organization in general or the headquarters. This book does use the term headquarters (HQ) to make the distinction at every level.

Components of PLAAF Headquarters' Organizational Structure

The structure for the headquarters and each subordinate organization can be examined through five different components as shown below. Note: The Chinese term *bu* (部) refers to a department, while the term *bumen* (部门) is the generic term for department and can be a department, bureau (局), division (处), office (科), or branch (股), depending on what level it is within the internal structure or the level from PLAAF HQ down to the regiment level. As such, the generic term will always be enclosed in parenthesis as in “department.”

- Name, such as Staff Department or Operations Bureau
- Grade, such as corps leader
- Size, which determines whether it is a department, bureau, etc.
- Responsibility
- Level within the HQ, which is composed of first-level departments (一级部), each of which had several second-level “departments” (二级部) that were a combination of departments (部) and bureaus (局), and sometimes third-level “departments” (三级部).

History of PLAAF Headquarters' Organizational Structure⁴⁵⁴

This subsection discusses the history of PLAAF HQ's organizational structure since 1949. Over the past 50 years (1969-2019), the overall administrative organization from PLAAF HQ down to the lowest unit can be compared to a deck of cards that occasionally gets reshuffled.^{cl} Only a few new cards have been added, while the other cards have merely been moved to a different location in the deck.

ck The PLA does not have a formal term for “headquarters” as in PLAAF Headquarters; it just uses “Air Force” (空军) and the meaning is taken from the context of whether it relates to PLAAF HQ or the PLAAF in general. The PLA does use the term “*zhihuibu*” (指挥部) for command headquarters, but it only applies to certain types of organizations such as an engineering unit.

cl For example, over the years, the Training Department and Schools Department have been first-level departments, have merged, and have been separated several times, but their functions have not changed.

In May 1944 at Yan'an, Shaanxi Province, the CMC established a subordinate Aviation Section.^{cm} In March 1949, the CMC upgraded the Aviation Section to an Aviation Bureau. On 11 November 1949, the CMC abolished the Aviation Bureau and formally established the PLAAF, which initially consisted of elements of various Army units. The PLAAF began to create subordinate departments within the headquarters and a corresponding administrative Aviation Division in each of the existing MR.

For all practical purposes, the administrative organization has always been similar to the structure of the ground forces. Between October 1949 and mid-1957, the CMC created a total of eight subordinate PLA General Departments (General Staff, Training Inspector General, Armed Forces Inspection, General Political, General Cadre, General Logistics, General Finance, and General Armament) and their second-level departments and bureaus.

Between mid-1957 and late 1958, the eight General Departments underwent a major reorganization, so that, by the end of 1958, there were only three General Departments—General Staff Department (GSD), General Political Department (GPD) and General Logistics Department (GLD). This structure remained until the General Armament Department (GAD) was added in 1998.

The PLAAF HQ started out with only three first-level departments—Headquarters, Political, and Logistics—but by the end of 1949, PLAAF HQ adjusted its structure to somewhat match the eight PLA General Departments.^{cn} As a result, from 1949 to 1955, it had six first-level departments—Headquarters, Political, Training, Engineering, Logistics, and Cadre/Personnel.

In May 1955, PLAAF HQ was restructured to include 11 first-level departments plus a Military Law Division. Between 1955 and 1969, further additions and mergers occurred, but the number of first-level departments remained at 11. In conjunction with a PLA-wide reduction in force in 1969, the number of first-level departments was reduced to the Headquarters, Political, and Logistics Departments.

Throughout its history, one of the lessons learned about its administrative organization was the need to have a separate structure for aircraft maintenance. Maintenance for all other equipment and weapon systems came under the PLAAF's Logistics Department and the GLD. Although the PLAAF tried to match its structure to the three General Departments' structure in 1969, it found the need to re-create a separate department for aircraft maintenance. Therefore, in May 1976, the Aeronautical Engineering Department, which had been downgraded to a second-level department in 1969, was re-established as the fourth first-level department. In November 1992, the PLAAF changed the name to the Equipment-Technical Department.^{co} Following the April 1998 creation of the GAD, the PLAAF changed the name of the Equipment-Technical Department to the Equipment Department and moved several second-level departments from the Headquarters and Logistics Departments to the Equipment Department.^{cn} In this particular case, it was a matter of the PLA changing the structure of the general departments to meet that of the services and branches/arms, rather than the other way around.^{cn}

Since 1969, the overall organizational structure from PLAAF HQ down to the regiment level has not changed significantly, even though some components have been transferred between different departments. PLAAF HQ, which is located in Beijing, is organized into four first-level departments—Headquarters Department (司令部), Political Department (政治部), Logistics Department (后勤部), and Equipment Department (装备部). Each department can have subordinate second- and third-level functional and administrative departments (部), bureaus (局), divisions (处), offices (科), sections (组), and/or branches (股). The PLA identifies all of these organizations under the generic term “departments” (部门).^{co}

cm The actual name for the Central Military Commission (CMC) is the Military Commission of the Central Committee (中央军事委员会 or 中央军委) of the Chinese Communist Party.

cn During the 1990s, the PLA Navy had five first-level departments—Headquarters, Political, Logistics, Equipment Repair Department, and Equipment Technical Department—and the Second Artillery Corps had four first-level departments—Headquarters, Political, Logistics, and Technical Equipment. When the General Equipment Department was created in 1998, all of the services and branches/arms reorganized their structure to completely match the four general departments.

co The PLA uses the term *jiguan* (机关) or *bumen* (部门) for the four functional and administrative departments, which are often merely translated as

Each organization down to the regiment level has the same basic departmental structure. At the division and regiment levels, many departments are combined into smaller functional and administrative organizations, such as combining operations and training into a regiment's Operations and Training Branch. The PLAAF, like the PLA as a whole, does not have any functional and administrative organizations below the regiment level.

The following subsections provide information on the organizational structure at PLAAF HQ for much of its recent history, including information on the command staff and key second-level departments, until 2016, when the PLA implemented the 11th force reduction and major reorganization.⁴⁵⁸ The following section then discusses changes since 2016.

Headquarters Department (Pre-2016)

The Headquarters Department (空司 / 空军司令部) was the highest-level functional and administrative organization within PLAAF HQ that was responsible for what the PLAAF calls military (军事) or command (指挥) work on behalf of the PLAAF's Party Committee and leadership.^{cp, 459} Its primary responsibilities include managing air force unit deployments, battlefield development, and combat command. It was also responsible for the PLAAF's organizational structure, personnel management, enlisted force personnel records, intelligence, communications, radar, air traffic control, and weather support, as well as researching air force military theory, and managing education and safety.⁴⁶⁰

The leadership of the PLAAF's Headquarters Department included the Chief of Staff (参谋长), who is the Department Director, and several Deputy Chiefs of Staff (副参谋长), each of which has a different group of second-level departments to oversee.

Political Department (Pre-2016)

The Political Department (空政 / 空军政治部) was the highest-level leadership, functional, and administrative organization within PLAAF HQ for political work. The Political Department was responsible for keeping officer personnel records, propaganda, security, education, cultural activities, civil-military relations, Party discipline, and Party organizations within the PLAAF. Political work is discussed in more detail in Chapter 6.⁴⁶¹

The leadership of the PLAAF's Political Department includes the Director (主任) and several Deputy Directors (副主任). The main second-level departments are shown in Table 3-8.

Logistics Department (Pre-2016)

The Logistics Department (空后 / 空军后勤部) was the highest-level leadership, functional, and administrative organization within PLAAF HQ for logistics work, which includes overseeing transportation, finances, materials and supplies, POL, and medical care.⁴⁶²

The leadership of the PLAAF's Logistics Department includes the Director (部长), PC (政委), Deputy Directors (副部长), Deputy PC (副政委), Chief of Staff (参谋长) (i.e., Director of the Headquarters Department), and Director of the Political Department (政治部主任). The main second-level departments are shown in Table 3-9.

"organs." Even though the PLA uses second- and third-level "departments," this is a generic term because some of them are technically bureaus (at the second level) and divisions (at the third level). For major changes between 2000 and 2012, see "PLA Air Force Organizational Reforms: 2000-2012."

cp The PLAAF often refers to certain officers as "military officers" or "military cadre." This means that they are in the military/command track. The PLAAF traces this concept back to the early days of the Red Army, when officers were designated as either military/command cadre or political cadre in order to differentiate between them and the peasants who made up the remainder of the force.

Equipment Department (Pre-2016)

The Equipment Department (空装 / 空军装备部) was the highest-level leadership, functional, and administrative organization within PLAAF HQ for equipment work, which includes the birth-to-death life-cycle management, repair, and maintenance of all PLAAF weapon systems and equipment.⁴⁶³

The leadership of the PLAAF's Equipment Department includes the Director (部长), PC (政委), Deputy Directors (副部长), Deputy PC (副政委), and Director of the Political Department (政治部主任). The main second-level departments are shown in Table 3-10.

One of the most significant changes to the Equipment Department during the 2000s was the creation of the second-level Armament General-Use Equipment Department (空军军械通用装备军事代表部) and its subordinate Air Force Armament General-Use Equipment Military Representative Bureau (空军军械通用装备军事代表局), which first appeared in late 2004 and early 2005, respectively.⁴⁶⁴

Only a few items for this department were found online. The department has a Director (部长), whose rank is major general, Deputy Directors (副部长), and a Ground-based Weapons Division (地面武器处).⁴⁶⁵

The bureau has a Director (局长) and a subordinate Political Department, a Cooperation Office (协办), and a Management Division (管理处). The Military Representative Bureau is responsible for guiding all of the PLAAF's military representatives assigned to regional bureaus and offices and to individual non-military research institutes and factories to monitor the development and production of PLAAF systems. It is roughly equivalent to the USAF's Air Force Plant Representative Office (AFPRO) system, except that the PLAAF's military representatives spend most, if not all, of their career in the same office, while the USAF's representatives rotate every two to three years.

Although the PLAAF created its first military representative offices in factories in 1950, it did not begin creating regional bureaus (地区军事代表局) until 1994. The PLAAF currently has a three-tiered military representative structure: PLAAF HQ, regional bureaus and offices, and factory or research institute representative offices.⁴⁶⁶

PLAAF Headquarters Structure Changes in 2016⁴⁶⁷

Following the 2016 reorganization, PLAAF HQ still has four first-level departments, although two of them have been renamed.⁶⁹ Concerning the size of each organization, the number of personnel in each department in PLAAF HQ was cut in half, and some second-level organizations were either renamed, merged, or abolished. Also, it appears that some new second-level organizations have been established. Furthermore, many third-level organizations either appear to have been merged or abolished. Due to the changes in size, the status of some of these organizations have changed from that of a department (部) to a bureau (局) at the second level, or to a division (处) at the third level. Of note, the former second-level PLAAF Discipline Inspection Commission (DIC) has become an independent organization with its Secretary on the PLAAF Standing Committee. In all, these changes mirror those across the PLA as part of the overall reorganization. See Table 3-6 below.

cq Under the PLAAF, the former Headquarters Department is now the Staff Department, while the former Political Department is now the Political Work Department.

Table 3-6: PLAAF Headquarters Grade and Rank Structure

Grade	Leaders	Staff Department	Political Work Department	Logistics Department	Equipment Department
TC leader	Commander and PC (GEN / LTG)				
TC deputy leader	Deputy Commanders; Deputy PCs; Secretary of Discipline Inspection Commission	Chief of Staff (LTG / MG)	Director (LTG / MG)		
Corps leader	(LTG / MG)	Deputy Chiefs of Staff (MG / LTG)	Deputy Directors (MG / LTG)	Director / PC (MG / LTG)	Director / PC (MG / LTG)
Corps deputy leader				Deputy Directors (MG / SCOL)	Deputy Directors (MG / SCOL)

The PLAAF DIC was previously a division leader-grade second-level department under the service’s former political department before it was elevated to a first-level organization with the grade of TC deputy leader in 2016. Given that the position is listed ahead of the four first-level department (Staff, Political Work, Logistics, and Equipment) leaders, it is therefore likely ranked higher than those four departments in protocol order. As the primary body responsible for Party discipline and overseeing micro-corruption, the PLAAF DIC is primarily responsible for keeping malfeasance within the Air Force in check, and coordinates closely with the CMC Discipline Inspection Commission (CMC DIC). To help put this in perspective, after assuming the leadership positions for the Party, state, and military in 2012, Xi Jinping implemented a broad anti-corruption campaign across all three components.⁴⁶⁸ This included creating a Central Commission for Discipline Inspection (CCDI) under the CCP Politburo and appointing a Politburo Standing Committee Member as the Secretary-General. The CMC’s DIC was also subordinated to the CCDI and the Secretary-General was one of the Deputy Directors (DDIR) of the General Political Department (GPD). In 2016, Xi upgraded the CMC DIC to one of the 15 newly-created CMC organizations. In 2017, the Secretary-General became one of the four CMC Members along with the chairman and two vice chairmen.

The PLAAF’s former Headquarters Department (空司 / 空军司令部), now called the Staff Department (SD / 空参 / 空军参谋部), was the highest-level functional and administrative organization within PLAAF HQ that oversees the PLAAF’s “military” (军事) or “command” (指挥) work on behalf of the Air Force’s Party Committee and leadership.⁴⁶⁹ Prior to the recent reorganization, its primary responsibilities included managing air force unit deployments, battlefield development, and combat command. Despite that it has since been stripped of this authority in the latest reforms,⁴⁷⁰ the Staff Department is still responsible for the PLAAF’s organizational structure, personnel management, intelligence, communications, radar, air traffic control, and weather support, as well as researching air force military theory, and managing education and safety.⁴⁷¹ See Table 3-7 below.

Leading the PLAAF’s Staff Department is the Chief of Staff (参谋长) who is the Department Director and holds the same grade (TC deputy leader) as the Deputy Commanders. As the lynchpin of the command process entailing various PLA units, the Chief of Staff is the “principal organizer and coordinator of military operations” and is “responsible for implementing the Commander’s decisions.”⁴⁷² The Staff Department also has several Deputy Chiefs of Staff (副参谋长), each of whom is responsible for different portfolios within the service’s Staff Department. For comparison purposes, the first and second columns in Tables 3-7 and 3-8 below provide some representative changes for the former Headquarters and Political departments’ primary second-level departments.⁴⁷³ As can be observed, some entities were downgraded to bureaus, whereas others have retained their previous nomenclature, implying that they have not been downsized. The left hand column for Tables 3-7 to 3-10 shows the organizations that were identified before the 2016 reorganization and the right hand column shows the organizations that have

been identified since then. The entry “unknown” means that it is not clear if that organization existed before or after the reorganization. Some of them may have disappeared, merged, or were just not discovered. Each second-level bureau has one or more third-level divisions. None of the information in the four tables is organized in protocol or alphabetical order.

Table 3-7: Comparison of PLAAF Headquarters Department / Staff Department (Pre- and Post-Reform)

Pre-Reorganization (Headquarters Department)	Post-Reorganization ^{cr} (Staff Department)
General Office (办公室)	General Office (办公室)
Directly Subordinate Work Department (直属工作部 / 直工部)	Directly Subordinate Work Bureau (直工局)
Operations Department (作战部) ^{cs}	Operations Bureau (作战局)
Intelligence Department (情报部) ^{ct}	Unknown
Communications Department (通信部)	Information and Communications Bureau (信息通信局)
Informatization Department (信息化部) ^{cu}	
Military Training Department (军事训练部)	Training Bureau (训练局)
Military Affairs Department (军务部) ^{cv}	Unknown
Ground-based Air Defense Department (地面防空兵部)	Ground-based Air Defense Bureau (地防局)
Electronic Countermeasures and Radar Department (电子对抗雷达部 / 电雷部)	Electronic Countermeasures and Radar Bureau (电雷局)
Air Traffic Control Department (航空管制部 / 航管部)	Air Traffic Control Bureau (航管局)
Pilot Recruitment Bureau (招飞局) ^{cw}	Pilot Recruitment Bureau (招飞局)
Flight Safety Bureau (飞行安全局)	Flight Safety Bureau (飞行安全局)
Technology Bureau (技术局) ^{cx}	Unknown
Unknown	Test Flight Bureau (试飞局)
Unknown	Aviation Bureau (航空兵局)
Confidential Bureau (机要局) ^{cy}	Confidential Bureau (机要局) ⁴⁷⁴
Unknown	Unit Management/Administration Bureau (部队管理局)
Unknown	Planning and Organization Bureau (规编局/规划与编制局)
Weather Bureau (气象局)	Unknown
Unknown	Veteran (Retired) Cadre Service Division (老干部服务处)
Aviation Theory Research Department (航空理论部) ^{cz}	Unknown

^{cr} Note: Organizations that have retained their previous nomenclature implies that their status has not been downgraded. The Aviator Recruitment Bureau also manages several subordinate selection centers in each of the seven MRAF HQs; for example, it has a Lanzhou Selection Center (兰州选拔中心).

^{cs} The Operations Department and Training Department are combined at the regiment level as the Operations and Training Branch (作战股). They are sometimes, but not always, combined at the division level as the Operations and Training Office (作训科).

^{ct} The 2002-2006 *Air Force News* did not have any references to an Intelligence Department in PLAAF Headquarters or any of the MRAF headquarters or below. However, this matches the GSD structure and should be included.

^{cu} This was most likely previously-known as the Communications Department.

^{cv} The Military Affairs Department is responsible for the organizational structure of the PLAAF, including the table of organization and equipment (TO&E), billets, MUCDs, aircraft tail numbers, and license plate numbers. It also serves as the personnel office for the enlisted force.

^{cw} This bureau has subordinate selections centers in each of the seven MRAF headquarters. For example, the bureau has a Lanzhou Selection Center (兰州选拔中心).

^{cx} The term *jishu* (技术) is translated as both “technical” and “technology” depending on the context. According to 27 October 2005 and a 15 April 2006 *Air Force News* articles, as early as October 2005, the Headquarters Department in PLAAF Headquarters created a subordinate Technology Bureau (技术局) as a result of the 2003-2004 downsizing by merging several units that were dispersed throughout the PLAAF. When it was created, the bureau confronted a situation where it did not have any regiment-level organizations to carry out the necessary work for the bureau staff. This bureau is responsible for unidentified units in Sichuan, Yunnan, Xinjiang, Tibet, and Guangdong.

^{cy} The Confidential Bureau is responsible for managing information and communications security to include ensuring the proper handling of classified documents.

^{cz} First noted based on interviews with PLAAF officers. This department was established around 1999. It is also noted in the comments section of Cai Fengzhen and Tian Anping, [*The Science of Integrated Air and Space Operations*] [空天一体作战学], (Beijing, PLA Publishers, August 2006), 308. The term *hangkong* (航空) is normally translated as “aviation” but is occasionally translated as “flight,” depending on the context.

In 2018, the Staff Department also had the following subordinate organizations:

- Central Station Center (总站某中心主任,政委) that has subordinate 1st, 2nd, and 3rd offices (一室,二室,三室).⁴⁷⁵ It is not clear what the mission/responsibility is, but it is most likely a regiment-level main communications station (通信总站) or a radar intelligence central station (雷达情报总站).
- New Soldier Training Brigade (新训旅).
- Security Battalion (警卫营).
- Communications Brigade (通信旅).

The PLAAF Political Work Department (PWD / 空政 / 空军政治工作部), which was formerly known as the PLAAF Political Department (空政 / 空军政治部), is the highest-level leadership, functional, and administrative organization within PLAAF HQ for political work.⁴⁷⁶ It is responsible for keeping officer personnel records, propaganda, security, education, cultural activities (e.g., song and dance troupes, and public events), civilian-military relations, Party discipline, and Party organizations within the PLAAF.⁴⁷⁷

The leadership of the PLAAF's Political Work Department includes the Director (主任) and two or more Deputy Directors (副主任).⁴⁷⁸ Each Deputy Director is responsible for guiding and monitoring activities in one or more second-level departments. Prior to the reorganization, all matters concerning enlisted personnel came under the PLAAF's former Headquarters Department's Military Affairs Bureau; however, the PLAAF set up an Enlisted Soldier and Civilian Personnel Bureau (known as空政兵文局, 空政兵员与文职人员局, or 空政兵文局) under its new Political Work Department that now manages all enlisted force and civilian personnel.⁴⁷⁹

Table 3-8: Comparison of Political Department / Political Work Department (Pre- and Post-Reform)

Pre-Reorganization (Political Department)	Post-Reorganization (Political Work Department)
Headquarters Department (司令部)	Unknown
General Office (办公室)	General Office (办公室)
Cadre Department (干部部) ^{da}	Cadre Bureau (干部局)
Propaganda Department (宣传部)	Propaganda Bureau (宣传部)
Discipline and Inspection Department (纪检部)	(Moved to Discipline Inspection Commission)
Organization Department (组织部)	Unknown
Security Department (保卫部) ^{db}	Unknown
Liaison Department (联络部)	Unknown
None	[Enlisted] Soldier and Civilian Personnel Bureau (空政兵文局 / 兵员与文职人员局)

The PLAAF Logistics Department (LD, 空后 / 空军后勤部), which has both a Director and a PC, is the leading functional and administrative organization within PLAAF HQ overseeing logistics work, including transportation, finances, materials and supplies, POL (petroleum, oil, and lubricant) as well as medical care.⁴⁸⁰ While it has not been renamed under the reorganization; each of its former second-level departments (except perhaps the staff department and the political work department) has now become a bureau. Of these bureaus, they have either been merged or abolished. The leadership of the PLAAF LD includes the Director, PC, Deputy Directors, Deputy PC,

^{da} The Cadre Department has at least a subordinate Legal Consultant Division (法律顾问处), Welfare Division (福利处), and Veteran Cadre Division (老干部局).⁴⁸¹ Table 3-9 shows the common primary second-level departments and the currently identified as well as probable second-level organizations under the PLAAF LD.

^{db} The Security Department is responsible for the PLAAF's security police, except for key personnel guard units (*jingwei budui*; 警卫部队), which are directly subordinate to the Headquarters Department. Although *Air Force News* did not have any specific references to the Security Department within the PLAAF Headquarters' Political Department, it had several references to Security Divisions (*baowei chu*; 保卫处), Security Offices (*baowei ke*; 保卫科), and Security Branches (*baowei gu*; 保卫股) at lower levels. Table 3-9: Comparison of PLAAF Logistics Department

Since the 2003-2004 downsizing, the PLAAF has merged the Propaganda and Security branches/arms at the regiment level so they are now called *xuanbao gu* (宣保股).

(Pre- and Post-Reform)

Pre-Reorganization	Post-Reorganization
Headquarters Department (司令部)	Probable Headquarters Department (司令部)
Political Department (政治部)	Political Work Department (政治工作部)
Finance Department (财务部)	Finance Bureau (财务局)
Military Transportation Department (军交运输部)	Transport and Delivery Bureau (运投局 / 运输投送局) ⁴⁸³
Directly Subordinate Supply Department (直属供应部 / 直供部)	Procurement and Supply Bureau (采购供应局)
Air Force National Defense Engineering Development Command Department (空军国防工程建设指挥部)	Probable Air Force National Defense Engineering Development Command Bureau (空军国防工程建设指挥部)
Real Estate Management Bureau (房地产管理局 / 房管局) ^{dc}	Real Estate Management Bureau (房管局)
Air Force General Hospital (总医院)	Air Force General Hospital (总医院)
Ordnance General-Use Equipment Department (军械通用装备部)	Ordnance General-Use Equipment Bureau (军械通用装备局)
Unknown	Military Facilities Construction Bureau (军事设施建设局)
Unknown	Combat Service Planning Bureau (战勤计划局)
Health Department (卫生部)	Health Department (卫生部)
Unknown	Materials Bureau (财务局)
Airfield and Barracks Department (机场营房部)	Unknown
Health Department (卫生部)	Probable Health Department (卫生部)
Audit Bureau (审计局)	Probable Audit Bureau
Air Force Engineering and Design Research Bureau (空军工程设计研究局)	Unknown
Quartermaster, Materials, and Fuel (POL) Department (军需物资油料部) ^{dd}	Unknown

As noted earlier, when the PLAAF was founded in November 1949, it set up an Air Force Engineering Department (空军工程部) to oversee aircraft maintenance. Since then, the organization has been revamped multiple times,⁴⁸⁴ with the current iteration known as the PLAAF Equipment Department (空装 / 空军装备部)—the highest-level leadership organization within PLAAF HQ for equipment work, including the cradle-to-death life-cycle management, repair, and maintenance of all air force weapon systems and instruments, except transportation vehicles.⁴⁸⁵ While its name has not changed under the recent reorganization, each of its former second-level departments (apart from its political work department, which is now a bureau) has either been merged or abolished. Similar to its PLAAF Logistics Department counterpart, the PLAAF Equipment Department is led by a Director and a PC.⁴⁸⁶ The former Ordnance General-Use Equipment Department (军械通用装备部), which now likely still exists as a bureau, is responsible for overseeing all PLAAF military representative offices throughout the country. Table 3-10 shows the

former primary second-level departments and the currently identified second-level organizations under the PLAAF Equipment Department.⁴⁸⁷

Table 3-10: Comparison of PLAAF Equipment Department (Pre- and Post-Reform)

dc The Real Estate Management Bureau was formally set up in 2004. It had its origin in 1985 as part of the one million force reduction. In 1986, the former General Staff Department approved its creation to manage military housing and property. It has been reorganized several times but was always outside the formal organizational structure and managed by civil service personnel. With its formal establishment in 2004, it was placed under military management. Its management system now has a 3-tiered structure: bureaus (局), divisions (处), and local offices (地区办事处). The bureau's primary mission is to receive the PLAAF's real estate assets that had been vacated and to oversee their maintenance so that they can be used by units for multiple purposes, including the storage of supplies during peacetime and wartime.

dd In 2003, the Materials Department (物资部) and Fuels Department (油料部) were merged. At some point later, probably January 2004, the Quartermaster Department (军需部) was also merged into it. However, the three components are separated at the regiment level into a Quartermaster Branch (军需股), Materials Branch (物资股), and Fuels Branch (油料股).

Pre-Reorganization	Post-Reorganization
Comprehensive Planning Department (综合计划部) ^{de}	Comprehensive Planning Bureau (综合计划局)
Political Department (政治部)	Probable Political Work Department (政治工作部)
Air Materiel Department (航材部) ^{df}	Unknown
Airfield [Maintenance] Department (外场部) ^{dg, 488}	Airfield [Maintenance] Support Bureau (外场保障局)
Scientific Research and Procurement Department (科研订货部) ^{dh}	Probable Scientific Research and Procurement Bureau (科研订货局)
Major Type/Model Department (重点型号部)	Probable Major Type/Model Bureau (重点型号局)
Directly Subordinate Work Department (直属工作部 / 直工部)	Directly Subordinate Work Bureau (直属工作局 / 直工局)
Aviation Engineering Management Department (航空工程管理部) ^{di}	Unknown
Unknown	Project Management Bureau (工管局)
Unknown	Equipment Purchasing Bureau (装购局)
Unknown	Ground Equipment Bureau (地装局)
Unknown	Testing & Inspection Bureau (试监局)
Armament General-Use Equipment Military Representative Department (空军军械通用装备军事代表部) ^{dj}	Armament/Ordnance General-Use Equipment Bureau (军械通用装备局)
Unknown	PLAAF Flight Safety Bureau (空军飞行安全局)
Unknown	Aviation Equipment Bureau (空装航装局)

MRAF and TCAF HQ Organizational Structure

Key Points

- Since 2000, the protocol order of PLAAF-led regional HQs (MRAFs / TCAFs) has aligned with the PLA's overall regional HQs (MRs / TCs), reflecting reforms that have gradually increased jointness across the PLA.
- During the transition from seven MRAFs to five TCAFs in 2016, many TCAF HQ offices shrank in terms of personnel, the two eliminated MRAFs became Bases, and their Commanders became permanent Deputy Commanders for two of the new TCs.

As noted in Chapter 1, the PLAAF had seven MRAF HQs in May 1955, including the Shenyang, Beijing, Lanzhou, Nanjing, Guangzhou, Chengdu, and Wuhan MRAFs. As shown in Chapter 1's Table 1-3, in 1958 and 1967, the PLAAF created an eighth MRAF in Fuzhou and ninth MRAF in Jinan, respectively. However, in 1985, the PLAAF reorganized the MRAFs once again to match the seven MRs. Specifically, it abolished the Fuzhou MRAF and merged it into the Nanjing MRAF and abolished the Wuhan MRAF and merged it into the Guangzhou and Jinan MRAFs.

The seven MRAFs, in protocol order, were Shenyang (沈空), Beijing (北空), Lanzhou (兰空), Nanjing (南空), Guangzhou (广空), Jinan (济空), and Chengdu (成空).^{dk} However, when the PLA implemented a new military unit

de This department also serves the function of a Headquarters Department.

df This department was previously under the Logistics Department.

dg The Field Maintenance Department is responsible for all first- and second-level maintenance at the aviation division and regiment level. This department also has directly subordinate repair and spare-part factories for second-level maintenance in each MR. It is responsible for all first- and second-level maintenance at the aviation division, brigade, and regiment level. This department also has directly subordinate repair and spare-part factories for second-level maintenance in each Military Region / Theater Command Air Force.

dh Somewhere between 2003 and 2005, the PLAAF merged the Scientific Research Department (科研部) and the Equipment Procurement Department (装备订货部) into a single department.

di In this instance, given the historical context of the term, *gongcheng* (engineering) most likely refers to aircraft maintenance.

dj This bureau was created in August 2004 with a Director and Political Commissar. It is not clear whether it is a separate second-level bureau under the Equipment Department or if it is subordinate to the Equipment Department's Armament General-Use Department.

dk Protocol order plays an important role in the PLA's organizational structure. For example, in recent decades the army, air force, and navy have always been listed in the same order. The PLA Rocket Force did not become a service until 2016, at which time it became fourth in protocol order. The four general departments were always listed as the GSD, GPD, GLD, and GED, and the PLAAF's counterparts are always listed as the Headquarters/Staff Department, Political/Political Work Department, Logistics Department, and Equipment Department. Prior to 2000, within the PLAAF, the seven MRAFs were virtually always listed in the order of Shenyang, Beijing, Lanzhou, Nanjing, Guangzhou, Jinan, and Chengdu, based on the dates they were established. The

cover designator (MUCD) system in 2000, the protocol order for the MRAFs changed to the same as the seven ground-force dominated Military Regions—Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou, and Chengdu.

From Military Region Air Forces to Theater Command Air Forces

On 3 February 2016, the PLAAF held an official ceremony in Beijing, where its then- Commander, General Ma Xiaotian, inaugurated all five TCAF HQs, granting them the TC deputy leader grade.⁴⁸⁹ Thus, the new TCAF HQs, in protocol order, replaced five of the former MRAF HQs: Eastern TCAF in Nanjing (formerly Nanjing MRAF HQ), Southern TCAF in Guangzhou (formerly Guangzhou MRAF HQ), Western TCAF in Chengdu (formerly Chengdu MRAF HQ), Northern TCAF in Shenyang (formerly Shenyang MRAF HQ) and Central TCAF in Beijing (formerly Beijing MRAF HQ). While the former Jinan and Lanzhou MRAF HQs were downsized and became corps deputy leader-grade Bases (Jinan Base and Lanzhou Base) in mid-2017, their Commanders nevertheless became permanent Deputy Commanders of the Central and Western TCs, respectively.^{dl}

As with the former MRAFs, all second-level organizations under the first-level departments remain divisions (处) and have retained the same grade of division deputy leader; however, they have apparently been reduced in size. Also, some third-level branches (股) or offices (科) may still exist as battalion leader-grade organizations, but it appears that most of these have either been abolished or merged with other organizations.^{dm}

As an additional personnel reduction measure, each TCAF HQ now has only one to two Deputy Commanders and one Deputy PC compared to the previous MRAFs, which had two to five Deputy Commanders and two Deputy PCs.⁴⁹⁰ As with the TC HQs, it is probable that one of the Deputy Commanders in each TCAF HQ may also concurrently serve as the Chief of Staff, while each TCAF HQ Deputy PC likely serves concurrently as the Director of the respective Political Work Departments. It also appears that some, if not all, TCAF HQs have their own Discipline Inspection Secretary who serves on each Standing Committee.

The Shift from Air Corps to Bases and Command Posts

Key Points

- Prior to reforms in 2003-2004, the PLAAF's structure mirrored that of the Army from the top down to include corps, division, and regiment levels. As the Army and PLAAF began moving toward a brigade structure in the early 2000s, the PLAAF had to adjust its overall structure by downgrading its corps leader-grade corps to either corps deputy leader grade or division leader-grade Command Posts while keeping its division-regiment aviation unit structure; however, this created command, control, and coordination issues with the Army and with the MRAF HQ because of the grade structure. Specifically, in the PLA, an organization cannot command or control another organization that is at the same grade. It can only coordinate with it, including units from another service.
- The 2003-2004 reforms sought to streamline the organizational structure but added additional complexity to command relationships.
- Over the past decade (2009-2019), an Army-dominated CMC essentially forced the PLAAF to shift from a division-regiment structure for its aviation units to a base-brigade structure in order to further match the Army's shift to a group army (corps)-brigade structure. As noted later, however, this structure has caused

reason the MRs and MRAFs were in a different protocol order prior to 2000 is because the MRs were established in a different order than the MRAFs.

dl They were most likely retained in those positions due to their overall experience and probably also to allow them to reach their mandatory retirement age based on their grade, rather than be demobilized.

dm In early 2018, there were two articles concerning the Southern TCAF and Central TCAF Support Departments which, based on what has occurred at the corps and below levels, imply that their logistics and equipment departments have been merged. The same may also have occurred throughout the five TCAFs.

problems for PLAAF pilots to move up their command track.

This section discusses the history of the PLAAF's Air Corps (空军军), which have been abolished or reorganized into Bases (基地) and Command Posts (指挥所).⁴⁹¹

During the 1950s and 1960s, the PLAAF created 13 Air Corps and several Command Posts to control aviation and air defense units within geographical areas that may or may not have been aligned with an existing MRAF. During the Cultural Revolution, many PLAAF command organizations ceased to exist and were reestablished during the late 1970s. In addition, as the PLAAF expanded and realigned its operational areas with those of the ground forces, several of the Air Corps replaced MRAF headquarters, were abolished, or were downgraded to a Command Post.

The key point is that these command organizations were composed of leaders and staff members only. They did not have weapons and equipment as part of their organization. When they moved, they did not necessarily have organic aviation and air defense units that moved with them. As these command organizations were moved around to replace existing organizations or establish new command organizations, they then took control of aviation and air defense units that already existed in the command area. Trying to track individual command elements is not always easy. There are several instances where some Air Corps were formed, moved to another location to form the basis for an MRAF headquarters, abolished, downgraded to a Command Post, or reestablished later in a new location. Appendix 3-2 provides the history of the PLAAF's 13 Air Corps and four Command Posts from 1949 to 2004.

With the exception of the Airborne Corps (former 15th Airborne Corps), which is directly subordinate to PLAAF HQ, the corps leader-grade Air Corps tier was abolished during the PLA's 2003-2004 force reduction.⁴⁹² Prior to the force reduction, the PLAAF had five corps-leader-grade Air Corps, six corps-leader-grade Bases (基地), and three division-leader-grade Command Posts (指挥所), which were subordinate to their respective MRAF headquarters.^{dn} These organizations were responsible for commanding the PLAAF aviation and air defense organizations in their area of responsibility on behalf of the MRAF headquarters. During this force reduction, the PLAAF reduced the grade for most, if not all, of the Air Corps and Bases to division leader grade, re-designated them as Command Posts, and consolidated leadership for all aviation and air defense organizations in each MRAF directly under the respective MRAF headquarters. Table 3-11 below shows the 13 PLAAF Command Posts and their origins as of 2004:

dn Units located in the same province as the MRAF headquarters are directly subordinate to it. Liaoning Province is an exception, because it contains both the Shenyang MRAF and the Dalian Command Post.

Table 3-11: PLAAF Command Posts as of 2004

MRAF	Corps deputy leader CPs	Division leader CPs
Shenyang	Dalian (former Dalian Base)	Changchun (former 1st Air Corps)
Beijing	Datong (former 10th Air Corps)	Tangshan (former Tangshan Base) ^{do}
Lanzhou	Urumqi (former 9th Air Corps), Xi'an (former Xi'an Base)	Hetian
Jinan	None	None
Nanjing	Fuzhou (former 8th Air Corps)	Shanghai (former Shanghai Base), Zhangzhou ^{dp}
Guangzhou	Wuhan (former Wuhan Base)	Nanning (former 7th Air Corps)
Chengdu	Kunming (former Kunming Base)	Lhasa

Although downgrading all of the Air Corps-level organizations in 2003-2004 was intended to simplify the command structure, it actually complicated the situation.⁴⁹³ The primary reason is that the PLA's organizational structure, in general, does not allow for an organization of one grade to be subordinate to another organization of the same grade. In other words, an air or SAM division can be subordinate to a corps deputy leader-grade CP but not to a division-grade CP. To help solve this dilemma, PLAAF writings stated that each MRAF now commanded all operational organizations in its AOR, and that each Command Post acted on behalf of the MRAF to command combat organizations in its AOR. Furthermore, a second problem arose concerning coordination between the Command Posts and the ground forces. Whereas the Air Corps and group armies could work as equals to plan, organize, and implement joint training, the Command Posts no longer have the same equal relationship.

Of note, every billet in the previous Air Corps and Bases were downgraded accordingly to match the Table of Organization (编制) for the corps deputy leader- and division leader-grade CPs. As such, many officers were demobilized as part of the 200,000-man force reduction, which included 85 percent officers. In addition, while the Headquarters Department and Political Department remained, their Logistics Department and Equipment Department were abolished, and those responsibilities were moved up to the MRAF HQ.

Shift to a Base-Brigade Structure

As shown in Table 3-12 below, in late 2011 and throughout 2012, the PLAAF abolished at least four air-division headquarters, established four corps deputy leader-grade Bases (at Dalian, Nanning, Shanghai and Urumqi) from existing Command Posts, and upgraded about 15 regiments to brigades before subordinating them under the four aforementioned Bases.⁴⁹⁴ One of the goals of creating brigades was to have a unit with more than one type of combat aircraft organized into separate flight groups, so that they could conduct dissimilar aircraft training within the same unit. While each Base is responsible for C2 of the air brigades, surface-to-air missiles (SAMs), antiaircraft artillery (AAA), and radar units in their AORs, they also coordinate with units from the PLAA and PLAN in their AOR for joint training.

^{do} It is not clear whether the Tangshan Command Post still existed. No direct references could be found for it in *Air Force News* on the Internet.

^{dp} It is not exactly clear if the Zhangzhou Command Post was a division leader-grade or a division Deputy leader-grade Command Post. Some online discussion indicated the latter.

Table 3-12: PLAAF Command Posts and Bases: 2012-2017

Former MRAF	TCAF	Corps Deputy Leader CPs	Division Leader CPs	Corps Deputy Leader Grade Bases
Shenyang	Northern TC		Changchun	Dalian
Beijing	Central TC	Datong	None	
Lanzhou	Western TC	Xi'an	Hetian	Urumqi
Jinan	Northern TC			
Nanjing	Eastern TC	Fuzhou	Zhangzhou	Shanghai
Guangzhou	Southern TC	Wuhan		Nanning
Chengdu	Western TC	Kunming	Lhasa	

This situation remained as such until early 2017 when the PLAAF created several more fighter and fighter-bomber brigades from existing regiments but ceased mixing different airframes in the same brigade because of aircraft maintenance issues; abolished their air division headquarters; and created at least eight more corps deputy leader-grade Bases from existing corps deputy leader- and division leader-grade Command Posts and two former MRAF HQs.⁴⁹⁵ Specifically, the former Lanzhou and Jinan MRAF HQ were downgraded and renamed Bases, while the former Wuhan, Lhasa, Kunming, Datong, and Fuzhou Command Posts became Bases, with every Base subordinate to their respective TCAF HQ.⁴⁹⁶ At least three division leader-grade Command Posts remained in existence as shown in Table 3-13 below.

Table 3-13: PLAAF Command Posts: 2017-Present

TCAF	Division Leader CPs
Eastern TC	Zhangzhou, Fujian Province
Southern TC	
Western TC	Hetian, Xinjiang AR
Northern TC	Changchun, Jilin Province
Central TC	

Table 3-14 below provides a summary of all of the PLAAF corps deputy leader-grade Bases that were created between 2012 and 2018. The table is organized according to the current TCAF protocol order, i.e. Eastern, Southern, Western, Northern, and Central, and each Base commands all subordinate aviation and air defense (SAM, AAA, and radar) units in its AOR.⁴⁹⁷ As such, it appears that no fighter and fighter-bomber air units are directly subordinate to any of the TCAF HQ.⁴⁹⁸

Table 3-14: PLAAF Bases Created between 2012 and 2018

Location (City, Province, AR)	Former MRAF	Current TCAF	Current TCAF
Fuzhou, Fujian	Nanjing	Eastern	Eastern
Shanghai	Nanjing	Eastern	Eastern
Kunming, Yunnan	Chengdu	Southern	Southern
Nanning, Guangxi	Guangzhou	Southern	Southern
Urumqi, Xinjiang	Lanzhou	Western	Western
Lanzhou, Gansu	Lanzhou	Western	Western
Lhasa, Tibet	Chengdu	Western	Western
Dalian, Liaoning	Shenyang	Northern	Northern
Jinan, Shandong	Jinan	Northern	Northern
Unknown, Inner Mongolia	Unknown	Northern	Northern
Datong, Shanxi	Beijing	Central	Central
Wuhan, Hunan	Guangzhou	Central	Central

The PLAAF also seems to have set up a new Base in Inner Mongolia under the Northern TCAF.⁴⁹⁹ There are no indications that this Base was a previous Command Post, and it is not clear which units are subordinate to it. As of late 2018, it appears that the only remaining Command Posts are based in Hetian (Xinjiang) under the Western TCAF, Changchun (Jilin) under the Northern TCAF, as well as in Zhangzhou (Fujian) under the Eastern TCAF. While no air brigades now appear to be subordinate to them, it is possible that other PLAAF units (radar brigades, SAM brigades, various facilities) in their AORs are under their command. If major military operations, (e.g. a response to an earthquake or civil unrest, or invasion) were required in their areas, air brigades could be subordinated to them.

In addition to transforming its seven MRAF HQ into five TCAF HQ to mirror the new PLA structure, in early 2016, the PLAAF changed its structure to better align with the PLA's overall shift toward "brigadization." These changes first focused on the TC-level and above in 2016, before then being implemented at the corps-level and below in 2017. Now that PLAAF HQ is responsible for "force building" functions, it has consequently been removed from the operational chain of command and control, such that it now only oversees the organizing, manning, and equipping of units.^{dq} In terms of responsibilities, it follows that PLAAF HQ is now solely responsible for "pursuing the Air Force's force building, while command responsibilities have been shifted down to the five TCAFs."⁵⁰⁰ Prior to the reorganization, PLAAF HQ shared operational responsibility with the former MR HQs. This latest development demonstrates the PLA's attempt to shift its organizations and relationships away from its traditional setup towards a more advanced (Western) model. As the PLA has not been involved in armed conflict for nearly four decades, it has thus had to glean from the lessons learned from other militaries with more recent operational experience. Of those armed forces to have documented those lessons, the U.S. military stands out first and foremost.

^{dq} Whilst the 2015 *Defense White Paper* uses the term "force building," the term is sometimes also translated as "development" or "construction."

Exceptions to the Rule: A Case Study on H-6N Bomber Units

However, it is likely that some units, such as the H-6N nuclear-capable bombers, will remain separate from the shift to the Base-brigade structure. This section briefly reviews developments with the H-6N units. The PLAAF currently has three bomber divisions and subordinate regiments as shown in Table 3-15 below.

Table 3-15: PLAAF Bomber Divisions and Subordinate Regiments

Subordination	Division (Regiments)	Division Location
Eastern TCAF HQ	10th Bomber Division (28th, 29th, 30th Regiment)	Anqing, Anhui
Southern TCAF HQ	8th Bomber Division (22nd, 23rd, 24th Regiment)	Leiyang, Hunan
Central TCAF HQ	36th Bomber Division (107th, 108th Regiment)	Lintong, Shaanxi

The former 106th Air Regiment that was subordinate to the 36th Air Division has been reorganized and renamed as the 106th Air Brigade, which is discussed below.

The exact origins of the 106th Air [Bomber] Brigade is not clear, since there was a 106th Air Regiment under the 36th Air Division, but it was removed, renamed, and given a different mission. It appears that, at some point around 2018, the PLAAF created an independent 106th Air [Bomber] Brigade with tail numbers 5503x.⁵⁰¹ Of note, the 55x3x tail number is a new one assigned only to this brigade. It does not fit into the division-regiment tail number system discussed in Chapter 3 for the three air divisions. The brigade is equipped with the H-6N, which was first publicly unveiled during the PRC's 70th anniversary parade in October 2019 and differs from other variants of the H-6 airframe in several ways. Most notably, the aircraft's internal bomb bay has been replaced with a semi-recessed area to allow carriage of a large missile system. Unlike its predecessors, the H-6N also has an air-to-air refueling capability, thereby providing the PLAAF with longer-range strike options. The United States Department of Defense (DoD) has also identified the H-6N as having a nuclear role, whereas other H-6 variants in service with the PLAAF and Naval Aviation, such as the H-6K and H-6G, appear to be assigned only a conventional role. As noted at the beginning of this chapter, China is developing a new H-20 bomber. Its mission, weaponry, and which airframe it is replacing will determine which unit or units it is assigned to.

There is conflicting information concerning where the 106th Air Brigade is located and who it is subordinate to. Although one MND article in English states that the brigade is located in the Eastern TCAF,^{dr} it appears that it is most likely located in the Central TCAF.⁵⁰² Nuclear missions may require a certain level of seniority overseeing the unit in question. It is not clear who the 106th Air Brigade is operationally subordinate to in peacetime, since the CMC most likely ultimately oversees all nuclear units, including the PLA Rocket Force. Therefore, unlike the fighter and attack air brigades, which are directly subordinate to PLAAF corps-level Bases, who are, in turn subordinate to their relevant TCAF HQ, the 106th Air Brigade is most likely either directly subordinate to the TCAF HQ, PLAAF HQ, even though it was removed from the operational chain of command in 2016, or possibly directly subordinate to the CMC Joint Operations Command Center.

Authoritative PLA reporting through early 2020 continues to verify that the PLA continues to keep its non-nuclear bombers under a division-regiment structure. Since the PLAAF stood up the 106th Air [Bomber] Brigade around 2018, there is no evidence that the PLAAF sees the overall structure of its division-regiment bomber force structure as being antiquated.⁵⁰³

One reason the PLA migrated towards a brigade structure for most units, including aviation units, was to reduce the number of command layers. Creating bomber brigades out of the current regiments would certainly reduce the number of administrative command layers for theater air forces, but would also increase the span of control by creating two separate bomber units that report directly to TCAF headquarters. This tradeoff is of questionable value at most from an organizational theory perspective.

dr No counterpart article in Chinese was found.

PLAAF Branches/Arms, Specialty Units, and Elements

Key Points

- PLAAF branches/arms are not always described consistently (both in terms of key forces and their protocol order), but are generally described as aviation, airborne, ground-based air defense, radar, electronic countermeasures, and communications.
- PLAAF specialized units include technical reconnaissance, chemical defense, and engineering.

As noted earlier in the 2002 *Defense White Paper*, since its founding, the PLAAF adopted a system of combining aviation with ground-to-air defense forces that consist of the aviation, surface-to-air missile, anti-aircraft artillery and airborne branches/arms, as well as communications, radar, ECM, chemical defense (which actually include nuclear, biological, chemical, and radiological defense), technical reconnaissance and other specialized units.⁵⁰⁴ This section provides background on these components since 1949, including their organizational structure. To start with, however, it is important to know the key terms shown below:

- *Junzhong* (军种): This term refers to the PLA's services, including the Army, Navy, Air Force, and now the Rocket Force, which prior to 2016 was not a full service.⁵⁰⁵
- *Bingzhong* (兵种): This term refers to what the PLA translates as both branches and arms, and this book refers to as branches/arms.⁵⁰⁶
- *Budui* (部队): This term is translated as “forces,” “troops,” and “units.”⁵⁰⁷ Historically, this term referred to “units” at the corps, division, brigade, and regiment grade levels; however, it is now associated with the newly-created Strategic Support Force (战略支援部队), which is not a service but has the same grade (TC leader) as the four services.
- *Fendui* (分队) This term is normally translated as “element,” but is also often translated as “subunit,” “detachment,” “battery” (SAM or AAA), or “flight” (maintenance); however, this book uses the term “element” for the sake of continuity.⁵⁰⁸ It specifically refers to operational and support organizations subordinate to units at the battalion, company, and platoon levels. Occasionally, squads, which are solely manned by enlisted personnel, are identified as an element.
- *Zhuanye bu(fen)dui* (专业部(分)队): This term is translated as “specialized units” or “subunits.”⁵⁰⁹
- *Dadui* (大队): Depending on the context, a *dadui* can be either a regiment leader-grade or a battalion leader-grade organization. Each service has several regiment leader-grade training groups/*dadui*. The PLAAF has battalion leader-grade flight groups/*dadui* (飞行大队) and maintenance groups/*dadui* (机务大队).
- *Zhongdui* (中队): Depending on the context, a *zhongdui* can be a squadron/*zhongdui* or just *zhongdui*. The PLAAF has company leader-grade flight and maintenance squadron/*zhongdui*.

A review of multiple sources concerning how the PLAAF has divided itself into branches/arms and specialized units shows a lack of consistency and some confusion about which components are branches/arms and which ones are not at any given time.⁵¹⁰ In addition, protocol order is important. The following subsections attempt to provide the best available information about each component and how they fit into the structure during the different periods of the PLAAF's history. Of note, the PLAAF's academic institutions are roughly organized by branches/arms to provide cadet education for personnel who will assume their operational or support billets in their branch/arm. Chapter 5 discusses each of the academic institutions and their links to the branches/arms. For example, the Air Force Early Warning Academy, which has a subordinate NCO school, is responsible for educating and training officers and NCOs for the Radar Branch/Arm.

While the following subsections provide background on the branches/arms and specialized units, the 2019 *Defense White Paper* stated that the PLAAF had the following branches/arms and specialized units: aviation (航空兵), airborne (空降兵), ground-to-air missile (地面防空兵), radar (雷达兵), electronic countermeasures (电子对抗部队), and communications forces (信息通信部队).⁵¹¹ Each of the following subsections provides information on the history of the branch/arm and how they have been organized.

Unit and Element Structure

As a general rule, every corps (base/command post/airborne), division, and brigade unit has had a Commander, PC, at least two Deputy Commanders, one Deputy PC, a Secretary of the Discipline Inspection Commission/Committee, a Headquarters / Staff Department (Chief of Staff), and Political / Political Work Department (Director). The former Logistics Department (Director and PC) and Equipment Department (Director and PC) have been merged into a single Support Department (Director and PC). Each headquarters, first-, second-, and third-level departments has its own Party Committee or Party Branch.

Regiment-level units are similar in terms of personnel, except that they have had a Headquarters / Staff Department (Chief of Staff), Political / Political Work Division, and Support Division. Each headquarters, first-, second-, and third-level departments has its own Party Committee or Party Branch.

At the element (battalion and company) level, each element has a Commander, political officer, two Deputy Commanders, and one deputy political officer, as well as a Party Branch. There are no functional and administrative departments at the element level. At the platoon level, there is one Commander and one to two Deputy Commanders. There are no political officers or Party Branches, but the leaders are organized into a Party Small Group and are part of their company's Party Branch.

Historically, the PLAAF has used the “rule of three” or 3-3 system (三三制) to designate numbers for its divisions and regiments for all of its branches/arms.⁵¹² In order to determine a division's subordinate regiments, multiply the division number times three, then subtract one and two. For example, the 10th air division has the 30th (10 x 3) regiment, 29th (10 x 3 - 1) regiment, and 28th (10 x 3 - 2) regiment. Each regiment has three flight groups numbered the 1st, 2nd, and 3rd. Each flight group is further organized into two to three flight squadrons, which are also numbered 1st, 2nd, and 3rd. Although the PLAAF still uses this system, it began to change during the 1990s and 2000s when the PLAAF began to shift from a division-regiment system to a brigade system. As a general rule, although some regiments were resubordinated to a different division or became a brigade, they kept their original number.

Aviation Branch/Arm⁵¹³

Aviation (航空兵) has been a branch/arm since it was created in 1949 and it has always been listed first in protocol order.⁵¹⁴ Commonly referred to as its “primary branch/arm,” the Aviation Branch/Arm dominates PLAAF planning and decision-making.⁵¹⁵ It is responsible for operating and maintaining the full spectrum of the PLAAF's fixed-wing aircraft, including its rotary-wing helicopters (Z-class), and UAVs.^{ds} Historically there have been seven types of fixed-wing aircraft in its inventory: fighter/multi-role aircraft (J-class), fighter-bombers (JH-class), bombers (H-class), ground attack aircraft (Q-class), transport aircraft (Y-class), airborne early warning (KJ-class), and reconnaissance aircraft (JZ-class).^{dt, 516} Figure 3-1 below describes the difference between international-defined fighter aircraft generations and PLAAF-defined fighter aircraft generations.⁵¹⁷ Although there does not appear to be a single

ds The PLAAF also has multiple types of UAVs, but there is no single identifier for them. UAV class identifiers include ASN, BZK, GJ, and WZ.

dt Of note, through the 1980s, the PLAAF used the letter “F” for “fighter” for its F-5s, F-6s, F-7s, and F-8s; however, at some point in the early 1990s, it began using “J” for the characters “*jianji*” (歼击机) for all of its fighters, including the J-5s, J-6s, J-7s, and J-8s. It also used “JH” for the characters “*jianhongji*” (歼轰机) for “fighter-bombers,” including the JH-7. JJ (歼机教练机) is used for fighter trainer. “Q” (强击机) is used for ground attack aircraft. “JL” (教练) is used for the JL-8 and JL-9 trainer.

authoritative source that defines fighter aircraft generations, according to Australia’s Air Power Development Center, “The notion of aircraft generations, a term that applies to only jet rather than propeller driven fighter aircraft, appeared in the 1990s and attempted to make sense of the leap-frogging improvements in performance to jet fighter aircraft brought about through major advances in aircraft design, avionics, and weapon systems.” No information was found concerning aircraft generations for bombers or transport aircraft.

Figure 3-1: Fighter Aircraft Generations

When reading PLAAF writings, it is important to understand that China’s criteria for identifying its aircraft generations differ from the accepted international norms. The international system bases the criteria for aircraft generations on particular decades and capabilities, as follows:

- 1st-generation subsonic jet fighters (mid-1940s to mid-1950s): F-86, MiG-15, MiG-17
- 2nd-generation (mid-1950s to early 1960s) (air-to-air radar, infrared and semi-active guided missiles, and radar warning receivers): F-104, F-5, MiG-19, MiG-21
- 3rd-generation (early 1960s to 1970) (improved maneuverability, avionic suites, advanced weapon systems, and better propulsion): MiG-23, F-4, Mirage-III
- 4th-generation (1970 to late 1980s) (sophisticated avionics and weaponry and fly-by-wire due to computers): MiG-29, Su-27, F/A-18, F-15, F-16, and Mirage-2000, which could conduct air-to-air and air-to-ground operations
- 4.5th-generation (late 1980s and early 1990s) (reduced funding, stealth, radar absorbent materials, thrust vector controlled engines, greater weapons carriage capacity to extend range of existing aircraft)
- 5th-generation (early 1990s to present) (highly advanced avionics and stealthy sensory suites): F-35 and China’s J-20.

The PLAAF identifies its aircraft only as 1st, 2nd, 3rd, or 4th generation based on when they were first created and/or integrated into the force. Specifically, the PLAAF identifies its aircraft as follows:

- 1st-generation aircraft: the J-5 and J-6 were first deployed in the 1950s and 1960s
- 2nd-generation aircraft: the J-7 and J-8 were first created and deployed in the 1970s and 1980s
- 3rd-generation aircraft: the Su-27/30, JH-7, J-10, J-11, and J-15 were first created in the 1990s and 2000s
- 3.5th-generation aircraft: the J-16 was first deployed in 2014; this generation also includes the J-10C and the J-11B
- 4th-generation aircraft: the J-20 was first deployed in the late 2010s.

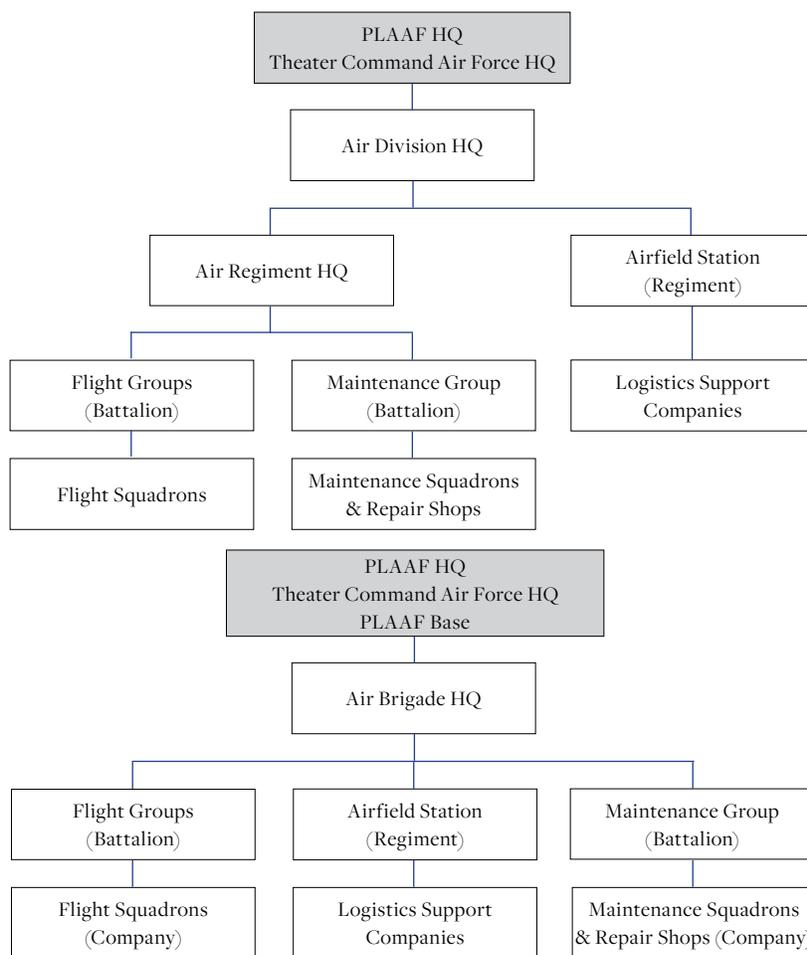
Air Divisions, Brigades, and Regiments

From October 1950 to early 1954, the PLAAF purchased about 3,000 aircraft from the Soviet Union and deployed them in 28 air divisions composed of 70 air regiments and five independent regiments. From January 1954 to 1971, the PLAAF created an additional 22 air divisions throughout China for a total of 50 air divisions.⁵¹⁸ As a general rule, each air division had two operational regiments and one training regiment. The number remained at 50 until the end of the 1980s. See Appendix 3-3 for a list of the original 50 air divisions and their subordinate regiments. From 1986 to 1988, the PLAAF converted one air division in each MRAF to a division-level transition training base (改装训练基地), where new graduates from the PLAAF’s flight academies received one year of transition training before they were assigned to an operational unit within the MRAF. As a result, most, if not all, of the training regiments in operational air divisions have been abolished and their aircraft and missions have been transferred to the transition training bases.⁵¹⁹ During the 2000s, the number of air divisions was gradually reduced to 29.⁵²⁰ As of 2017, the PLAAF had only nine air divisions with subordinate regiments left, which were composed of bomber, transport, and special mission aircraft.⁵²¹ These air divisions are directly subordinate to either PLAAF HQ or a TCAF HQ, as opposed to any Bases. The most likely reason for this is that these aircraft have larger missions that span across Theater Commands and/or provincial borders and as such, require an organization at a higher level to command their actions. It remains unclear if any changes to these air divisions will happen in the future. The reduction in the number of divisions took place in order to incorporate new types of aircraft, retire older aircraft, meet new mission requirements, and reduce

personnel. Although UAVs are not covered in this book, the PLAAF began creating several UAV brigades during the 2010s.⁵²²

Historically, all of the aircraft were organized into a division-regiment-flight group (battalion)-flight squadron (company) structure; however, that changed in the early 2010s, when the PLAAF began to create air brigades by abolishing all fighter and fighter-bomber air divisions and upgrading regiments to brigades and subordinating them to Bases. Prior to the shift to a base-brigade structure, some air divisions that were located in the same province as the MRAF HQ were directly subordinate to the MRAF HQ, but that changed under the base-brigade structure, such that all combat aircraft brigades are now directly subordinate to a Base. As noted above, the bomber, transport, and special mission aircraft have remained in a division-regiment structure that are directly subordinate to PLAAF HQ or a TCAF HQ. The exception is that four of the TCAFs (Eastern, Southern, Northern, and Central) each has a subordinate transport aircraft search and rescue brigade (空军运搜航空兵旅), while the Western TCAF has a transport aircraft search and rescue regiment, which are directly subordinate to the TCAF HQ. As a general rule, brigades for any branch/arm are not subordinate to divisions, and regiments are not subordinate to brigades. For example, an air brigade is not subordinate to an air division and it does not have subordinate air regiments. However, a logistics or communications regiment can be subordinate to an operational brigade composed of weapon systems. In addition, whereas an air division can be located at the same airfield as a subordinate regiment, rarely are two regiments or two brigades located at the same airfield. Figure 3-2 below provides an overview of how air divisions and air brigades are organized, including their subordinate logistics and maintenance organizations.

Figure 3-2: Air Division and Brigade Structure Comparison



Historically, each air division had a Commander, PC, two Deputy Commanders, and one to two Deputy PCs, as well as a Headquarters Department (Chief of Staff), Political Department (Director), Logistics Department (Director and PC) and Equipment Department (Director and PC), as well as second-level departments and possibly some third-level departments. This structure remained fairly constant until the 2016 reorganization, whereby the Headquarters Department became the Staff Department, the Political Department became the Political Work Department, and the Logistics and Equipment Departments were merged into a Support Department. In addition, a Discipline Inspection Commission/Committee was added.

The normal regiment structure included a Commander, PC, two Deputy Commanders, and one Deputy PC. Air regiments have only two functional and administrative departments: a Headquarters Department (now Staff Department) headed by a Chief of Staff and a Political Division (now Political Work Division) headed by a Director. Air regiments do not have logistics or equipment or support departments. These functions are managed by the airfield station (logistics) and maintenance group. The structure has remained fairly consistent, but a Discipline Inspection Commission/Committee has also most likely been added.

Depending on the type of airframe, each brigade, which has more than 30 airframes, has from three to five subordinate flight groups, of which one or two are transition training flight groups.⁵²³ Each flight group, in turn, has two to three subordinate flight squadrons with about three-to-five airframes each.

Remaining Air Divisions

To date, the PLAAF has neither abolished its three bomber, three transport, and three special mission aircraft divisions, nor has it converted their subordinate regiments to brigades.⁵²⁴ These air divisions, shown in Table 3-16, are directly subordinate to either PLAAF HQ or a TCAF HQ, as opposed to any Bases. As noted earlier, the most likely reason for this is that these aircraft have larger missions that span across Theater Commands and/or provincial borders and, as such, require an organization at a higher level to command their actions. It remains unclear if any changes to these air divisions will happen in the future.

Table 3-16: PLAAF Air Divisions in 2019

Subordination	Division	Location
PLAAF HQ	34th Transport	Beijing
Eastern TCAF HQ	10th Bomber 26th Special Mission	Anqing, Anhui Wuxi, Jiangsu
Southern TCAF HQ	8th Bomber 20th Special Mission	Leiyang, Hunan Guiyang, Guizhou
Western TCAF HQ	4th Transport	Qionglai, Sichuan
Northern TCAF HQ	16th Special Mission	Shenyang, Liaoning
Central TCAF HQ	13th Transport 36th Bomber	Wuhan, Hubei Lintong, Shaanxi

Flight Groups

Each PLAAF air regiment typically has two to three subordinate battalion-level flight groups (飞行大队). Each flight group has an average of eight to ten aircraft. Each flight group has a Commander (大队长), a Political Director (教导员), one to two Deputy Commanders, and a Deputy Political Director. As a general rule, PLA organizations at the battalion level and below do not have any functional and administrative departments.

Flight Squadrons

Each flight group has two to three company-level flight squadrons (飞行中队) with two to five aircraft per squadron, of which one is always in the maintenance backshop. The PLAAF considers flight squadrons to be the basic organizational structure for air units. Whereas fighter and fighter-bomber units train using single-ship, two-ship, and four-ship formations, bomber units usually use three-ship formations. Each flight squadron has a Commander (中队长), a Political Instructor (指导员), and one to two Deputy Commanders. Some flight squadrons also have a Deputy Political Instructor.

Maintenance Group

Each air regiment and air brigade has a subordinate battalion-level maintenance group (机务大队) that are directly subordinate to the regiment's or brigade's Support Department.^{du} The maintenance group has a Commander, a Political Director, one to two Deputy Commanders, and at least one Deputy Political Director. Given that it is a battalion-grade organization, it does not have any functional and administrative (e.g., Headquarters / Staff Department or Political / Political Work Division).

As part of the 2003-2004 force reduction, maintenance group Commanders were upgraded to regiment deputy leader-grade officers in order to emphasize the importance of aircraft maintenance.⁵²⁵ A typical maintenance group for a single air regiment or brigade has about 350 people, including 90 officers and 260 enlisted personnel.⁵²⁶

Each maintenance group has four subordinate company-level maintenance squadrons (机务中队), which are identified as the 1st, 2nd, and 3rd maintenance squadrons and the periodic inspection squadron. Each maintenance squadron has a Commander, a Political Instructor, and at least one Deputy Commander. Some squadrons may also have a Deputy Political Instructor.

Each squadron, in turn, has several subordinate platoon-level flights (分队), including radar, machinery, armament, special equipment, radio, and fire control system flights. Each flight has a Commander. As platoon-level organizations, flights do not have political officers.

As a result of the 2003-2004 force reduction, the PLAAF began to replace some 1st and 2nd lieutenant maintenance officers with NCOs, who are identified as "acting leaders"; however, whereas an officer can continue up his career path, NCOs have a glass ceiling at the battalion level. Following the 11th force reduction in 2016, the PLAAF continued to reduce the number of maintenance officers and increased the number of enlisted personnel.⁵²⁷ Each year, the PLAAF holds unit competitions for its maintenance personnel to see who will be promoted. Other competitions are also held throughout the year in order to keep personnel focused on their responsibilities.⁵²⁸

A typical maintenance group is organized into four squadrons (中队) as follows. A typical *Air Force News* article identifies this type of unit as an air regiment's maintenance 1st squadron (航空兵团机务一中队), etc. The four squadrons and subordinate flights (分队) are as follows:

- First Squadron (一中队)
 - Radar flight (雷达分队)
 - Machinery flight (机械分队)
 - Armament flight (军械分队)
 - Special equipment flight (特设分队)
 - Radio flight (无线电分队)

du The terms *jīwù* (机务) and *jīxié* (机械) are both translated as "maintenance."

- Second Squadron (二中队)
 - Machinery flight
 - Armament flight
 - Special equipment flight
 - Radio flight
- Third Squadron (三中队)
 - Primary fighter machinery flight
 - Trainer aircraft machinery flight
 - Armament flight
 - Special equipment flight
 - Radio flight
- Periodic Inspection Squadron (定期检查中队)
 - Machinery flight
 - Armament flight
 - Special equipment flight
 - Radio flight
 - Repair flight (修理分队).

Aircraft Repair Shops

Each maintenance group has a subordinate company-level aircraft repair shop (修理厂), or backshop, for local repairs. The repair shop, in turn, has several subordinate platoon-level flights (分队) that work with their corresponding squadrons in a maintenance group. Each flight is organized into several squad-level sections (组).⁵²⁹ The repair shop is manned by technical officers and NCOs, all of whom fill billets as machinists and mechanics. NCOs serve as the section leaders but are also replacing some junior officers as flight Commanders.

The repair shops are responsible for intermediate repair of the division's/brigade's aircraft and periodic inspections under 400 hours, general malfunction repair and overall repair, specialized parts inspection and repair, and repairing of certain spare parts. All the technical equipment for maintenance is organized into ground equipment and instruments, and instruments and equipment onboard engineering vehicles. A typical repair shop department (厂部) is organized into platoon-grade flights (分队) and squad-level sections (组) as follows:

- Aircraft flight: Assembly section, metal work section, special equipment flight, electrical section, and instruments section.
- Armament flight: In-house repair section and out house (periodic repair) section.
- Radio flight: Communications and navigation section and radar section.
- Accessories flight: Hydraulics section, compressed air section, and inspection, nondestructive section.
- Machinery flight: Lathe section, heat treatment section, welding section, benchwork section, and milling and grinding section.

Rapid Repair Elements

The PLAAF began studying rapid repair for damaged aircraft after the first Gulf War. In 1998, the PLAAF's 1st Aviation Technology College, located in Xinyang, Henan Province (Jinan MRAF), opened the PLA's first aircraft-damage rush-repair test center (战伤抢修实验中心).⁵³⁰ During the early 2000s, the PLAAF began creating a rapid-repair element at each airfield and conducting training for "on-site rapid repair" of equipment after an enemy attack. Each element incorporates personnel from the maintenance group and airfield station.⁵³¹

Airfield Stations

An airfield station (场站) is an independent regiment leader-grade logistics support unit subordinate to an air division or air brigade.⁵³² Prior to February 1970, the airfield station was called a Base (基地) and was subordinate to an air division. Because the airfield station is a regiment leader-grade organization, it cannot be subordinate to an air regiment; however, following the reorganization of the fighter and attack air divisions and regiments into brigades from 2011-2017, the airfield stations can now be directly subordinate to the air brigade that they support. Some airfield stations can also be directly subordinate to an MRAF or TCAF HQ.⁵³³ Some airfield stations were also downgraded in the 2000s. For example, according to a 1 September 2005 *Air Force News* article, a Chengdu MRAF airfield station received orders in April 2005 that, as a result of the ongoing PLA downsizing, it was to be downgraded from a regiment leader-grade organization to a regiment deputy leader-grade organization. A follow-on article on 13 September 2005 noted that the downgrading had caused morale problems because both officers and enlisted personnel were concerned they would not be selected for promotion. It does not appear that many, if any, other airfield stations were downgraded.

The Commander (站长) serves as the airfield Commander with responsibility for all facilities and operations. He also organizes the supply of materials and equipment to each tenant air regiment or brigade and provides logistics support for flight operations and training. The airfield station is also responsible for radar, communications, and meteorology components within the control tower; however, as noted in Chapter 6, the primary personnel in the control tower are the aviation unit leaders.

Airfield stations supporting a single air regiment or air brigade normally have about 500 personnel with an approximate ratio of 20 percent officers and 80 percent enlisted members; however, some airfield stations support two regiments at the same airfield and can have up to 900 personnel. An airfield station has three components: a command staff, functional and administrative organizations, and subordinate company-level organizations.⁵³⁴

The command staff consists of a Commander, PC, at least two Deputy Commanders, and at least one Deputy PC. It also has a Headquarters / Staff Department and a Political / Political Work Division, each of which have several subordinate functional and administrative branches.

Although the airfield station serves as the logistics support organization for an air regiment or brigade, it also incorporates certain organizations within the Equipment Department system, such as munitions and air materiel.⁵³⁵ The functional and administrative departments are shown below:

- Headquarters / Staff Department (司令部 / 参谋部)
 - Military Affairs Branch (军务股)
 - Armament Branch (军械股)
 - Fuel Branch (油料股)
 - Finance Branch (财务股)
 - Quartermaster Branch (军需股)
 - Transportation Branch (运输股)^{dv}
 - Barracks Branch (营房股) or the Airfield and Barracks Branch (机营股)
 - Air Materiel Branch (航材股)^{dw}

dv This branch works closely with the vehicle company.

dw When the General Equipment Department was created in 1998, the PLAAF's Logistics Department re-subordinated its Air Materiel Department (航材部) to the Equipment Department (装备部). It appears that the PLAAF has not been uniform in transferring all components of the air materiel system from the logistics to the equipment system. Whereas the air materiel warehouses/depos for some air regiments are subordinate to the air division's Equipment Department, some are still subordinate to the airfield station. This branch works closely with the four stations company.

- Political / Political Work Division (政治工作处 or 政治处)
 - Propaganda and Security Branch (宣保股)
 - Organization and Cadre Branch (组织干部股 or 组干股),

The functional and administrative branches support more than ten companies, including navigation beacon, target range, security, four stations, airfield service, vehicle, fuel transport, cave depot, and air-to-air missile companies. Personnel are organized into over 90 specialties. The airfield station also has several depots, including those for fuel, air materiel, and munitions. In addition, it is responsible for communications and has a subordinate weather station. The subordinate organizations are shown below:

- Command office (指挥室)
- Communications battalion (通信营)
 - Navigation beacon company (导航连) or communications and navigation beacon company (通信导航连)
 - Radar station (雷达站)
 - Aircraft landing radar station (着陆雷达站)
 - Communications company (通信连)
 - Duty office (值班室)
- New conscript company (新兵连)
- Target range company (靶场连)
- Security company (警卫连)
- Four stations company (四站连)^{dx}
- Airfield services company (场务连)^{dy}
- Vehicle company (汽车连) or vehicle airfield service company (汽车场务连)
- Fuel transport company (运油连)
- Cave depot company (洞库连)
- Missile group/zhongdui (导弹中队)
- Flight support center (飞行保障中心)
- Field maintenance flight duty office (外场飞行值班室)
- Flight logistics support command office (飞行后勤保障指挥室)
- Flight control office (飞行管制室)
- Health team (卫生队)
- Meteorological/weather radar/observation stations (气象雷达站 / 气象台 / 气象观测站)
- Fuel depots (油料仓库 or 油库)
- Air materiel depots (航材仓库)
- Armament depots (军械仓库)
- Parachute wrapping office (抱伞室)^{dz}
- Communications equipment repair facility (通信修理所).

dx The four stations company consists of an oxygen generation station (制氧站), compressed air (冷氧站), battery charging (充电站), and power supply equipment (电源站), each of which considered a station (站). Each station is probably a platoon-level organization.

dy An airfield service company is responsible for an airfield's runways, beacons, fire and rescue, airfield flood protection, snow removal, camouflage, missile movement, rapid repair, and maintaining the associated equipment.

dz These personnel wrap up the drag chutes from aircraft after they land.

The airfield station also manages the control tower and the unit's hospital and clinics. Each airfield station also has several ad hoc organizations (element / 分队), including:^{ca}

- Armament support element (军械分队 or 军械保障分队)
- Airfield services element (场务分队)
- Anti-bird strike squad (驱鸟班)
- Firefighting element (消防分队)
- Fuel support element (油料保障分队)
- Transportation support element (运输保障分队)
- Air materiel element (航材分队)
- Health support element (卫生保障分队)
- Medical element (医疗分队)
- Supply element (给养分队)
- Battlefield rescue element (战地救护分队)
- Temporary support element missile zhongdui duty office (临时保障分队导弹中队值班室).

Ground Crews

Each aircraft is assigned a ground crew (地勤人员) of about 6 to 11 personnel, depending on the type of aircraft. Each ground crew, which includes officers, NCOs, and two-year enlisted personnel, consists of personnel from the airfield station and maintenance group.⁵³⁶ The ground crew maintains the aircraft between sorties and prepares it for take-off, including loading munitions. It is not uncommon for the ground crew to work an 18-hour day for a single flying day.⁵³⁷ Whereas most ground crew activity used to occur in an open area next to the runway, the PLAAF has now constructed hundreds of overhead shelters, where maintenance and even refueling takes place. As a result, in 2017 the PLAAF began testing the possibility of increasing the number of personnel in a typical ground crew for a fighter or attack aircraft to four-to-five.⁵³⁸

Aircraft Serial Numbers

According to Andreas Rupprecht, one of the most striking external characteristics of Chinese military aircraft are their serial numbers, which have also been identified as tail numbers and serial numbers and have normally consisted of five numbers.⁵³⁹ The following paragraphs discuss the five different systems the PLAAF and Naval Aviation have used to assign the serial numbers.

The First System: Legacy System (1950s-2016)

During the 1950s and 1960s, most PLAAF aircraft had only a two-digit number that were painted on them by the Soviet factory that sold the aircraft to the PLAAF.⁵⁴⁰ The first indigenous four-digit number was assigned to aircraft starting in the late 1950s. Those numbers were based on a coded unit designation and the aircraft's assignment to a specific regiment or division. Beginning in the 1970s, the majority of regular PLAAF and Naval Aviation units began using a five-digit registration number that follows the pattern #&x#x as shown in Table 3-17 below, which existed until 2005.⁵⁴¹ The division number is represented by the first and fourth digits (##) and the regiment is represented by the second digit (&). The actual division number could be extracted from Table 3-17 below. Example: An aircraft with the registration number of 11220 would belong to the 1st Division (1xx2x), 1st Regiment (x1xxx). The table below represents the existing units and flight academies, including those that had been abolished or merged. Chapter 5 discusses the history of the flight academies. [Note: As discussed in Chapter 5, the PLAAF changed the

ca An airfield station can put together ad hoc fendui to support specific missions, such as an aircraft deployment.

official name of its flight colleges to flight academies starting in 2013. However, this chapter will continue to use the term flight college for the sake of continuity given that most of the information precedes 2013.] In Table 3-17, the left hand column shows the first number and the top row shows the fourth number in the five-digit tail number.

Table 3-17: Pre-June 2005 PLAAF and Naval Aviation Aircraft Number Matrix

	1	2	3	4	5	6	7	8	9	0
1		1st AD	2nd AD	3rd AD	4th AD	5th AD	6th AD	7th AD	8th AD	9th AD
3	10th AD	11th AD	12th AD	13th AD	14th AD	15th AD	16th AD	17th AD	18th AD	19th AD
2	20th AD	21st AD	22nd AD	23rd AD	24th AD	25th AD	26th AD	27th AD	28th AD	29th AD
5	30th AD	31st AD	32nd AD	33rd AD	34th AD	35th AD	36th AD	37th AD	38th AD	39th AD
4	40th AD	41st AD	42nd AD	43rd AD	44th AD	45th AD	46th AD	47th AD	48th AD	49th AD
7						FTTC	12th FA	13th FA	NTS	50th AD
6	1st FA	2nd FA	3rd FA	4th FA	5th FA	6th FA	7th FA	8th FA	9th FA	10th FA
8	1st NAD	2nd NAD	3rd NAD	4th NAD	5th NAD	6th NAD	7th NAD	8th NAD	9th NAD	10th NAD

The following bullets provide information on how to understand the table’s content:

- The cells in rows 1, 3, 2, 5, and 4, plus cell 7-0 are PLAAF air divisions (AD).
- Cells 7-8 and 7-9 plus the cells in row 6 are PLAAF Flight Academies (FA).
- The cells in row 8 are PLA Naval Aviation air divisions (NAD).
- FTTC is the PLAAF Flight Test and Training Center.
- NTS is Navigation Training School.

In 2005, the PLAAF and Naval Aviation adjusted the system due to the reduction in the number of air divisions and flight academies. According to Andreas Rupprecht, the five-digit number can be analyzed as discussed below:⁵⁴²

- Think of the five digits in terms of the letters “a c d a n”, such as 11056.
- The first and fourth digits (aa) minus 11 are the relevant ones to identify the division, such that the 11056 number represents the 4th Transport Air Division.
- The second (c) and third (d) digits represent the regiment, such that 11056 represents the 10th Air Regiment.
- The fifth (n) digit denotes the flight squadron number, such that 11056 represents the 6th Flight Squadron.

Table 3-18 below shows a matrix with all of the air division and flight college numbers.⁵⁴³

Table 3-18: Post-June 2005 PLAAF and Naval Aviation Aircraft Number Matrix

	0	1	2	3	4	5	6	7	8	9
1			1st AD	2nd AD	3rd AD	4th AD	5th AD	6th AD	7th AD	8th AD
2	9th AD	10th AD	11th AD	12th AD	13th AD	14th AD	15th AD	16th AD	17th AD	18th AD
3	19th AD	20th AD	21st AD	22nd AD	23rd AD	24th AD	25th AD	26th AD	27th AD	28th AD
4	29th AD	30th AD	31st AD	32nd AD	33rd AD	34th AD	35th AD	36th AD	37th AD	38th AD
5	39th AD	40th AD	41st AD	42nd AD	43rd AD	44th AD	45th AD	46th AD	47th AD	48th AD
6	49th AD	50th AD					FTTC		13th FA	NTS
7		1st FA	2nd FA	3rd FA	4th FA	5th FA	6th FA	7th FA	8th FA	
8	Naval FA	1st AD	2nd NAD	3rd NAD	4th NAD	5th NAD	6th NAD	7th NAD	8th NAD	9th NAD

The following bullets provide information on how to understand the table's content:

- The cells in rows 1, 2, 3, 4, and 5, plus cells 6-0 and 6-1 are PLAAF air divisions (AD).
- Cells 6-9 and 7-1 through 7-9 are PLAAF Flight Academies (FA).
- The cells in row 8 are the Naval Aviation Flight Academy (FA) plus Naval Aviation air divisions (NAD).
- FTTC in cell 6-6 is the PLAAF Flight Test and Training Center.
- NTS in cell 6-9 is Navigation Training School.

The Second System (2012-Present): Combat Aircraft Brigades

The second system was introduced for combat aircraft brigades in line with the process of shifting to a base-brigade structure in 2012.⁵⁴⁴

- Think of the five digits in terms of the letters “b b n b n”, such as 62078, which is a J-11 in the 16th Air Brigade.
- The first (b), second (b), and fourth (b) minus 611 equals the brigade number.
- The third (n) and fifth (n) digits represent the individual number of the aircraft within the brigade. This number is normally painted on the tail or the front part of the fuselage.

The Third System (2012-Present): TCAF HQ Subordinated Units

The third system, which is still not fully understood, is reserved for TCAF HQ subordinated units, including reconnaissance, search and rescue, survey, and transport units⁵⁴⁵. It is not clear what the first digit represents. The second digit represents the five TCAFs in protocol order: Eastern (1), Southern (2), Western (3), Northern (4), and Central (5). The third number probably represents the type of helicopter, and the final two numbers most likely represent the aircraft's number within the unit.

It appears that this system may also apply to new bomber brigade(s) discussed in Chapter 8.⁵⁴⁶ For example, this includes a new bomber brigade identified in 2019 that is subordinate to the Central TCAF. It appears that the following number most likely apply to the ABCDE system for units that are directly subordinate to the TCAF HQ:

- A = 5 (This indicates a Direct TCAF HQ reporting unit).
- B = 1, 2, 3, 4, or 5 where the number indicates the Theatre Command (1 = Eastern, 2 = Southern, 3 = Western, 4 = Northern, 5 = Central) in protocol order.

- CE = Read together, this double-digit number indicates an individual airframe.
- D = Specific Brigade or Regiment; however, it is not clear at the moment how (if at all) this relates to a true unit number in the way brigade and regiment serials do. One theory is that this is simply the brigade or regiment number. Another theory is that it indicates the role of the specific brigade or regiment.

For example, in the case of the H-6Ns assigned to the apparent 106th [Bomber] Brigade, which have serial numbers 5503X (55031-55034), this becomes:⁵⁴⁷

- A=5 means it is a direct reporting unit.
- B=5 means it is a Central TCAF unit.
- CE=04 means it is airframe number 04 in that unit.
- D=3 is still not clear what this means.

As such, the combined C and E number approach is common to other air force regiments and brigades, the ABD functions appear to be specific for direct TCAF reporting units. However, it is not exactly clear which numbers relate to the 106th [Bomber] Brigade. For comparison purposes, the aircraft serial numbers for the three H-6 bomber divisions and subordinate regiments identified in Table 3-18 above are shown below.⁵⁴⁸ The 1st and 4th numbers identify the division and the 2nd, 3rd, and 5th numbers identify the regiment and individual aircraft numbers.

- 8th Air [Bomber] Division (1xx9x): 11091-11099, 11190-11199, and 11290-11291:
 - 23rd Regiment (005-099)
 - 24th Regiment (101-150)
- 10th Air [Bomber] Division (2xx1x): 20011-20019, 20110-20119, and 20210-20211:
 - 28th Regiment (001-049)
- 36th Air [Bomber] Division (4xx7x): 41071-41079, and 41170-41179:
 - 108th Regiment (051-150).

The Fourth System (2012-Present): Flight Academies

The fourth system is a system similar to the original four-digit serial numbers previously used by liaison, transport, and training units and has been reintroduced within all of the flight academies.⁵⁴⁹ Known as AxBx numbers where the first digit (A) denotes the flight college: Harbin (1), Shijiazhuang (2), and Xi'an (3). The third digit (B) denotes the individual training brigade within that flight college, since each training brigade is numbered from 1st to 5th. Finally, the second and four numbers (xx) are reserved to identify the individual aircraft within a certain training brigade.

The Fifth System (2012-Present): Airborne Force Fixed and Rotary Wing Aircraft

The fifth and final system is reserved for the transports and helicopters operated by the Airborne Force and is, in fact, a relic of the original four-digit serial numbers previously used by liaison, transport, and training units.⁵⁵⁰ Until early 2017, all PLAAF helicopters used 6x6x numbers, which stood for the 6th Transport Aviation Regiment, 15th Airborne Corps. However, in April 2017, when the Airborne Corps dropped the number 15 from its name, it also reorganized these numbers, changing them to 6xAx. The exact meaning of the third digit (A) is unclear, but it might differ between fixed-wing aircraft (6x1x) and helicopters (6x2x). The second digit (x) denotes the type operated and the following numbers for the following types have so far been identified: Y-5C, Y-12D, and Y-8 (1); Z-8K (0); Z-9 (1);

and Z-10K (2 and 3). Given the fact that nearly all services have replaced the former regimental numbers of a four-digit system with the now standard brigade system, it is most likely that the Airborne Force will also follow suit and introduce the five-digit system, perhaps similar to the one recently introduced by the “theater-subordinate” units. However, as of February 2020, the four-digit system was still being used.

Airborne Force Branch/Arm, or the Airborne Corps⁵⁵¹

The Airborne Force (空降兵) has been a branch/arm since the first units were created under the PLAAF in 1950.⁵⁵² Prior to 2017, it consisted of the 15th Airborne Corps (空降兵第15军); however, in 2017 the number 15 was dropped, such that it is now only identified as the Airborne Corps (空降兵军). Although it was listed as second in protocol order in 2019, it has historically been listed as fourth or fifth.⁵⁵³ It has always been directly subordinate to PLAAF HQ, even though the corps headquarters is in Xiaogan, Hubei Province, which was previously located within the Guangzhou MRAF and is now in the Central TCAF.

According to the *China Air Force Encyclopedia*, the basic missions for the Airborne Force include: conducting sudden attacks against enemy political, military, and economic strategic key points; seizing and holding important operational and strategic targets or areas deep in enemy territory; deploying rapidly in response to sudden changes in the situation; and conducting special operations in enemy rear areas.⁵⁵⁴ The PLAAF deployed airborne units to Wuhan in 1967 and Beijing in June 1989, which indicates the Airborne Force also has had the mission of dealing with internal unrest.⁵⁵⁵

Unlike the U.S. military, the PLA’s Airborne Force has always been subordinate to the Air Force rather than the Army.^{eb} In July 1950, the CMC established an Air Force Marine (空军陆战) brigade in Shanghai, but the headquarters was moved to Kaifeng, Henan Province, the following month.⁵⁵⁶ Thereafter, the unit’s designation changed several times, becoming the Air Force Marine First Division, the Paratroops Division, and the Airborne Division. In 1961, the name was finally changed to the 15th Airborne Corps and had its headquarters in Xiaogan, Hubei Province. By the mid-1970s, the Airborne Corps had three airborne divisions.⁵⁵⁷ In the mid-1980s, the three divisions were reduced to brigades, but were again upgraded to divisions in 1993, each with about 10,000 troops.⁵⁵⁸ The three divisions were numbered the 43rd, 44th, and 45th divisions and were located in Henan and Hubei Provinces.

The 15th Airborne Corps gained greater visibility in the early 1990s as signified by the following events:

- In 1992, the Airborne Force was officially designated a “lead element” of the PLA’s rapid-reaction force (快速反应部队), even though they had been training in that role since the late 1980s.⁵⁵⁹
- In December 1993, Lieutenant General Jing Xueqin (景学勤) became the first Airborne Force Commander to be appointed one of the PLAAF’s four Deputy Commanders.⁵⁶⁰ He held that position until he retired in 2003; however, he was not replaced by another airborne officer. During his tenure as a Deputy Commander, the PLAAF received its first IL-76 transports for supporting the Airborne Force, and the Airborne Force appeared to increase training for external missions.

In April 2017, it was renamed the Airborne Corps (空降兵)—dropping the “15th” appellation⁵⁶¹—and placed directly under PLAAF HQ.⁵⁶² As part of the latest reforms, the three former airborne division headquarters were abolished whilst their six subordinate regiments were upgraded to brigades. The revised Airborne Corps has, at a minimum, the following units: six Airborne Brigades (空降兵旅), a Transport Air Brigade (运输航空兵旅), a Special Operations Brigade (特种作战旅), a Combat Support Brigade (作战支援旅), and a Training Base (训练基地). Prior to the reorganization, the 15th Airborne Corps had a single helicopter regiment that is apparently still operational,

^{eb} The Airborne Force did not become an official branch until around 1992. Prior to that, the PLAAF’s five branches/arms were aviation, SAM, AAA, communications, and radar. The airborne troops were sometimes mentioned as a sixth branch.

but is now directly subordinated to the Transport Air Brigade.⁵⁶³ Each brigade has relevant subordinate battalion-, company-, and platoon-level elements.

Like all other units, the Airborne Corps and each brigade has a Commander, PC, two Deputy Commanders, one Deputy PC, Secretary of the Discipline Inspection Commission/Committee, a Staff Department (Chief of Staff), Political Work Department (Director), and a Support Department (Director and PC), as well as various second- and possible third-level functional and administrative departments. Each battalion and company has a Commander, two Deputy Commanders, a political officer, all of whom sit on the decision-making body, known as the Party Branch.

Ground-to-Air Missile / Ground Air Defense Branch/Arm⁵⁶⁴

This is one of the most complicated branches/arms, which is composed of the former Surface-to-Air Missile (SAM) Branch/Arm and Antiaircraft Artillery (AAA) Branch/Arm.^{cc} In approximately 2007, the PLAAF merged the SAM and AAA Branches/Arms into a single branch/arm, which it has identified in English as the Ground Air Defense Branch/Arm and Ground-to-Air Missile Branch/Arm, even though the same Chinese characters (地面防空兵) are used and are best translated as “Ground Air Defense Branch/Arm.”⁵⁶⁵ Although the 2008 *Defense White Paper* identified it as the Ground Air Defense Arms and listed it as second, the 2019 *Defense White Paper* identified it as the Ground-to-Air Missile Arms and listed it as third behind the Aviation and Airborne Arms. Although the Chinese name has remained the same, the most likely reason the English name changed was because virtually all AAA units have disappeared. For purposes of this book, the term Ground-to-Air Missile Arms will be used from here on.

Antiaircraft Artillery Branch/Arm⁵⁶⁶

The PLAAF’s AAA Branch/Arm was originally established in 1946 as part of the ground forces.⁵⁶⁷ In August 1955, the CMC formally established the PLA Air Defense Force (PLAADF / 解放军防空军) as one of the PLA’s four services.⁵⁶⁸ The new force was created by merging the ground forces’ AAA, searchlight, observation, and radar units. In May 1957, the CMC merged the PLAADF into the Air Force to form a single service with aviation and air defense units. The AAA and radar units were each organized into separate branches/arms along with the Aviation Branch/Arm. When the PLAAF and PLAADF merged, there were 11 AAA divisions.

Historically, the PLAAF’s AAA troops have been organized into one of three command structures as follows, where the highest-level AAA headquarters is a brigade or regiment, each of which have subordinate battalions:⁵⁶⁹

- AAA divisions (师) with subordinate regiments.
- AAA brigades (旅) with subordinate battalions, which are composed of firing companies.^{ed}
- AAA regiments (团) with subordinate battalions, which are composed of firing companies.

By the early 2010s, all of the AAA divisions were downgraded to brigades or regiments, and, by 2017, almost all AAA units had virtually disappeared.^{ec} For example, between 2017 to 2018, only a few references to AAA units were identified, including:

- A Central TCAF AAA regiment.⁵⁷⁰
- An Eastern TCAF AAA brigade.⁵⁷¹
- An Airborne Brigade’s AAA company.⁵⁷²

ec The PLAAF sometimes refers to its former SAM forces as “second artillery” (二炮) to distinguish it from the AAA troops or “first artillery” (一炮). However, this often causes confusion because the term can be mistaken for the PLA’s ballistic missile force, which was also called Second Artillery and is now the Rocket Force.

ed Only one *Air Force News* article (28 March 2005) had a reference to a AAA platoon. This article noted both a 1st and 2nd AAA platoon subordinate to a AAA company, but they were not identified as a firing platoon.

ce Of note, as discussed in Chapter 4, some reserve AAA units still exist.

Prior to 2012, depending on their location, AAA units were either directly subordinate to an MRAF headquarters or to a division-level Command Post, which, in turn, was subordinate to an MRAF headquarters. When the PLAAF began shifting to a base-brigade structure in 2012, all existing AAA regiments and brigades were directly subordinated to a Base, which, in turn, was directly subordinate to an MRAF and then, starting in 2016, a TCAF HQ.

Depending on the type of headquarters, AAA brigades and regiments each have at least some of the following types of subordinate operational and support organizations:

- Command post (指挥所), field combat command post (野战指挥所), command company (指挥连), and/or command squad (指挥班).
- Firing companies (发射连).⁵⁷³
- Firing platoons (发射排).
- Target marker company (标兵连).
- New conscript companies (新兵连).
- Vehicle company (汽车连).
- Transportation company (运输连).

*Surface-to-Air Missile Branch/Arm*⁵⁷⁴

When the PLAAF added surface-to-air missiles (SAMs / 地空导弹兵) for the first time in 1958, it also created a separate SAM Branch/Arm. Until approximately 2007, the SAM Branch/Arm was normally listed as second in protocol order and the AAA Branch/Arm was listed third. Of note, when the PLAAF created the SAM Branch/Arm, it tried to hide its existence by identifying all of its units and academic institutions as “2nd Antiaircraft Artillery” (第二高射炮兵). This continued until the 1990s.

Historically, the PLAAF’s SAM forces have been organized into one of the following four command structures, where the highest-level headquarters is a division, brigade, or regiment:⁵⁷⁵

- One air defense composite division (防空混成师) was created in the 1980s near Beijing with separate SAM and AAA regiments, battalions, and launch/firing companies.
- SAM divisions (导弹师) with subordinate regiments, battalions, and companies.
- SAM brigades (导弹旅) with subordinate battalions, and in some cases launch companies.
- SAM regiments (导弹团) with subordinate battalions, and in some cases launch companies.

SAM divisions, brigades, and regiments each have at least some of the following types of subordinate operational and support organizations:

- Command center (指挥中心), command post (指挥所), command battalion (指挥营), and/or command company (指挥连).
- Launch companies (发射连).⁵⁷⁶
- Launch squads (发射班) led by NCOs.
- Military training center (军事训练中心).
- New conscript regiment (新兵团), battalion (新兵营), and companies (新兵连).
- Company-level radar station (雷达站).
- Vehicle company (汽车连).
- Missile guidance company (制导连).
- Technical support company (技术保障连).

- Based on available information, this structure for SAM units still exists; however, as discussed earlier in this chapter, all SAM units are now subordinate to one of the Bases, which are, in turn, subordinate to a TCAF HQ.

*Air Defense Units*⁵⁷⁷

As part of the Ground-to-Air Missile Branch/Arm, the PLAAF has also combined a few former SAM and AAA regiments together into “air defense units” (防空部队), such that an air defense brigade has subordinate SAM and AAA battalions.⁵⁷⁸ In addition, some AAA battalions in the PLA’s air defense units have also been converted to short-range SAM battalions.⁵⁷⁹ In some cases, however, these units are simply known as a SAM brigade with SAM and AAA battalions.

The Central TCAF appears to have the only air defense composite division, first created in the mid-1980s. The primary reason for this is that the SAM assets in this region have always been the primary defense force for Beijing and do not move around as often as those in other SAM units.

Radar Branch/Arm and Specialized Unit⁵⁸⁰

The first independent radar troop (雷达兵) units were established in 1949.⁵⁸¹ Once the General Staff Department’s Air Defense Department was established in December 1950, radar units were divided into two types. Those subordinate to the Air Defense Department were responsible for early warning, and those subordinate to the PLAAF were responsible for directly supporting aviation units. The Radar (雷达兵) Branch/Arm was first created in 1955 under the PLAADF. In 1957, the PLAAF and PLAADF merged and the radar troops became a formal branch/arm of the PLAAF.

Since then, the organization of the PLAAF’s radar component has been somewhat complicated. During the early 2000s, the PLAAF downgraded radar troops from a branch/arm to the status of a specialized unit. In 2007 and 2009, it was identified as both a branch/arm and a specialized unit.⁵⁸² It appears that it was in both categories because the branch/arm includes long-range radars, such as over-the-horizon radars (OTHR), while the specialized unit refers to short-range radars, such as those assigned to airfields and SAM and AAA units. However, since the early 2010s, it has only been identified as a branch/arm.⁵⁸³

In 1959, company-level radar stations (雷达站) were established as the basic radar unit. In the early 1960s, the PLAAF created a three-level structure consisting of regiments, battalions, and company-level stations. As the number of radar stations grew in the late 1990s, the PLAAF established some radar brigades as the highest-level headquarters. These brigades have subordinate battalions, some of which are fixed and some of which are mobile, as well as fixed stations.

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 (ATC) and for senior officers in the control tower to use 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 mountain tops. For example, the PLAAF has a well-known radar station located in Ganbala, Tibet, which is five hours from Lhasa.⁵⁸⁴ The station is over 4,500 meters above sea level, the average temperature is 10 degrees Celsius, and windspeeds are severe. The third type consists of over-the-horizon radars (OTHR) near China’s coastline that are used for early warning. Overall, the PLAAF has three basic categories of radars, including long range, medium range, and short range, which are further categorized into low, medium, and high altitude. Besides OTHR, the PLAAF’s aviation, SAM, and AAA units have radars that are indigenous to those units and are considered specialized units.

Normally, PLAAF radar units are organized into one of two three-tiered structures: brigades with subordinate battalions and stations, or regiments with subordinate battalions and stations. The brigade and regiment headquarters, which are also identified as intelligence stations (情报站), are responsible for collecting, managing, and disseminating radar intelligence. They also command subordinate radar battalions and stations.⁵⁸⁵

The PLAAF and MRAF / TCAF command structure collects and manages radar intelligence and organizes the structure for radar unit combat activities. The command structure above the brigade and regiment level is organized as follows:

- A radar intelligence central station (雷达情报总站) at PLAAF HQ.
- A radar intelligence central branch station (雷达情报总分站) at each MRAF / TCAF HQ.
- Radar intelligence branch stations (雷达情报分站) at each Base.⁵⁸⁶

As the number and type of radars have increased and the communications capabilities have improved since the late 1990s, the PLAAF has made some significant changes to its radar organizational structure. Specifically, the number of radar brigades has increased, while the number of regiments has decreased. In some cases, individual radar regiments have been either upgraded to brigades, or two regiments have been merged into a single brigade structure. As a result of these changes, these brigades now have control over a larger number of radar stations covering a wider geographical area. This shift to radar brigades coincides with the PLAAF's creation of SAM, AAA, and Aviation Branch/Arm brigades as well.

During the 2000s, the PLAAF began to conduct more mobile operations for its aviation, SAM, AAA, and radar forces to avoid being struck and immobilized by enemy air and missile strikes. As a result, in 2004, the PLAAF began creating central radar stations (中心雷达站) in the Chengdu and Nanjing MRAFs. Although it is not clear what their exact mission and structure is, they can be either company- or battalion-level organizations and they appear to have a mobile mission.⁵⁸⁷

Operational Unit Structure

Radar brigades, regiments, battalions, and stations each have at least some of the following types of subordinate operational and support organizations:

- Central radar station (中心雷达站)
- Combat service company (战勤连)
- Command post (指挥所) and/or command office (指挥室)
- Command training simulation center (指挥训练模拟中心)
- Communications platoon (通信排)
- Driver training team (司训队)
- Field combat command post (野战指挥所)
- Guidance station (引导站)⁵⁸⁸
- Health team (卫生队)
- Mobile battalion (机动营) and/or mobile element (机动分队)
- Network training center (网络训练中心)
- New conscript battalion (新兵营) and/or company (新兵连)
- New conscript training unit (新兵教导队)
- Officer training center (军官训练中心)
- Quartermaster depot (军需仓库)
- Radar controller squad (操纵班) staffed by enlisted personnel
- Radar repair shop (雷达修理所)
- Security company (警卫连)
- Training unit (教导队)

- Vehicle company (汽车连)
- Warning radar station (警戒雷达站).

Communications/Signals Branch/Arm and Specialized Unit⁵⁸⁹

The PLAAF has officially translated the term *tongxin* (通信) as both communications and as signals.⁵⁹⁰ For the purposes of this book, communications is used. This component has shifted back and forth between being a specialized unit and a full branch/arm. Unfortunately, there are inconsistencies in the timeframes. For example, none of the 1991 to 2015 *World Military Yearbooks* identified it as a branch/arm, while the 1996 *Air Force Dictionary* identified it as a full branch/arm. Meanwhile, the 2006 *Air Force Officer Handbook* identified it as a specialized unit, while the 2008 *Defense White Paper* and the 2009 book on the PLAAF's history and organizational structure identified it as a branch/arm.⁵⁹¹ The latest source, the 2019 *Defense White Paper*, includes communications as the last component in the list, but the terminology appears to indicate that it is a specialized unit (部队) rather than a full branch/arm. In addition, it also changed the name in the 2019 *Defense White Paper* to *xinxi tongxin budui* (信息通信部队), which is best translated as “information” and “communications,” even though the White Paper only translated it as “communications.”^{ef}

The PLAAF's communications troops were originally part of the ground forces' signal corps in the late 1940s. Today, they are responsible for providing communications, navigation, and automated command support to the entire PLAAF.⁵⁹²

The PLAAF's Headquarters Department previously had a subordinate Communications Department (通信部), which appears to have been renamed the Informatization Department (信息化部), sometime in the early 2010s, which were responsible for providing guidance to all PLAAF communications units. As noted earlier, the Informatization Department was downgraded to a bureau and renamed the Information and Communications Bureau in 2016.

Communications troops are assigned to communications organizations at the regiment level down to squads. A high percentage of communications personnel are women. The PLAAF does not appear to have mixed-gender communications companies, platoons, or squads.

PLAAF HQ and each MRAF / TCAF HQ have a regiment-level general communications station (通信总站).⁵⁹³ Each general communications station has subordinate battalions, companies, platoons, and squads.⁵⁹⁴

Communications regiments (通信团) are assigned to various organizations, such as the PLAAF Headquarters / Staff Department and the Airborne Corps.

General communications stations and communications regiments are organized like all PLA and PLAAF regiment-level organizations, with a Commander, PC, and four departments or divisions. Battalion- and company-level communications units have Commanders, Deputy Commanders, and political officers, but they do not have any functional or administrative organizations.^{eg}

Electronic Countermeasures Branch/Arm and Specialized Unit⁵⁹⁵

The PLAAF has usually officially translated the term *dianzi duikang* (电子对抗) as electronic countermeasures (ECM), but it has also translated it as electronic warfare.⁵⁹⁶ The PLAAF provides little public information about its electronic countermeasures specialty troops (电子对抗专业兵). According to the *Defense White Paper*, it is organized into brigades or regiments, each of which has subordinate battalions.⁵⁹⁷ The PLAAF formed its first ground-based

^{ef} Note: The U.S. military is not consistent in how it translates this term, because the Army has a Signal Corps, so it translates the PLA term as “signal,” while the USAF has a Communications Command, so it translates the PLA term as “communications.”

^{eg} While communications regiments have a Commander (团长), communications central stations have a Director (主任). In addition, communications companies have a Commander (连长), but company-level communications stations have a Director (主任). The Directors serve the same functions as a Commander.

ECM units in the early 1970s and aviation ECM units in the 1980s. These units were re-designated as specialized technical units in the 1990s.⁵⁹⁸ It appears that it was upgraded to a full branch/arm around 2009.⁵⁹⁹

The PLAAF's Headquarters Department previously had a subordinate Electronic Countermeasures and Radar Department (电子对抗雷达部) that was responsible for providing guidance to all PLAAF radar and ECM units. In 2016, it was downgraded to a bureau under the Staff Department.⁶⁰⁰

The Air Force Equipment Research Academy (空军装备研究院) in Beijing has a subordinate Air Force Radar and Electronic Countermeasures Research Institute (空军雷达与电子对抗研究所).^{ch, 601}

Technical Reconnaissance Specialized Unit⁶⁰²

It appears that the PLAAF added technical reconnaissance (技术侦察) as a specialized unit around 2000 but it has not been upgraded to a branch/arm.⁶⁰³

Similar to the ECM troops, little information is available on the PLAAF's technical reconnaissance troops (技术侦察兵). From the limited writings, however, it is clear that the PLAAF's technical reconnaissance troops are responsible for intercepting, processing, and analyzing foreign communication signals and non-communication signals. In Western military terms, these troops carry out signals intelligence (SIGINT), electronic intelligence (ELINT), and measures and signals intelligence (MASINT). Their work includes electronic direction finding based on these various signal types.⁶⁰⁴

Although the organization is unclear, PLA sources state that technical reconnaissance organizations exist at the levels of regiment and below, with technical reconnaissance company-level stations serving as the basic reconnaissance organization.⁶⁰⁵ Technical reconnaissance troops are also dispersed throughout other types of units, to include aviation, airborne, and radar units.

Concerning the PLAAF's organizational structure, prior to the creation of the PLA Strategic Support Force in 2016,⁶⁰⁶ the PLAAF had at least three numbered (1st, 2nd, and 3rd) technical reconnaissance bureaus (TRB / 技术侦察局) subordinate to the PLAAF Headquarters Department but were located in different locations around the country;^{ei} however, at least some components have been transferred to the PLASSF.⁶⁰⁷ Based on discussions with various analysts, it appears that the PLAAF still has some technical reconnaissance organizations and troops. TRBs conduct "communications intelligence, direction finding, traffic analysis, translation, cryptology, computer network defense, and computer network exploitation" in support of service, MR, and TC operations.⁶⁰⁸

Training for PLAAF technical reconnaissance troops is divided into three types. The first type is specialty training, which provides general knowledge about technical reconnaissance and its theoretical basis, as well as knowledge about foreign militaries and foreign languages. The second type is specialized technical training, which includes training in photography and imagery interpretation, signals interception, signals analysis and code breaking, intelligence processing, and operation and maintenance of technical equipment. The final category, specialized tactical training, is unit-level reconnaissance training.⁶⁰⁹

Training also can be tailored to the recipient, with separate training types for enlisted personnel and officers. The first type of training is technical training for enlisted troops. This training is organized by individual skill levels and type of unit. Technical units or specialized training organizations generally organize and carry out technical training for the enlisted force.

ch On 2 February 2004, PLAAF Headquarters held a ceremony to formally establish the new Air Force Equipment Research Academy (空军装备研究院), which is a corps leader-grade organization. The research academy is responsible for consolidating the strengths of the PLAAF's scientific research, implementing S&T strategy for a strong military, and speeding up the informationalization of the PLAAF's equipment and weapons. The new academy consolidates more than 20 division- and regiment-level scientific research organizations.

ei Of note, normally a bureau is located in the same location as the Headquarters / Staff Department, so the fact that the TRBs are located in different cities is an anomaly.

The second type is training for technical officers. PLAAF colleges and specialized training organizations carry out this type of training, depending on the actual specialty. This training aims to make officers knowledgeable about the theoretical aspects of their respective specialties and capable of using their equipment to carry out technical reconnaissance.⁶¹⁰

Chemical Defense Specialized Unit⁶¹¹

The PLAAF's first chemical defense (防化) elements, which actually include nuclear, biological, chemical, and radiological defense, were created in 1951 and each MRAF Headquarters Department had a subordinate Chemical Defense Department starting in 1955, which were later subordinated to the Training Department as a Chemical Defense Division.⁶¹² In addition, the PLAAF's Headquarters Department's Training Department also had a subordinate third-level Chemical Division.⁶¹³ No information was found about a third-level Chemical Defense Division or Office under the current PLAAF HQ's Staff Department, but it most likely still exists. Each TCAF HQ most likely also has a third-level Chemical Defense Office under the Training Division.

The 2002 and 2008 *Defense White Papers* identified this as a specialized unit. Of note, the term chemical defense is short for nuclear, biological, chemical, and radiological defense. It appears, however, that this may have disappeared as a specialized unit around 2012, since no entries for chemical defense were identified after the 2013 *World Military Yearbook*, including the 2019 *Defense White Paper*.

The PLAAF's chemical defense troops (防化部队) are primarily responsible for decontaminating areas struck by chemical weapons, but also deal with radiological decontamination.⁶¹⁴

Each MRAF / TCAF HQ and most corps-level organizations have a subordinate chemical defense element. During the 1960s and 1970s, the PLAAF also created a chemical defense research institute, training organizations, and equipment repair facilities.⁶¹⁵ Today, this organization is subordinate to the Air Force Research Academy and is known as the Air Force Meteorology and Chemical Defense Research Institute (空军气象防化研究所).

At PLAAF HQ and the MRAF / TCAF HQ, chemical defense troops are organized into regiment-level groups (防化大队) or battalion-level teams (防化队). These organizations have subordinate chemical defense elements and/or companies.⁶¹⁶ The regiment-level groups also have their own command post.

Operational units, including ground air defense and airfield stations, have embedded chemical defense teams that can be battalion, company, or platoon size and that range from a few people to more than 30. These organizations have a wide variety of support vehicles.⁶¹⁷

Each element, company, and team has subordinate squads, including observation, reconnaissance, and decontamination squads. Their primary missions include detecting and destroying nuclear, chemical, and biological agents.⁶¹⁸

It is not clear where the PLAAF's chemical defense officers and enlisted personnel receive their education and training. However, it is possible that the officers might attend the PLA's Army Institute of NBC Defence (陆军防化学院) in Beijing, which the PLA describes as its only academy responsible for chemical defense education and training.⁶¹⁹

Air Force Engineering Corps

The PLAAF established an engineering corps (工程兵) in 1950 as a specialized unit, which later became a branch/arm; however, in May 1986, the PLAAF reorganized all of the relevant units into eight regiment-grade air defense engineering [functional and administrative] divisions (防空工程处) and abolished the Engineering Corps Branch/Arm.⁶²⁰

Military Unit Cover Designators

Key Points

- The PLA uses two military unit designator systems, which U.S. DOD translates as a “true unit designator” (TUD) and a “military unit cover designator” (MUCD).
- The last wholesale adjustment to the MUCD system occurred in 2000; since 2016, more adjustments appear to be underway, but do not appear to have impacted the PLAAF as of 2020.

This section discusses military unit designators that are based on the following two key terms:⁶²¹

- *Budui fanhao* (部队番号), which the PLA translates as “unit designation” and “designation of units,” the PLAAF translates as “troop designation,” and the U.S. DOD translates as “true unit designator” and uses the acronym TUD.
- *Budui daihao* (部队代号), which the PLA translates as “unit code name” and “designator code of units,” the PLAAF translates as “troop code name,” and the U.S. DOD translates as “military unit cover designator” and uses the acronym MUCD.

Since the 1950s, the PLA has simultaneously used a TUD system, where all military operational and support units are identified by their actual number, such as the 1st Air Division, and a MUCD system to protect the identity of its units. These cover designators are used on stationery letterhead, banners, in newspaper and magazine articles, and on signs at the entrance to military facilities. The PLA has changed its MUCDs at least four times since the early 1950s. Two separate sets of four-digit designators were used from the early 1950s to 1975, when a five-digit system was instituted. A new five-digit system was instituted in 2000.^{ej, 622}

The PLA assigns MUCDs to “units” (部队), which are defined as corps-, division-, brigade-, and regiment-level operational and support organizations.⁶²³ Although MUCDs are generally not assigned to academic institutions, the PLAAF’s flight academies have always been assigned an MUCD, because they are organized and managed the same as an operational aviation unit.

ej The five-digit system was instituted following an expanded meeting of the CMC, which also instituted a 600,000-man reduction in force. Deng Xiaoping had just been rehabilitated and was re-instituted as a Party vice-chairman, Politburo member, CMC vice-chairman, and Chief of the General Staff.

Table 3-19 below shows the MUCD blocks for the period of 1975 to 2000:

Table 3-19: MUCD Blocks, 1975-2000

MUCD Block	Organization
32/83xxx	Nanjing MR
(32xxx)	Fuzhou MR 1975-1985
(83xxx)	Nanjing MR 1975-1985
34/53/54xxx	Guangzhou MR
(33/34xxx)	Wuhan MR 1975-1985
35/56xxx	Chengdu MR
(351xx-355xx)	Kunming MR 1975-1985
36/84xxx	Lanzhou MR
37/38xxx	Navy
39/86/87xxx	Air Force
51/52xxx	Beijing MR
546/55xxx	Jinan MR
57/58/88xxx	General Staff Department
59xxx	General Logistics Department
80xxx	Second Artillery Force
81/82xxx	Shenyang MR
89xxx	General Armament Department

When the 1975 MUCD system was implemented, the PLA was organized into 11 MRs / MRAFs and had about four million personnel. In 1985, the number of MRs / MRAFs was reduced to seven and, by 2000, the PLA had downsized by more than 1.2 million personnel. As a result, the old MUCD system no longer fit its structure. Therefore, the following new MUCD system was implemented in October 2000. Note that the protocol order for the blocks was the General Departments, Army (i.e., seven MRs), Navy, Air Force, and Second Artillery Force. Because the General Political Department did not have any operational and support units, it was not assigned any MUCDs. Protocol order is one of the driving forces for the MUCD system. From 1975 to 2000, the PLAAF listed its seven MRAFs in a different order based on a combination of their priority and the dates they were created, even though each MRAF had a predecessor organization since around 1950.⁶²⁴ The order was Shenyang (1955), Beijing (1955), Lanzhou (1955), Nanjing (1955),^{ek} Guangzhou (1955), Jinan (1967), and Chengdu (1985).

ek Even though the Nanjing MRAF was created in 1955, it did not have any forces in Fujian Province until the start of the 1958 Taiwan Strait Crisis.

However, when the PLA implemented a new MUCD in 2000, the protocol order was adjusted in 2000 to match the MR order shown in Table 3-20 below:

Table 3-20: MUCD Blocks, 2000-2015

MUCD Blocks	Organizations
61xxx	General Staff Department
62xxx	General Logistics Department
63xxx	General Armament Department
65xxx	Shenyang MR
66xxx	Beijing MR
68/69xxx	Lanzhou MR
71/72xxx	Jinan MR
73xxx	Nanjing MR
75/76xxx	Guangzhou MR
77/78xxx	Chengdu MR
91/92xxx	Navy
93/94/95xxx	Air Force
96xxx	Second Artillery Force

As shown in Table 3-21, the PLAAF's block was further broken down into the following eight categories, including the seven MRAFs in protocol order plus a single block for the Airborne Corps, which is directly subordinate to PLAAF HQ, and any other directly subordinate units (DSU). It does not appear that the blocks have been adjusted following the reorganization to five TCAFs in 2016.

Table 3-21: PLAAF MUCD Blocks 2000-Present

Block	MRAF	First Number	Last Number	Number of MUCDs
1	Shenyang	93001	93400	399
2	Beijing	93401	93800	399
3	Lanzhou	93801	94200	399
4	Jinan	94201	94600	399
5	Nanjing	94601	95000	399
6	Guangzhou	95001	95400	399
7	Chengdu	95401	95700	299
8	Airborne; DSU	95701	95999	299

Each element (分队) is also assigned a one-, two-, or three-digit number that follows the MUCD, such as the 78170 unit 30 element (78170 部队30分队).⁶²⁵ There are also exceptions to this rule, as there are to every rule regarding the PLA. Specifically, although MUCDs have historically been assigned to regiment and above organizations, certain battalion leader-grade organizations have also been assigned MUCDs. Although they are battalion-level organizations, they are most likely independent battalions that are organized like and treated as a regiment. For example, several Army Aviation battalion leader-grade flight groups (飞行大队) are assigned MUCDs, such as one flight group whose Commander had 27 years of flight experience and was a division-deputy leader-grade officer, which fits with a regiment-grade organization.⁶²⁶ In addition, the group had a Political Division (政治处), which means it was a regiment-grade organization.⁶²⁷

Following the 2016 reorganization, the MUCD system began undergoing significant changes and a new, codified system has yet to be announced.⁶²⁸ Starting in 2017, official Chinese sources began publishing articles describing five-digit MUCDs that start with 31 and 32, followed by three digits. Although some of the blocks have been adjusted to match the five Theater Commands, it does not appear that the PLAAF’s block has changed. Unlike the 2000 change, which occurred all at the same time, the current changes are taking place at different times and the blocks are not based on individual organizations, such as one block for each Theater Command. Table 3-22 below shows the available information.

Table 3-22: MUCD Blocks, 2017-Present

MUCD Block	Organizations
31xxx	Specific types of units, such as all of the Group Armies (3165x-3167x), which are not organized by TC
32xxx	Units subordinate to the Strategic Support Force
61/62/63xxx	Central Military Commission
65xxx	Northern TC
66xxx	Northern TC, Central TC
68/69xxx	Western TC, Northern TC, Central TC
71/72xxx	Northern TC, Central TC
73xxx	Eastern TC
75/76xxx	Southern TC, Central TC
77/78xxx	Southern TC, Western TC
86/87xxx	People’s Armed Police Force
91/92xxx	Navy
93/94/95xxx	Air Force
96xxx	Rocket Force

PLAAF Research Academy

Key Finding

- The PLAAF Equipment Research Academy is a relatively new organization that coordinates with other PLA-managed and Chinese state-owned enterprises in China’s defense industry.

On 2 February 2004, PLAAF HQ held a ceremony to formally establish the new Air Force Equipment Research Academy (空军装备研究院) as a corps leader-grade organization.⁶²⁹ The research academy was created in order to be responsible for consolidating the strengths of the PLAAF’s scientific research, implementing science and technology (S&T) strategy for a strong military, and speeding up the informatization of the PLAAF’s equipment and weapons. The new research academy consolidated the administrative functions of more than 20 PLAAF division- and regiment-level scientific research organizations, most of which are located around Beijing. This further allowed the PLAAF to downsize the administrative staff and to have a single organization that was responsible for consolidating requirements.

It was given the grade of corps leader so that it would be able to coordinate better with other PLA-managed and Chinese state-owned enterprises in the country’s defense industry on a daily basis. For example, it works closely with the CMC’s Science and Technology Commission (科学技术委员会), which was created under the former General Armament Department, as the “leading technical and intellectual brain trust” for defense S&T and serves as

a nexus between military units, the CMC, and the defense industry.⁶³⁰ The Commission has always been a MR/ TC leader-grade organization. It is responsible for determining strategies for developing defense-related science and technology and advising the PLA leadership on weapons and equipment selection, military modernization, arms control, and nonproliferation.⁶³¹ In this capacity, the S&T Committee has direct access to the CMC leadership and coordinates closely with all of the PLA services and defense industry components.⁶³²

As of 2005, about 1,500 officers were assigned to the PLAAF Equipment Research Academy, which had the following subordinate institutes:

- Equipment General Demonstration Research Institute (装备总体论证研究所), which was also identified as the General Research Institute (总体研究所) in a 13 January 2005 internet article.⁶³³ The term “*zongti*” (总体) is difficult to translate correctly here, because it can be translated as “total” or “general.”
- Aviation Equipment Research Institute (航空装备研究所).
- Air Force Ground Air Defense Equipment Research Institute (空军地面防空装备研究所).
- Air Force Radar and Electronic Countermeasures Research Institute (空军雷达与电子对抗研究所).
- Air Force Communications Navigation and Command Automation Research Institute (空军通信导航与指挥自动化研究所).
- Air Force Reconnaissance and Intelligence Equipment Research (空军侦察情报装备研究所).
- Air Force Weather and Chemical Defense Research Institute (空军气象防化研究所).
- SAM Technical/Technology Services Research Institute (导弹技术勤务研究所).
- Air Force Equipment Software Testing and Evaluation Center (空军装备软件测评中心).^{el}

With the “below-the-neck” reforms that started in 2017 as part of the 11th PLA force reduction, the PLAAF reorganized the academy and renamed it the Air Force Research Academy (空军研究院) in July 2017.⁶³⁴ Although its overall organizational structure remains unclear, it was established that, in November 2017, multiple PLAAF specialized-research institutions were gradually set up and integrated into the new academy-institute mechanism (院所体制).⁶³⁵ As such, the Air Force Research Academy is becoming the PLAAF’s main scientific research powerhouse (科研主体力量). Some of the new institutes under this academy that have been identified, but the other ones noted above also most likely still exist:

- Air Defense Anti-Missile Institute (防空反导所).
- Building and Construction Research Institute (建设发展研究所).
- Communications and Missile Institute (通信与导弹所).
- Meteorology and Hydrology-related (气象水文) research institute.⁶³⁶

Appendices

Appendix 3-1: Key Leaders during the PLAAF’s 13 Party Congresses

This Appendix provides a list of all of the key leaders in each of the 13 Party Congresses. As shown in Tables 3-23 to 3-25, all of the key leaders for each Party Congress already held their position for some time and were not replaced during the Party Congress. The following bullets summarize the key information for the first 12 Party Congresses:

- Table 3-23 shows the 12 PLAAF Commanders and 12 PCs, when they served, and where they overlapped with the 13 Party Congresses.⁶³⁷

el In September 2004, the PLAAF Equipment Software Testing and Evaluation Center was officially opened by the General Armament Department within the PLAAF Equipment Research Academy. This was the first software testing and evaluation center within the PLAAF.

- Table 3-24 shows the 14 Chiefs of Staff and 17 Directors of the Political / Political Work Department.⁶³⁸ Of note, two former Chiefs of Staff became the PLAAF Commander and two Directors of the Political Department became the PLAAF PC.
- Table 3-25 shows the 12 Directors of the Logistics Department and the five Directors of the Equipment Department since it assumed its current name in 1998.⁶³⁹
- Since 1949, the PLAAF has had a total of 48 Deputy Commanders and 27 Deputy PCs.⁶⁴⁰ The longest time a Deputy Commander served was for 27 years (1956-1992) and the shortest period was one year (1999 and 2012) and the average time was 7.5 years. As a general rule, from 3-5 Deputy Commanders have served at the same time until they met their mandatory retirement age of 63 (MR / TC deputy leader grade); however, five Deputy Commanders were promoted and became the PLAAF Commander.⁶⁴¹
- The longest time a Deputy PC served was nine years (1960-1968, 1985-1993) and the shortest period was three years for multiple people and the average time was five years. As a general rule, only 1-2 Deputy PCs serve at the same time until they met their mandatory retirement age of 63; however, four Deputy PCs were promoted to become the PLAAF PC. Now that the PLAAF has added the Secretary of the Discipline Inspection Commission to the Party Standing Committee, it is doubtful if the PLAAF will have more than one Deputy PC at any given time. In fact, the Deputy PC billet was empty for almost half a year from the end of 2017 to mid-2018.
- Of note, none of the key leaders were replaced during the 13th Party Congress.

Table 3-23: PLAAF Party Congresses, Commanders, and PCs: 1956-2019

#	Date	Commander	Political Commissar
1st	May 1956	Liu Yalou (Oct 1949 – May 1965)	No PC (Apr 1950 – Feb 1957)
2nd	Apr 1959		Wu Faxian (Feb 1957 – May 1965)
3rd	Sep 1962		
		Wu Faxian (May 1965 – Sep 1971)	Yu Lijin (May 1965 – Sep 1968)
4th	May 1969		Wang Huiqiu (Sep 1968 – May 1973)
		No Commander (Sep 1971 – May 1973)	Fu Chuanzuo (May 1973 – Nov 1975)
		Ma Ning (May 1973 – Apr 1977)	Zhang Tingfa (Nov 1975 – Apr 1977)
5th	Apr 1978	Zhang Tingfa (Apr 1977 – Jul 1985)	Gao Houliang (Apr 1977 – Jul 1985)
6th	Nov 1983		
		Wang Hai (Jul 1985 – Nov 1992)	Zhu Guang (Jul 1985 – Nov 1992)
7th	Dec 1988		
		Cao Shuangming (Nov 1992-1994)	Ding Wenchang (Nov 1992 – Feb 1999)
8th	Dec 1993		
		Yu Zhenwu (Nov 1994 – Dec 1996)	
		Liu Shunyao (Dec 1996 – May 2002)	Qiao Qingchen (Feb 1999 – May 2002)
9th	Feb 1999		
		Qiao Qingchen (May 2002 – Oct 2007)	
10th	May 2004		Deng Changyou (May 2002 – Oct 2012)
		Xu Qiliang (Oct 2007 – Oct 2012)	
11th	May 2009		
		Ma Xiaotian (Oct 2012 – Aug 2017)	Tian Xiusi (Oct 2012 – Jul 2015)
12th	Jun 2014		
		Ding Laihang (Aug 2017 – Present)	Yu Zhongfu (Jul 2015 – Present)
13th	Jun 2019		

Table 3-24: PLAAF Party Congresses, Chiefs of Staff, and Directors of the Political Department / Political Work Department: 1956-2019

#	Date	Chief of Staff (Headquarters / Staff Department) ⁶⁴²	Director, Political / Political Work Department*
1st	May 1956	Wang Chengzhang (Oct 1949 – Nov 1958)	Wang Huiqiu (Jan 1953 – Jul 1964)*
		Zhang Tingfa (Nov 1958 – Sep 1966)	
2nd	Apr 1959		
3rd	Sep 1962		Huang Yukun (Jul 1964 – May 1967)
			No Director (May 1967 – May 1973)
4th	May 1969		Gao Houliang (May 1973 – Oct 1975)*
		Liang Shu (Sep 1969 – Feb 1974)	Liu Shichang (Oct 1975 – Jan 1978)
5th	Apr 1978	Wang Dinglie (May 1975 – Nov 1982)	Ye Songsheng (Jan 1978 – Nov 1982)
		Ma Zhanmin (Nov 1982 – Jan 1987)	Bi Hao (Nov 1982 – Jan 1987)
6th	Nov 1983	Ma Zhanmin (Nov 1982 – Jan 1987)	Gao Xingmin (Jan 1987 – Apr 1988)
7th	Dec 1988		Ding Wenchang (Apr 1988 – Nov 1992)
		Xin Dianfeng (Jul 1993 – Oct 1994)	Zhang Hanping (Nov 1992 – Dec 1993)
8th	Dec 1993		Xu Chengdong (Dec 1993 – Nov 1997)
		Xu Qiliang (Oct 1994 – Jan 1999)	Deng Changyou (Nov 1997 – May 2002)
9th	Feb 1999	Zheng Shenxia (Jan 1999 – Jul 2003)	
		He Weirong (Jul 2003 – Dec 2005)	
10th	May 2004		Sun Junzhe (May 2002 – Sep 2007)
		Zhao Zhongxin (Dec 2005 – Sep 2007)	Wang Xiaolong (Sep 2007 – Dec 2009)
11th	May 2009	Yang Guohai (Sep 2007 – Jul 2013)	
		Ma Zhenjun (Jul 2013 – Jan 2018)	Zhu Fuxi (Dec 2009 – Nov 2012)
			Fang Jianguo (Dec 2012 – Jul 2015)*
12th	Jun 2014		Fan Xiaojun (Jul 2015 – Jan 2017)
		Yu Qingjiang (Jan 2018 – Present)	Du Yuanfang (Jan 2017 – Present)
13th	Jun 2019		

*These three Directors served part of their time as a concurrent Deputy PC.

Table 3-25: PLAAF Party Congresses and Directors for Logistics and Equipment Departments: 1956-2019

#	Date	Director, Logistics Department	Director, Equipment Department	
1st	May 1956	Shi Zhonghan (Feb 1954 – Oct 1962)	See the footnote for the background on the Equipment Department. ^{em}	
2nd	Apr 1959			
3rd	Sep 1962	Qi Yuanwo (Oct 1962 – Feb 1967)		
4th	May 1969	He Zhenya (Dec 1968 – Oct 1971)		
		Liu Ren (Aug 1975 – Feb 1978)		
5th	Apr 1978	No Director (Feb 1978 – Jan 1979)		
		Huang Yonggui (Jan 1979 – Jan 1987)		
6th	Nov 1983	Wang Zhongqi (Jan 1987 – Jun 1990)		
		Yang Dechun (Jun 1990 – May 1995)		
7th	Dec 1988			
8th	Dec 1993	Zhang Dongsheng (May 1995 – Dec 2000)		Tian Shaoqi (Oct 1998 – Dec 2004)
		Li Maifu (Dec 2000 – Jul 2003)		
9th	Feb 1999	Hu Chuanyan (Jul 2003 – Sep 2007)		
10th	May 2004	Zhu Hongda (Sep 2007 – Dec 2014)	Wei Gang (Dec 2004 – Dec 2011)	
11th	May 2009		Yuan Qiang (Dec 2011 – Jun 2015)	
12th	Jun 2014	Zheng Xuexiang (Dec 2014 – Present)	Li Fan (Jun 2015 – Sep 2018)	
			Zhu Cheng (Sep 2018-Present)	
13th	Jun 2019			

Appendix 3-2: PLAAF Air Corps, Base, and Command Post History: 1949-2019

This appendix provides the history of the PLAAF’s 13 Air Corps and four Command Posts from 1949-2000. See Chapter 3, *The Shift from Air Corps to Bases and Command Posts* section for the current situation.

1st Air Corps: The 1st Air Corps (空一军) was established in Changchun, Jilin Province, probably in November 1951. During preparations to liberate Taiwan in the fall of 1958, the PLAAF moved the core staff of the 1st Air Corps to Jinjiang, Fujian Province, in July 1958. In October 1958, the 1st Air Corps was reestablished in Changchun as a corps leader-grade organization.⁶⁴³ In 2004, it was downgraded to division leader-grade and renamed the Changchun Command Post.

2nd Air Corps: The 2nd Air Corps (空二军) was established in November 1951 at Andong, Liaoning Province, and was later abolished.⁶⁴⁴ It was not replaced by a Command Post.

^{em} When the PLAAF was founded in November 1949, it created an Air Force Engineering Department (空军工程部) to manage aircraft maintenance; however, in September 1969, it was abolished. In May 1976, it created the Aeronautical Engineering Department (空军航空工程部) as the fourth first-level department. In 1992, the name was changed to the Air Force Equipment Technical Department (空军装备技术部), but it still had the same responsibilities. At the same time the CMC created the General Armament Department in 1998, the PLAAF changed the name to the Equipment Department (空装/空军装备部).

3rd Air Corps, Dalian Command Post and Base: The 3rd Air Corps (空三军) was originally formed at Kaiyuan Liaoning Province, in November 1951, changed to the Dalian CP (大连指挥所/ 大指) probably in 1985 and changed again to the Dalian Base (大连基地/ 大基) sometime after 1993.⁶⁴⁵ In 2004, it was renamed the Dalian CP as a corps deputy leader-grade organization. In 2012, it was renamed the Dalian Base and remained as a corps deputy leader-grade organization.

4th Air Corps, Shanghai Command Post and Base: The 4th Air Corps (空四军) was established in Shanghai in August 1952, changed to the Shanghai CP (上海指挥所/ 上指) probably as early as 1985, and changed again to the Shanghai Base (上海基地/ 上指挥) sometime after 1993.⁶⁴⁶ In 2004, it was renamed the Shanghai CP as a division leader-grade organization. In 2012, it was renamed the Shanghai Base and upgraded to corps deputy leader grade.

5th Air Corps: The 5th Air Corps (空五军) was established in Weifang, Shandong Province, in August 1952, but was noted in Hangzhou in 1954 until April 1976, when it was abolished.⁶⁴⁷ At that time, the 5th Air Corps command staff was moved to Kunming and the Kunming MRAF CP was renamed the 5th Air Corps.⁶⁴⁸ In November 1978, the 5th Air Corps was renamed the Kunming MRAF CP.⁶⁴⁹ The 5th Air Corps apparently disappeared for good in 1978.⁶⁵⁰ In 2004, it was renamed the Kunming CP as a corps deputy leader-grade organization. In 2012, it was renamed Kunming Base as a corps deputy leader-grade organization.

6th Air Corps, Jinan MRAF, Tangshan Command Post and Base: The 6th Air Corps (空六军) was established at Yangcun, Hebei Province, in March 1956, but moved to Weifang, Shandong Province, in June 1956.⁶⁵¹ In September 1967, the 6th Air Corps moved to Jinan, Shandong Province, and formed the basis for the Jinan MRAF (济南军区空军/ 济空).⁶⁵² During December 1968, the 6th Air Corps was recreated in Tangshan, Hebei Province, and was noted in 1976 during the earthquake.⁶⁵³ At an unidentified later time, the 6th Air Corps changed its name to the Tangshan CP (唐山指挥所/ 唐指).⁶⁵⁴ The name was changed to Tangshan Base (唐山基地/ 唐基) sometime after 1993.⁶⁵⁵ In 2004, it was renamed the Tangshan CP as a division leader-grade organization.

7th Air Corps: In November 1959, the Shantou CP (汕头指挥所/ 汕指) was established in Chenghai, Guangdong Province, but moved to Xingning, Guangdong Province, in 1960.^{en} At some point after 1960, another Shantou CP was apparently established. In June 1962, the second Shantou CP became the 7th Air Corps (空七军). Sometime after that, the 7th Air Corps moved to Xingning, Guangdong Province. In August 1964, the 7th Air Corps moved to Nanning, Guangxi Autonomous Region.⁶⁵⁶ In 2004, it was renamed the Nanning CP as a division leader-grade organization. In 2012, it was renamed Nanning Base and upgraded to corps deputy leader.

8th Air Corps, Fuzhou MRAF, Fuzhou Command Post, Jinjiang Command Post: The PLAAF has changed its command organizations in Fuzhou several times since the mid-1950s, and provides one of the most difficult situations to understand. In September 1955, the PLA Air Defense Force's 1st Corps (防空军第一军) was established in Fuzhou, Fujian Province. Following the Air Defense Corps' merger with the PLAAF in 1957, the 1st Corps was replaced in July 1958 by the Fuzhou MRAF (福州军区空军/ 福空), which was formed at Jinjiang, Fujian Province, from a core of the 1st Air Corps (Changchun) and organized to command Fujian and Jiangxi PLAAF units in preparation to liberate Taiwan.⁶⁵⁷ In February 1960, the PLAAF established the Fuzhou CP (福州指挥所/ 福指) in Fuzhou City.⁶⁵⁸

en Yao Jun, ed., [A History of China's Aviation] [中国航空史], (Zhengzhou: Dajia Publishers, September 1998), 660. The Command Post was upgraded to a corps-level organization in April 1965 as the United States' involvement in Vietnam increased. The Command Post Commander was Lin Hu, who was former PLAAF Commander Wang Hai's Regiment Commander during the Korean War. He was a Division Commander during the 1958 Taiwan Straits crisis, a Deputy Commander in the Guangzhou MRAF under Wang Hai, and a Deputy commandant of the PLAAF Command Academy. He became a PLAAF Deputy Commander under Wang Hai in September 1985.

In June 1960, the MRAF and Command Post staffs exchanged locations, and the Fuzhou CP changed its name to the Jinjiang CP (晋江指挥所/ 晋指).⁶⁵⁹ In 2012, it was renamed the Fuzhou CP as a corps deputy leader-grade organization. In 2017, it was renamed the Fuzhou Base as a corps deputy leader-grade organization.

In June 1962, the Jinjiang CP changed its name to the 8th Air Corps (空八军).⁶⁶⁰ In April 1976, the 8th Air Corps, then located in Zhangzhou, Fujian Province, was abolished,⁶⁶¹ but was immediately reconstituted in Chengdu when it replaced the Chengdu MRAF CP. In November 1978, the 8th Air Corps was replaced by the Chengdu MRAF CP.⁶⁶² At some point after 1978, the 8th Air Corps moved from Chengdu to Fuzhou, Fujian Province. When the Fuzhou MRAF HQ was abolished in August 1985, the 8th Air Corps became the primary PLAAF command authority for all PLAAF units in Fujian. In 2004, it was renamed the Fuzhou CP as a corps deputy leader-grade organization. In 2012, it was downgraded to division leader grade.

9th Air Corps, Xinjiang / Urumqi Command Post: In November 1964, the 9th Air Corps (空九军) was established in Urumqi, Xinjiang Autonomous Region, and in November 1978 changed to the Xinjiang MRAF CP (新疆军区空军指挥所/ 新指).⁶⁶³ On 16 April 1979, the name was changed to Urumqi MRAF CP (乌鲁木齐军区空军指挥所/ 乌指).⁶⁶⁴ The 9th Air Corps was again noted in Xinjiang (probably Urumqi) as early as 1993.⁶⁶⁵ Furthermore, no reference has been seen to the Urumqi CP since then. Most likely, the 9th Air Corps was re-established to replace the Urumqi CP, possibly as early as August 1985 when the PLA reduced its 11 Military Regions into seven, including the merger of the Xinjiang MR into the Lanzhou MR. In 2004, it was renamed the Urumqi CP as a corps deputy leader-grade organization.

10th Air Corps: The 10th Air Corps (空十军) was established in January 1969 at Datong, Shanxi Province.⁶⁶⁶ In 2004, it was renamed the Datong CP as a corps deputy leader-grade organization. In 2016, it was renamed the Datong Base.

11th Air Corps, Xi'an Command Post and Base: The 11th Air Corps (空十一军) was established in June 1969 in Hetian, Xinjiang Autonomous Region, and replaced the Lanzhou MRAF HQ at Xi'an, Shaanxi Province, when the Lanzhou MRAF (兰州军区空军/ 兰军) headquarters moved from Xi'an to Lanzhou, Gansu Province in November 1969.⁶⁶⁷ The 11th Air Corps was replaced by the Xi'an CP (西安指挥所/ 西指) in August 1985.⁶⁶⁸ The name was changed to the Xi'an Base (西安基地/ 西基) sometime after 1993.⁶⁶⁹ In 2004, it was renamed the Xi'an CP as a corps deputy leader-grade organization. It appears that the Command Post ceased to exist after 2016.

12th Air Corps, Shantou and Xingning Command Post: In November 1959, the Shantou CP (汕头指挥所/ 汕指) was established in Chenghai, Guangdong Province, but moved to Xingning, Guangdong Province, in 1960.⁶⁷⁰ At some point after 1960, another Shantou CP was established that became the 7th Air Corps in June 1962. In June 1969, the Xingning CP changed its name to the 12th Air Corps (空十二军).⁶⁷¹ The 12th Air Corps was abolished in April 1976.⁶⁷²

13th Air Corps: The 13th Air Corps (空十三军) was created in Shijiazhuang, Hebei Province, in August 1970 and was abolished in March 1976.⁶⁷³

Kunming MRAF Command Post and Base: On 1 August 1960, the Kunming MRAF CP (昆明军区空军指挥所/ 昆指) was formed.⁶⁷⁴ In April 1976, the 5th Air Corps command staff was moved to Kunming and the Kunming MRAF CP was renamed the 5th Air Corps.⁶⁷⁵ In November 1978, the 5th Air Corps was renamed the Kunming MRAF CP.⁶⁷⁶ The CP was renamed the Kunming Base (昆明基地/ 昆基) sometime after 1993.⁶⁷⁷

Wuhan MRAF, Command Post, and Base: In 1955, the PLA implemented a reorganization, whereby the PLAAF renamed its six MRAF HQs as the Shenyang, Beijing, Nanjing, Guangzhou, Lanzhou, and Wuhan (former Hubei) MRAFs. Although four of the MRAFs remained in the same location, two of them moved. The South Central MRAF in Wuhan moved to Guangzhou as the Guangzhou MRAF, and the Southwest MRAF in Chengdu moved to Wuhan to become the Wuhan MRAF. In the 1970s, the Wuhan MRAF became one of the PLA's seven MRAFs. In 1985, the Wuhan MRAF was abolished and merged into the Guangzhou MRAF and Jinan MRAF. At some point (probably 2012), the PLAAF created the Wuhan CP as a corps deputy leader-grade organization. In 2016, it was renamed as the Wuhan Base and remained as a corps deputy leader-grade organization.

Lhasa Command Post and Base: The Lhasa CP (拉萨指挥所/拉指) was established at the division-level in November 1962 and subordinated to the Chengdu MRAF in January 1969.⁶⁷⁸ In August 1985, it was downgraded to a general office, but was upgraded again in 1987 to a division-level Command Post.⁶⁷⁹ Lhasa is the PLAAF's smallest Command Post and, according to PLAAF officials in 1989, is equivalent to only a brigade-level organization.⁶⁸⁰ According to PLA officials, the Lhasa CP probably did not get restructured as a Base (基地) when the other Command Posts changed in 1993. In 2004, it remained as the Lhasa CP as a division leader-grade organization. In 2016, it was renamed Lhasa Base as a corps deputy leader-grade organization.

Hetian Command Post: In July 1962, the Lanzhou MRAF created the Hetian (Hotan) CP (和田指挥所/和指) in Xinjiang.⁶⁸¹ The Hetian CP was a division-level organization. The CP was downgraded to a maintenance airfield station in April 1967. In 2004, it remained as the Tangshan CP as a division leader-grade organization.

Zhangzhou Command Post: In October 1978, the Fuzhou MRAF re-established the Zhangzhou CP (漳州指挥所/漳指) in Fujian Province.⁶⁸² This Command Post was probably originally established in 1958, but was later abolished.

Appendix 3-3: Original PLAAF 50 Air Divisions

This appendix provides a list of the original 50 air divisions.^{co .683}

Table 3-26: Original 50 Air Divisions

Division	Regiments	Date	Aircraft	Location when established
1st	1st 2nd 3rd	Mar 56	Fighter	Anshan, Liaoning (Created in 1950 as the 4th Composite Brigade in Nanjing and renamed the 1st Air Division in 1956)
2nd	4th 6th	Nov 50	Fighter	Shanghai Longhua
3rd	7th 8th 9th	Oct 50	Fighter	Shenyang, Liaoning. Currently in Wuhu, Anhui
4th	10th 12th	Oct 50	Fighter	Liaoyang, Liaoning Changed to 1st Division. Then reestablished in Mar 56 in Liaoyang.
5th	13th 15th	Dec 50	Ground Attack	Kaiyuan, Liaoning
6th	16th 17th	Nov 50	Fighter	Anshan, Liaoning
7th	19th 21st	Dec 50	Fighter	Dongfeng, Jilin ²
8th	22nd 24th	Dec 50	Bomber	Siping, Jilin
9th	25th 27th	Dec 50	Fighter	Jilin, Jilin Transferred to Naval Aviation as 5th Division, Sep 55. Reestablished in Guangzhou in Mar 56.
10th	28th 30th	Jan 51	Bomber	Nanjing, Jiangsu
11th	31st 33rd	Feb 51	Ground Attack	Xuzhou, Jiangsu
12th	34th 36th	Dec 50	Fighter	Xiaoshan, Zhejiang
13th	37th 39th	Apr 51	Transport Recce	Xinjin Xian, Sichuan
14th	40th 42nd	Feb 51	Fighter	Beijing Nanyuan
15th	43rd 45th	May 51	Fighter	Huaide Xian, Jilin
16th	46th 48th	Feb 51	Fighter	Qingdao, Shandong
17th	49th, 50th, 51st	Apr 51	Fighter	Tangshan, Hebei Transferred to Naval Aviation as 4th Division, May 54. Reestablished in Beijing in Mar 56.
18th	52nd, 54th	May 51	Fighter	Guangzhou, Guangdong
19th	55th, 57th	Nov 51	Fighter	Wuhan, Hubei
20th	58th, 60th	Nov 51	Bomber	Bengbu, Anhui
21st	61st, 63rd	Nov 51	Fighter	Shanghai
22nd	64th, 66th	Nov 51	Ground Attack	Hengyang, Hunan
23rd	67th, 68th, 69th	Nov 51	Bomber	Hengyang, Hunan
24th	70th, 71st, 72nd	Nov 51	Fighter	Nanchang, Jiangxi
25th	73rd, 74th	Nov 51	Bomber	Huxian, Shaanxi
26th	76th 78th	Dec 52	Fighter	Liuzhou, Guangxi
27th	79th, 81st	Dec 52	Fighter	Beijing Tongxian
28th	82nd, 84th	Dec 52	Ground Attack	Gucheng, Hebei
29th	85th, 87th	Jan 54	Fighter	Jiaxing, Zhejiang
30th	88th, 89th	May 60	Fighter	Donggou, Liaoning
31st	91st, 93rd	May 60	Fighter	Yancheng, Jiangsu
32nd	94th, 96th	May 60	Fighter	Jinghai, Hebei
33rd	97th, 99th	May 60	Fighter	Shanpo, Hubei
34th	100th, 102nd	Sep 63	Transport	Beijing, Hebei. Sep 80 changed to indep transport Regiment. Mar 88 changed back to 34th Division that is directly subordinate to PLAAF HQ
35th	104th, 105th	Mar 65	Fighter	Xingning, Guangdong

co The PLAAF histories provide lots of detail about the formation of the first 28 divisions, but give virtually no information about the remaining 22 divisions.

36th	106th, 108th	Mar 65	Bomber	Wugong, Shaanxi
37th	109th, 110th, 111th	Aug 66	Fighter	Dandong Langtou, Liaoning
38th	112th, 113th, 114th	Jun 67	Fighter	Jinghai, Hebei Formerly 1st Training Base
39th	115th, 117th	Jun 67	Fighter	Liuhe, Jilin Formerly 2nd Training Base
40th	119th	Jul 69	Fighter	Langtou, Liaoning
41st	121st, 122nd, 123rd	Aug 69	Fighter	Gongmaozi, Inner Mongolia
42nd	124th, 125th, 126th	Aug 69	Fighter	Guilin, Guangxi
43rd	127th, 128th	Jul 69	Fighter	Jilin, Jilin
44th	130th, 131st, 132nd	Nov 69	Fighter	Shanpo, Hubei
45th	133rd, 134th, 135th	Nov 69	Ground Attack	Bengbu, Anhui
46th	135th, 136th, 137th	Oct 69	Fighter	Dingxin, Gansu
47th	139th, 140th, 141st	Feb 70	Fighter	Yinchuan, Ningxia
48th	142nd, 143rd, 144th	Aug 70	Bomber	Liyang, Hunan
49th	145th, 146th, 147th	Jul 71	Fighter	Zhangshu, Jiangxi
50th	148th, 149th, 150th	Apr 71	Ground Attack	Leizhuang, Guiyang

Chapter 4: PLAAF Personnel System

This chapter provides information about the PLAAF's personnel system from 1949 to 2019. It examines the officer (cadre) corps, the enlisted force, civilian cadre, and civilian personnel system. It also briefly discusses issues pertaining to marriage, family, housing, and benefits. The officer corps is divided into two categories: pilots and non-pilot specialties. It also discusses the growing role of women in the PLAAF.⁶⁸⁴ It is divided into the following nine sections:

- A brief history of the “people” in the People’s Liberation Army
- Officer corps recruitment and promotion
- Enlisted force conscription, recruitment, and promotion
- Civilian cadre
- Civilian personnel
- Reserves
- Marriage, family, housing, and benefits
- PRC Ministry of Veterans Affairs
- Mental health issues.

See Appendices G, H, and I for information concerning the history of the PLAAF's Commanders, PCs, and Deputy Commanders.

A Brief History of the “People” in the People’s Liberation Army

Key Points

- In the PLA and PLAAF, officers are identified as “officers” or “cadres” and the enlisted force is identified as “soldiers” or, more recently in the PLAAF, “airmen.”
- The PLA’s personnel system has evolved greatly over the years as the education level of officers has risen, with a key development being the establishment of a formal NCO program.
- The enlisted force is a combination of conscripts and volunteers, even though all new two-year enlisted personnel are identified as “conscripts.” For purposes of this book, depending on the context, the term conscript and/or two-year enlisted personnel will be used.
- Within the enlisted force, the PLAAF has a higher percentage of NCOs than the ground forces due to a need for enlisted personnel with technical skills.

When looking at the PLA’s and PLAAF’s history, it is important to make a distinction between officers (军官), who historically have been identified as cadre (干部), and the enlisted force (士兵/ 战士), who have also been identified as soldiers or airmen. These two categories roughly make up the PLA equivalent of the USAF’s “airman.” It is important to note, however, that the PLAAF did not start using the word “airman” in English or Chinese (空军人) until around 2017, but it appears to only refer to enlisted personnel.⁶⁸⁵

In order to understand where the PLA's and PLAAF's personnel system is today, it is important to identify the PLA's officers' educational levels during several different periods.⁶⁸⁶ Specifically, in the period between the founding of the Red Army (1927) and the founding of the PRC (1949), only a small portion of officers were extricated from illiteracy while the majority of them were still illiterate. When the PRC was established in 1949, the PLA had 5.5 million troops. At that time, the enlisted force consisted primarily of illiterate peasant volunteers and the officer to enlisted member ratio was about 1:1.⁶⁸⁷ Even during the 1950s, most officers were still illiterate or barely literate. As such, the primary focus was to relieve them of illiteracy. At that time, the main content of the training classes set up by the units was teaching people how to read and write.⁶⁸⁸ Chapter 5 provides information about the PLAAF's schools that were established in the 1950s.

From 1950 to roughly 1980, some officers only studied for six months to two years before they received a two-year secondary professional program/diploma (中专) or three-year post-secondary educational program/diploma (大专), which focused on reading and writing. They then assumed their operational billet with only a little specialty training. The PLA did not stop offering secondary technical degrees for officers until 1995. In the late 1960s, 93.4 percent of officers had lower than a high-school educational level. Before the Third Plenum of the 11th CCP Central Committee (December 1978), there were still 91.9 percent of officers with less than a high-school educational level. As discussed in Chapter 5, the PLA shut down a high proportion of its academic institutions during the Cultural Revolution.

The situation underwent quite a tremendous change in the late 1980s, when 42.3 percent of officers had a college educational level (i.e., a two- to three-year post-secondary program or a four-year bachelor's degree) or above.^{ep}In 2000, that figure had risen as high as 71.8 percent. Also of importance is that, until 1982, a high proportion of officers began as outstanding enlisted personnel for up to three years (ages 15-17), at which time they received a direct promotion as an officer (从士兵中选拔基层干部) without any formal education.⁶⁸⁹ The PLAAF ceased this program in 1982, such that all officers had to graduate from one of the PLA academic institutions with a secondary, post-secondary, or bachelor's degree. Meanwhile, however, the enlisted force remained primarily illiterate or barely literate through the 1980s and 1990s. As discussed later, until 2010, by law, the PLA had to conscript two-thirds of its enlisted personnel from rural areas, where they received only a ninth-grade education. As will be discussed later in this chapter, the PLA began recruiting, not conscripting, college students and graduates in 2009 as enlisted personnel.

Finally, as noted in Chapter 1, the PLAAF does not provide open source data about the composition of its force, including the total number of personnel, the total number of officers and enlisted personnel, or the number of personnel by grade and rank. However, as noted earlier, the original mix of officers and enlisted personnel was 1:1. According to estimates by Clay and Blasko, following the 11th force reduction that began in 2016, officers/civil cadres now number approximately 450,000 personnel (23 percent), NCOs 850,000 (42 percent), and two-year enlisted personnel about 700,000 (35 percent).⁶⁹⁰

Concerning NCOs, the PLA did not use the characters *shiguan* (士官), best translated as “noncommissioned officer” (NCO) but also translated as “sergeant” for the Army, Navy, and Air Force or “petty officer” for the Navy, until 1988. The 1988 “Regulations of the Chinese People's Liberation Army on the Active-Duty Service of Enlisted Personnel” (中国人民解放军现役士兵服役条例) established the system of preferential treatment for both conscripts and volunteer soldiers, and contained stipulations governing their work arrangements following demobilization. These regulations also reestablished the system of grades and ranks for the enlisted force. Soldiers serving as volunteers in the PLA became known as noncommissioned officers (士官) and were accorded the rank of either sergeant (军士) or specialist sergeant (专业军士).

^{ep} The PLA uses the term university/college graduates (大学毕业生) as a generic term that includes personnel with a three-year post-secondary diploma (大专/大专毕业生) or a four-year bachelor's degree (本科/本科毕业生).

Since 1999, the PLA has shifted from an enlisted force made up predominantly of two-year enlisted personnel to one with a greater percentage of NCOs. According to a 2009 report, NCOs accounted for 40 percent of the total number of PLA personnel.⁶⁹¹ According to 2009 statistics following the implementation of significant NCO reforms and regulations, junior-grade NCOs constituted 61.1 percent of the NCO corps, intermediate-grade NCOs constituted 37.2 percent, and senior-grade NCOs accounted for 1.7 percent.⁶⁹² In addition, about 61.1 percent of NCOs were 26 years old or younger, 98.3 percent were 34 years old or younger, and the average age is 30 and below. As a result of the 2009 reforms, the size of the junior-grade NCO corps was reduced in order to enlarge the number of intermediate-grade NCOs.⁶⁹³ In 2012, technical NCOs constituted 90 percent of the NCO corps.⁶⁹⁴ Although no figures were provided for the percentage of NCOs in each grade for the PLAAF, in 2006, PLAAF NCOs constituted about 60 percent of the PLAAF's total enlisted force.⁶⁹⁵ This implies that the PLAAF's NCOs have a higher percentage than the PLA as a whole, especially the ground forces.

The primary reason for this discrepancy is that the PLAAF, like the PLA Navy and former Second Artillery Force, has a higher percentage of billets that require enlisted personnel with technical skills than does the ground forces. However, not all PLAAF branches/arms have the same ratio of conscripts and NCOs. For example, the Airborne Branch/Arm, which does not require as many technical specialists, appears to have a higher percentage of conscripts to NCOs than does the Aviation Branch/Arm, where NCOs have been replacing junior officers in several technical billets, including aircraft maintenance.⁶⁹ As a result, the NCOs in the Airborne Branch/Arm and the former SAM and AAA Branches/Arms that were merged into the Ground Air Defense Branch/Arm apparently do not receive as much technical training at specialized units as do maintenance NCOs.

PLAAF Officer Corps Recruitment and Promotion

Key Points

- The PLA and PLAAF do not have the equivalent of a Military Occupational Specialty (MOS) or Air Force Specialty Code (AFSC) system, but rather have five career tracks for officers.
- As PLAAF officers are promoted up the grades, they retire once they reach the mandatory retirement age for their grade.
- The PLAAF is still searching for the best way to recruit, educate, and train new officers, and continues to experiment with a variety of programs.

Like the rest of the PLA, the PLAAF has been reforming its officer corps recruitment, education, and training since the late 1990s. Chapters 5 and 6 discuss the education and training components, respectively. This section discusses officer career tracks and categories and officer recruitment, which is divided into non-pilot cadet recruitment and pilot cadet recruitment.

Officer Corps Key Terms and Concepts

The following terms and concepts, which are organized alphabetically, lay the foundation for the section:⁶⁹⁶

- *Fuyuan* (复员): Demobilization.
- *Ganbu* (干部): Cadre, which is synonymous with officer.

eq This statement is derived from an analysis of information from *Air Force News*. For example, new conscripts for airborne, AAA, SAM, communications, and radar regiment-level units are assigned to new conscript companies within new conscript battalions (*Air Force News*, 24 January 2006, 3). One airborne battalion had 750 new conscripts (*Air Force News*, 14 February 2006, 3). A combined SAM and AAA division was the only unit identified with a new soldier regiment with more than 1,000 conscripts (*Air Force News*, 26 February 2004, 1). No new soldier battalions were noted for the aviation branch. The high number of conscripts being trained within a regiment indicate a higher percentage of conscripts to NCOs.

- *Guofangsheng* (国防生): National Defense Student.
- *Jianxi* (见习): on probation/probationary.⁶⁹⁷
- *Junguan* (军官): Officer.
- *Lixiu* (离休): Honorary retirement.
- *Tuichu* (退出): Discharged from active duty⁶⁹⁸ and also refers to personnel who did not serve a full term in order to retire.
- *Tuiwu* (退伍): Release from service before reaching retirement, usually associated with the enlisted force.
- *Tuixiu* (退休): Retirement based on reaching mandatory age by grade.
- *Tuiyi* (退役): Decommission before reaching retirement.
- *Zhaofei* (招飞): Recruitment of flying cadet.⁶⁹⁹
- *Zhaosheng* (招生): Recruited as a military cadet.

Officer Career Tracks, Categories, and Management

The PLA has five officer career tracks for what it calls active duty officers.⁷⁰⁰ It should be noted that, unlike the U.S. military, the PLA does not have MOS codes or AFSCs for its officers or enlisted personnel. The PLA often combines the first four career tracks together to differentiate them from special technical officers, but there is no official single term for all the officers in the first four career tracks.^{er} The five career tracks for the PLAAF are shown below:

- Military (军事/ operational) officers serve as a unit Commander or Deputy Commander down to the platoon level, as well as in staff officer billets in PLAAF HQ's Headquarters / Staff Headquarters Department for all branches/arms down to the regiment level.^{es}
- Political (政治) officers serve as the Director or Deputy Director, as well as in staff officer billets in PLAAF HQ's Political / Political Work Department in all branches/arms down to the regiment level, as well as political officer billets in the battalion and company levels.
- Logistics (后勤) officers serve as the Director or Deputy Director, as well as in staff officer billets, in PLAAF HQ's Logistics Department and lower level Support Departments, Bureaus, and Divisions down to the platoon level.
- Equipment officers (装备) serve as the Director or Deputy Director, as well as in staff officer billets in PLAAF HQ's Equipment Department and lower level Support Departments, Bureaus, and Divisions down to the platoon level.⁷⁰¹
- Special technical (专业技术) officers can serve in technical billets in any of the four departments, but tend to be concentrated in equipment- and R&D-related organizations. Their specialties are divided into 16 sets with 52 categories. The 16 specialty sets include education, scientific research, engineering technology, health technology, economics and accounting, the arts, sports education, news, publishing, and broadcast, interpreting, and agricultural technology. Most sets have multiple categories within them.⁷⁰² Depending on their particular job, some officers move back and forth between being a special technical officer and an equipment and/or logistics officer.

The former General Political Department's (GPD) Cadre (Officer) Department served as the personnel center for officers, while the former GSD's Military Affairs Department served as the personnel center for the

^{er} Some PLA dictionaries and encyclopedias combine military, political, logistics, and equipment officers as non-special technical officers.

^{es} When an individual is referred to as a "military officer," this indicates that he is in the military (operational) career track, not that he is a generic military officer.

enlisted force. The PLAAF's former Political Department's Cadre Department and Headquarters Department's Military Affairs Bureau were responsible for officers and enlisted personnel, respectively. However, following the 2016 reorganization, the CMC Political Work Department and the PLAAF's Political Work Department became responsible for all personnel issues. While the Political Work Department's Cadre Bureau manages all officer issues, the Political Work Department created an Enlisted Soldier and Civilian Personnel Bureau (known as空政兵文局, 空政兵员与文职人员局, or 空政兵文局) to manage all enlisted force and civilian personnel issues.⁷⁰³

The PLA further organizes its officers into three categories as follows, each of which receive different types of education and training as they move up their career ladder:⁷⁰⁴

- Commanding officers (指挥军官), which includes the Commander, PCs, Deputy Commanders and PCs, and the Director and Deputy Director for all of the first-, second-, and third-level departments within the headquarters.
- Staff officers (参谋/干事), who serve in each of the four first-level departments (Headquarters / Staff, Political / Political Work, Logistics, Equipment, Support) and their subordinate second- and third-level departments.
- Special technical (专业技术) officers.

Officer Grades and Ranks

As discussed in Chapter 3, the PLA's officers are assigned 10 ranks and 15 grades. Concerning the rank insignia, officers in the five career tracks noted earlier wear shoulder boards with rank insignia shown in Figure 4-1 below.⁷⁰⁵ Flag-rank officers have from 1-3 stars, field-grade officers have from 1-4 stars, and company grade officers have from 1-3 stars, depending on their rank.⁷⁰⁶

Figure 4-1: PLA Officer Rank Insignia

Category	PLA Ranks (All Services)
Flag-Rank Officer (将官) 	General (上将) (3 stars)
	Lieutenant General (中将) (2 stars)
	Major General (少将) (1 star)
Field-Grade Officer (校官) 	Senior Colonel (大校)
	Colonel (上校)
	Lieutenant Colonel (中校)
	Major (少校)
Company-Grade Officer (尉官) 	Captain (上尉)
	1 st Lieutenant (中尉)
	2 nd Lieutenant (少尉)

Concerning their grades, since 2007, PLA officers have worn ribbons shown in Figure 4-2 below that indicate what their grade is by counting the number of rows, number of stars (1 or 2) in the center ribbon at the top, and the color of the ribbon with the star(s). Concerning the number of stars, one star is a deputy leader and two stars is a leader.⁷⁰⁷

Figure 4-2: PLA Officer Ribbons

Non-Special Technical officers (Military/Command, Political, Logistics, Equipment/Armament)	Special Technical Officers	Ribbons	Rows of Ribbons
CMC Chairman (军委主席) / Vice Chairmen (军委副主席)			7
CMC Member (军委委员)	Grade 1 (1级)		
TC Leader (正战区职)¶	Grade 2 (2级)		6
TC Deputy Leader (副战区职)¶	Grade 3 (3级)		
Corps Leader (正军职)	Grade 4 (4级)		5
Corps Deputy Leader (副军职)	Grade 5 (5级)		
Division Leader (正师职)	Grade 6 (6级)		4
Division Deputy Leader (副师职)	Grade 7 (7级)		
Regiment Leader (正团职)	Grade 8 (8级)		3
Regiment Deputy Leader (副团职)	Grade 9 (9级)		
Battalion Leader (正营职)	Grade 10 (10级)		2
Battalion Deputy Leader (副营职)	Grade 11 (11级)		
Company Leader (正连职)	Grade 12 (12级)		1
Company Deputy Leader (副连职)	Grade 13 (13级)		
Platoon Leader (排职)	Grade 14 (14级)		

An example of a corps leader-grade officer (five rows and two stars) is shown in Figure 4-3 below.⁷⁰⁸ Of note, there are always three ribbons on the top row, so some ribbons are placeholders; the lines on the ribbons indicate the total number of years served, including cadet time; and none of the ribbons refer to awards or medals. Furthermore, unlike U.S. military ribbons, none of the PLA ribbons denote any awards.

Figure 4-3: PLA Officer Corps Leader-Grade Ribbons



Mandatory Retirement Ages

Each officer grade has a mandatory retirement age assigned to it. As such, officers can only retire when they have met the mandatory retirement age for their grade shown below. If they have not met their mandatory retirement age, even if they have served more than 20 years, they are demobilized. As noted in Chapter 1, the PLA has had 11 force reductions since the 1950s. The past two (2004 and 2016) focused on reducing the number of officers at the top because of a bloated system. For example, in 2004, 85 percent of the 200,000 personnel who were demobilized were officers, and in 2016, 50 percent of the 300,000 personnel who were demobilized were officers. Also as shown in Table 4-1 below, there are different mandatory retirement ages for officers holding combat-related billets and those who are serving in non-combat-related billets, such as in academic, research, and medical institutions.^{et, 709}

Table 4-1: Mandatory Officer Retirement Ages

Retirement Age		Grade (Non-Special Technical Officers)	Grade (Special Technical Officers)	Primary Rank	Secondary Rank
Combat Troop	Non-combat				
N/A		CMC Chairman (军委主席) Vice Chairmen (军委副主席)	N/A	N/A GEN/ADM	N/A
See Note Below		CMC Member (军委委员)	Grade 1 (1级)	GEN/ADM	
65	65	TC Leader (正战区职)	Grade 2 (2级)	GEN/ADM	LTG/VADM
63		TC Deputy Leader (副战区职)	Grade 3 (3级)	LTG/VADM	MG/RADM
55	60	Corps Leader (正军职)	Grade 4 (4级)	MG/RADM	LTG/VADM
	58	Corps Deputy Leader (副军职)	Grade 5 (5级)	MG/RADM	SCOL/SCPT
50	55	Division Leader (正师职)	Grade 6 (6级)	SCOL/SCPT	MG/RADM
		Division Deputy Leader (副师职) (Brigade Leader)	Grade 7 (7级)	COL/CPT	SCOL/SCPT
45	50	Regiment Leader (正团职) (Brigade Deputy Leader)	Grade 8 (8级)	COL/CPT	LTC/CDR
	45	Regiment Deputy Leader (副团职)	Grade 9 (9级)	LTC/CDR	MAJ/LCDR
40	40	Battalion Leader (正营职)	Grade 10 (10级)	MAJ/LCDR	LTC/CDR
		Battalion Deputy Leader (副营职)	Grade 11 (11级)	CPT/LT	MAJ/LCDR
35	35	Company Leader (正连职)	Grade 12 (12级)	CPT/LT	1LT/LTJG
		Company Deputy Leader (副连职)	Grade 13 (13级)	1LT/LTJG	CPT/LT
30	30	Platoon Leader (排职)	Grade 14 (14级)	2LT/ENS	1LT/LTJG

Since 2002, CMC members who are 67 or younger at the time of the Party Congress can remain until the next congress (age 72). Members who are 68 at the time of the Party Congress must retire.

Officer Recruitment

Historically, PLAAF officer corps recruits consisted of high school graduates and outstanding enlisted members with less than three years of service, but, over the past decade (2009-2019), the PLAAF has made a concerted effort to attract more first to third year students and new graduates from civilian science, technology, and engineering academic institutions. This trend reflects a larger effort by the PLA to create a more professional, educated military

et The Law of the People's Republic of China on Officers in Active Service (中华人民共和国现役军官法) was originally passed on 5 September 1988 by the Third Session of the Standing Committee of the Seventh National People's Congress (第七届全国人民代表大会常务委员会第三次会议). The first revision was in accordance with the "Resolution Regarding Amendments to the 'Regulations of the Chinese People's Liberation Army for Active Duty Military Officers'" (中国人民解放军现役军官服役条例) by the Seventh Session of the Standing Committee of the Eighth National People's Congress (第八届全国人民代表大会常务委员会第七次会议) on 12 May 1994. The second (latest) revision was passed by the Nineteenth Session of the Standing Committee of the Ninth National People's Congress (第九届全国人民代表大会常务委员会第十九次会议) on 28 December 2000.

force capable of meeting the challenges of modern “informatized” warfare. The PLAAF’s officer cadets can be divided into three basic components: pilot cadets (male and female), non-pilot cadets, and students in the National Defense Student Program.

During 2019, officers in the PLAAF were selected from the following categories of personnel, with the first comprising the majority:⁷¹⁰

- High school graduates, who attend an officer academic institution.
- National Defense Student Program, which began in 1998 and will cease to exist in 2020 and is discussed in more detail in Chapter 5.
- Outstanding enlisted personnel who do not already have a college education and who must attend an officer academic institution.
- Outstanding enlisted personnel who already have a three-year post-secondary educational program/diploma or bachelor’s degree but must still attend an officer academic institution.
- Direct recruitment of civilian college graduates with science, technology, and engineering-related degrees, who receive a direct promotion as an officer specially recruited civilians who have desired technical skills (特招地方专业技术人员).
- Wives of officers, especially pilots, who already have a college degree and receive a direct promotion as an officer (特招空勤家属).⁷¹¹
- Civilian cadre (文职干部) who transfer over to become a special technical officer.
- Civilian personnel (文职人员).

Historically, excluding new officers who are assigned to remote areas and pilots who have completed their flight training at a flight academy, all other new officers must serve their first year on probation (见习). In addition, officers historically had to remain on active duty until they reached their mandatory retirement age based on their grade. That situation began to change in 2004 with the 10th PLA force reduction, which included the demobilization of 170,000 officers, where the period was cut down to around 15 years. Following the 11th force reduction in 2016, which included the demobilization of 150,000 officers, almost all new officers must serve at least eight years before leaving the military. Unlike the USAF, whose reserve force consists of 69,200 personnel and performs 20 percent of the USAF’s work, the PLAAF appears to have a very limited number of reserves.⁷¹²

Flag Officer Promotions

When the PLA reinstated ranks in 1988, the PLA held its first ceremony for three-star flag officers; however, the next ceremony was not held until 1993. From 1994 through 2006, ceremonies were held only every two years except for special ceremonies in 1999 and 2004 to promote two people each time. With the exception of 2018, when no ceremony was held, a ceremony has been held every year since 2007 in July. Three special ceremonies were also held (2007, 2012, and 2017) to promote a total of four people. Although no ceremony was held in 2018, two separate ceremonies were held in 2019 on 31 July and 12 December, which added a total of 17 personnel. In addition, only one person was promoted in July 2020. From 1988-2020, a total of 189 PLA and nine PAP officers were promoted to three-stars in 27 ceremonies.⁷¹³ From 2000-2019, the highest number was 16 and the lowest was three with an average of three. See Appendix B for a full list of 18 PLAAF officers who received their third star since 1988.

Concerning PLAAF one- and two-star flag officer promotions since 1988, the PLAAF has typically held one ceremony per year that usually occurs in July in Beijing, but they have also occurred in January, March, June, August, and December.⁷¹⁴ In addition, the PLAAF occasionally has more than one ceremony in the same year.⁷¹⁵ For example,

ceremonies were held in January and July 2017 and January, March, and June 2018. The PLAAF Commander and PC are the keynote speakers and pin on the new ranks.⁷¹⁶ The lowest number noted for a ceremony was eight and the highest was 25 and the average was 8-10. See Appendix B for a list of PLAAF officers who have received their second star.

High School Student Recruitment for Non-Pilot Cadets

The PLAAF has different programs for recruiting high school seniors as pilot cadets and all other new cadets. The following information discusses all other cadets.^{eu}

High school students in their final year (高中毕业生) who want to attend a civilian (地方) or military (军队) academic institution (院校), which can be a university (大学) or college/academy/institute/school (学院), must complete a two-step process: take the National University Entrance Examination (全国大学入学考试), which is typically identified as the gaokao, the national college admission exam (高考), and complete a Voluntary Admission (录取志愿) application. Students who want to attend a military institution must also be interviewed (面试) by a military recruiter and take a physical exam (体检). The gaokao is normally administered in early June. It began as a national exam, but is now administered at the provincial level in order to allow for regional differences in the quality of education systems and availability of resources.

When listing preferred schools, a student can include only one first-tier school (such as Tsinghua University or Beijing University), with his or her subsequent preferences going to second- or third-tier institutions. Additionally, different provinces require students to declare major preferences at different times. Some require it only after a student receives his or her score, while others require declarations prior to receipt of the score or even prior to sitting the exam itself.

As with the gaokao, the applications are processed by the provincial Education Department (省教育部); however, interviews by the lead author of this book with people knowledgeable about PLA recruitment provided different information about the next step of the recruitment process. According to one interviewee, the provincial Education Department forms a committee consisting of representatives from all the academic institutions in the province to include military institutions. The committee members then review the applications on behalf of their institution and make the selections accordingly based on the priority order listed on each application. For example, if the student's first-choice (第一志愿) university is rejected, it is then passed to the second-choice (第二志愿) school and so on down the list until it is accepted, or all schools have rejected it. The process becomes more cumbersome if the application is sent to another province or municipality.

Another interviewee, however, was not absolutely clear about the process but noted that, once the provincial Education Department receives the applications, it sends them to the first academic institution on the student's priority list. If rejected, the application is then sent to the next one on the list. Given the time involved in the process, the committee system is the more likely to be in actual use.

Students can apply for academic institutions in provinces or municipalities other than where they reside. The application goes to those institutions in the order in which they are listed on the application; however, each province and institution within that province has a quota for students it accepts from each province with a preference for students from that province.

Along with a handful of civilian universities attached to government agencies, all of the PLA military academic institutions are listed in the "binding Early Decision" category (提前批). If the application is rejected, it is then sent to the first-ranked civilian institution. Thus, military institutions get preferential access to interested candidates and are not forced to compete directly with leading civilian universities in the application process. The PLA does not

^{eu} The following information provides the key points from interviews with four separate Chinese in 2011 to 2013—a PLA officer, a professor, a parent, and a college student—concerning China's university and college entrance examination system.

send recruiters to high schools to recruit officer cadets, and only those students who apply for a military institution on their application form are considered.

After receiving their exam scores, each student must complete a Voluntary Admission (录取志愿) application, called a “Choice” application.⁷¹⁷

The first choice (提前录取) concerns the type of college the student would like to attend, which includes marking a box for a civilian college (地方大学), military college (军队院校), or both. In general, applicants apply for a military college for one of two reasons: They feel it is patriotic to do so, and/or their education is free. Applicants also have the option to choose to attend a teaching/normal college (师范院校), where they can receive at least partial tuition assistance, depending on their majors. Depending on their entrance exam score, they must mark the appropriate level and choose the type of college they are eligible to attend. There are three levels as shown below:

- First Group Choice (第一批录取) is for Key Universities (重点大学), of which there are 151. These are largely funded under the 985 Project (39 institutions) and 211 Project (112 institutions).⁷¹⁸ The National University of Defense Technology (NUDT) and the Air Force Medical University (former 4th Military Medical University) are the only military institutions in this level. Students must have the highest scores to apply for this level.
- Second Group Choice (第二批录取) is considered a General University (一般大学), where students receive a 4-year bachelor’s degree (普通本科).
- Third Group Choice (第三批录取) is for students who can only receive a 2- to 3-year technical degree (专科).

Students who apply for a military academic institution must also undergo an interview with a local PLA recruiter from the People’s Armed Forces Department (PAFD) and take a physical exam (体检).

High School Student Recruitment for Pilot Cadets

This subsection discusses PLAAF recruitment of high school seniors as pilot cadets. The PLAAF uses the term zhaoshou feixingyuan (招收飞行员), usually shortened to zhaofei (招飞), to refer to pilot recruitment.⁷¹⁹

The PLAAF is still searching for the best way to recruit, educate, and train its pilot cadets. After graduation, the cadets serve as aviators, which include fighter, attack, helicopter, bomber, and transport pilots, as well as bomber and transport navigation and communications officers. Historically, the PLAAF recruited high school graduates and outstanding enlisted members, but it has gradually increased the recruitment of college students and graduates. The PLAAF has selectively recruited aviation cadets from specific provinces and municipalities. For example, in 1989, cadets were chosen from only 14 provinces and municipalities.⁷²⁰ In 2006, the recruiting notice was issued to 29 of China’s 31 provinces, autonomous regions, and municipalities, but cadets were chosen from only 16 of them.⁷²¹ It only began recruiting a small number of high school graduate cadets from Hainan Island around 2013.⁷²² One of the problems the PLAAF has faced in recruiting from across China is that rural areas only require a ninth grade education.⁷²³ Furthermore, for educational and political reliability reasons, recruiting has targeted Han Chinese from specific provinces and municipalities.⁷²⁴ However, in recent years the PLAAF has expanded its recruiting of non-Han Chinese by including a small number of cadets from minorities in Xinjiang, Inner Mongolia, Yunnan, and Qinghai, but it still does not recruit from Tibet.⁷²⁵ Occasionally they feature an ethnic minority pilot in propaganda, but they are usually from primarily Han Chinese cities and undergo a detailed political background check.

Male Pilot Cadet Recruitment

The PLAAF's former Headquarters Department's and current Staff Department's Pilot Recruitment Bureau, which has a regional selection center and multiple selection sites subordinate to each of the former seven MRAFs and current five TCAFs, is responsible for all pilot cadet recruiting activities. Information from 2010 provides a good overview of the number of cadets recruited. In early 2010, the PLAAF dispatched about 400 recruiters to 170 locations in thirty of China's provinces, autonomous regions, and municipalities. In the end, the new class consisted of 1,100 cadets, including 836 high school graduates, 200 college students/graduates and sixty-four enlisted members already enrolled in PLAAF officer colleges.

In the early 2000s, the PLAAF progressively introduced new programs to recruit graduates from PLA colleges and students and graduates from civilian colleges with a science and engineering background. The programs are shown below:

- 2000 (4+2+1 program): PLA college graduates with a three-year post-secondary educational program/diploma or four-year bachelor's degree in missiles or telecommunications receive a second (two-year) Bachelor's in Military Science plus one year of transition training.
- 2003 (4+2+1 program): Civilian college graduates with a three-year post-secondary educational program/diploma or 4-year bachelor's degree in science or engineering receive a second (two-year) Bachelor's in Military Science plus one year of transition training. In late 2013, however, the PLAAF stopped recruiting civilian college graduates in favor of recruiting college students who are enrolled in the Defense Student Programs discussed below.⁷²⁶
- 2006 (2+2+1 program): Civilian college students in their second or third year with a major in science or engineering receive two years of basic aviation theory along with basic and advanced flight training, after which they receive a Bachelor's in Military Science followed by one year of transition training.
- 2010: The PLAAF selected the first group of twelve new enlisted members (twenty-four years old or younger) from PLAAF units and a Beijing MR group army who already had a college degree. The goal was to assign them to PLAN, PLAAF, and Army units and treat them as equals to officers. They spent two years receiving their basic aviation education at the Air Force Aviation University as well as flight training in a CJ-6 and K-8. In June 2012, only two of the original twelve (sixteen percent) completed the training and received a bachelor's in military science.⁷²⁷
- 2011: The PLAAF's Political Department launched a new pilot cadet program in the PLAAF's National Defense Student Program at Tsinghua University, whereby thirty-two students will receive three years of education at Tsinghua followed by one year of education at the Air Force Aviation University in Changchun.⁷²⁸ Upon graduation, they will then be assigned to a flight college for their flight training. In 2013, the PLAAF initiated similar programs for National Defense Program students at Beijing University (twenty-five students) and Beijing University of Aeronautics and Astronautics (thirty students).⁷²⁹
- 2017: In 2017, a total of nearly 130,000 high school graduates participated in the pilot cadets' primary selection.⁷³⁰ After the first rounds, more than 3,600 participated in the final test (定选检测). The test at this stage included a physical exam, psychological evaluations and a political background check. Out of the 1,600 that passed the final round, a total of 1,110 students, including 1,075 men and 35 women, were eventually accepted to become pilot cadets involved in a seven-year program before they begin training in their operational aircraft.
- 2018: In 2018, more than 123,000 students, including high school seniors and students in the TAS program, applied to become pilots.⁷³¹ In the end, the PLAAF admitted a total 1,480 individuals from a list of around 2,400 qualified candidates. The number and the quality of accepted candidates is the highest since the PLAAF started to recruit pilots on its own in 1988. As a result of the creation of TAS programs starting in 2015 at 16

schools, the first group of 728 high school graduates from these schools entered pilot selection in 2018, and 379 were admitted, equating to 25 percent. The percentage will most likely increase each year.

To meet its goals of recruiting better educated members as pilot cadets, the PLAAF has had to adjust the maximum age for recruits. The maximum age for pilot cadets is twenty years old for high school graduates, twenty-two years old for second-year college students, and twenty-four years old for military or civilian college graduates.

Female Pilot Cadet Recruitment^{ev, 732}

In March 2012, the PLAAF celebrated the 60th anniversary of the first female aviators joining an operational unit, thus becoming one of sixteen countries with female air force pilots today.⁷³³ Although their numbers have been small, women are playing an increasingly important role as evidenced by the selection of China's first female astronaut for its first (and successful) manned space docking mission. Since the early 1980s, the PLAAF has averaged a new group of about thirty to forty female cadets every three years; however, as a result of the PLAAF's consolidation of its flight academies in 2011 and the shift to a "4+1" program for the ninth group that began in 2008, the tenth group did not begin training until 2013.⁷³⁴ The 11th group, which consisted of 35 cadets, began their education at AUAF in 2017, and the 12th group, which consisted of 40 cadets, began their education in 2019.⁷³⁵

Historically, female aviators have been separated from their male counterparts throughout their cadet education and training, as well as in their operational units. The majority have been assigned to all-female crews in a single flight group in the 13th (Transport) Air Division's 38th Regiment, where they conduct charter flights, disaster relief, and research-oriented trial flights, as well as reforestation and cloud seeding. However, this pattern began slowly changing since 2000, including mixed IL-76 crews, one transport Division Commander, and a new group of J-10 pilots, JH-7 rear seat weapons control officers (后舱武器控制军官), and MI-17 helicopter pilots.^{ew} Of note, the PLAAF did not begin specialized training for male or female rear seat weapons control officers in two-seat multirole aircraft (JH-7) at operational units until early 2011.^{ex} The initial training lasted for three months. Previously, pilots merely switched between the front seat during a morning sortie to the rear seat in the afternoon sortie.

Directly Recruited Civilian College Graduates

Little information is available about the PLA's program to directly recruit civilian college graduates as officers.⁷³⁶ The PLAAF's goal in 2010 was to recruit twenty percent of its new officers from civilian college graduates with bachelor's, master's, or doctorate degrees, but it is not clear if it met this goal. The program is governed by regulations issued by the former GPD in 2003. As a basic rule, civilians with certain qualifications are recruited directly by the PLA organization to fill a specific billet. Although the PLA has not announced publicly the exact number of people who have taken advantage of this program, it has stated that more than 5,000 people joined the PLAAF from 1998 to 2007 as part of the "211 Project." The "211 Project" is a reform program mostly focusing on civilian institutions that was initiated during China's 9th Five-Year Plan (1996–2000).^{ey} The program's stated goal is to raise the research

ev Historically, women in the PLAAF served primarily as enlisted communications operators and as nurses and as transport aircraft crew members. The branches and organizations in which they are allowed to serve have gradually expanded. For example, according to Elsa Kania and Ken Allen, "the PLAAF's first female paratroopers unit (女子空降队) was established in 1991, and there is already a 'considerable' number of female paratroopers in the PLAAF's Airborne Corps. In addition, the first female airborne reconnaissance guide team (女子侦察引导队) to enter the PLAAF's Airborne Force completed its training in 2016."

ew According to one article, the women in the JH-7 were assigned as rear seat weapons control officers; however, the only photos of them standing near a JH-7 shows only women, which implies they are both pilots and weapons control officers.

ex ["Air Force First Group of Rear Seat Weapons Control Officers Successfully Complete First Flight"] [空军首批后舱武器控制军官顺利完成首飞], *Air Force News*, 2 March 2011, 1, has a photo of a JH-7. The number on the nose is 30790 [28th Air Division, Jianqiao, Hangzhou, Zhejiang Province]. The caption says that, on 24 February 2011, the first group of two rear seat weapons control officers (后舱武器控制军官) who belong to a Nanjing MRAF air regiment conducted their first formal training flight. The regiment received the officers in December 2010. There is a Rear Seat Flight Training Instruction Outline for Military Training and Evaluation (OMTE / 后舱飞行训练教学大纲) that was used for the training as the unit transitioned to the new aircraft.

ey Project 211 was a project of National Key Universities and colleges initiated in 1995 by the Ministry of Education of the People's Republic of China,

standards of high-level universities and cultivate strategies for socio-economic development. Besides passing a political reliability review, there are specific maximum age requirements as shown below:⁷³⁷

- 3-year post-secondary educational program/diploma: 22 years old.
- Bachelor's degree: 24 years old.
- Master's degree: 29 years old.
- Doctorate degree: 34 years old.

Depending on their career track and specialty, the new officers must receive basic military and pre-billet specialty training as shown below:⁷³⁸

- 3-12 months of military-political training at a PLA academic institution.
- 2-3 months of probation and basic training at a unit followed by billet on-the-job training (OJT).

Based on their specialty and academic degree, they are given a relevant grade and rank. Specifically, they do not all start as a platoon leader-grade officer with the rank of second lieutenant. In addition, the PLA consistently singles out these personnel by identifying them as “civilian college graduates” (地方大学毕业生).

This program also includes direct recruitment of wives of active duty officers and giving them a direct promotion as an officer. Most, if not all, of them serve in an administrative or support billet, which includes meteorology and logistics. One of the primary reasons for this is so that the male officer can receive on-base housing earlier than normal and so that his family can live in the same location. This issue is discussed later in this chapter.

PLAAF's National Defense Student (Reserve Officer) Program

In 1998, the PLA initiated a National Defense Student (国防生) Program, which is also called the Reserve Officer (后备军官) Program, in 118 civilian universities, which includes 19 PLAAF programs.⁷³⁹ In May 2000, the State Council and CMC issued the “Decision Concerning Establishing a System for Civilian Colleges to Educate and Train Military Officers.” Chapter 5 discusses this in more detail.

In September 2006, the PLAAF stated that its goal in 2010 was to have 60 percent of its officers come from civilian college graduates, but two-thirds of this sixty percent (forty percent of all officers) was to come from the Defense Student Program and one-third (twenty percent of all officers) from direct recruitment of civilian college graduates.⁷⁴⁰ In addition, in April 2007, the GPD's Cadre Department stated that the PLA's goal was to have 60 percent of all new officers in 2010 come from the National Defense Student Program.⁷⁴¹ A November 2009 *PLA Daily* article stated that the PLA's officer corps receives about 100,000 graduates per year, of which 70 percent come from military academic institutions and 30 percent from the Defense Student Program.⁷⁴² As of September 2011, the PLAAF had recruited 21,000 Defense Students, of which 13,000 had graduated. Accounting for approximately 6,000 students still in the program, this equates to a ninety percent graduation rate. Unfortunately, the PLAAF does not publish figures for the total number of new officers who have graduated from military and civilian academic institutions, so the percentage of Defense Students within this total is not known.

Although the regulations state that at least seventy percent of the graduates must earn a science and engineering degree, it appears that the actual rate is closer to 100 percent. Yet another goal is to have at least seventy percent of the graduates assigned to division and lower units. Upon graduation, the Defense Students are assigned to an operational unit, a PLAAF academic institution, or a training unit where they receive their specialty training. In

with the intent of raising the research standards of high-level universities and cultivating strategies for socio-economic development

addition, about forty percent of Defense Students move directly to graduate school. Finally, the number of female students is limited to a maximum of five percent.

In 2000, Defense Students began receiving 5,000 RMB (USD 710) per year, of which 3,000 RMB (USD 425) was for tuition given directly to the university and 2,000 RMB (USD 285) was for living expenses.^{ez} In 2009, the amount doubled to 10,000 RMB, but it is not clear how it was divided.

As discussed in Chapter 5, the PLA did not recruit any new students in 2017 and will abolish the program in 2020.

PLAAF Officers from Other PLA Academic Institutions

The PLAAF occasionally receives officers who served as cadets at non-PLAAF academic institutions, including the CMC's National University of Defense Technology (NUDT) and the former General Armament Department's Academy of Equipment and Command Technology (AECT / 装备指挥技术学院), which is now the Strategic Support Force Space Engineering University (战略支援部队航天工程大学). Most of the PLAAF officers who graduate from NUDT receive their degree from the College of Aerospace and Materials Engineering.⁷⁴³

Outstanding Enlisted Personnel

Until 1982, the PLAAF provided a direct promotion for outstanding enlisted personnel with between one and three years of active duty. In 1982, that program was abolished; however, the PLAAF continued to select outstanding enlisted personnel to attend an officer academic institution as a cadet to become an officer. Although the program still exists, the percentage of officer cadets coming from outstanding enlisted personnel has decreased sharply since 2000 for the following reasons. First, the PLA implemented the National Defense Student Program in 1998. Second, as discussed below, the PLAAF has increased its recruitment of civilian college students and graduates as two-year enlisted personnel. Once they complete their mandatory two years, they either return home or volunteer to be selected as a noncommissioned officer (NCO).

Enlisted Force Conscription, Recruitment, and Promotion

Key Points

- Historically, the PLA and PLAAF's enlisted forces were an undereducated force of conscripts who served for three or four years and then potentially remained on active duty for a total of 16 years, before being demobilized and sent home.
- Today, the enlisted force has a growing percentage of educated high school graduates, college students, and college graduates who join for two years.
- Depending on their specialty, enlisted troops who stay on after two years can then serve for up to 30 years in a newly-developed NCO corps. Unlike the officer corps, which has a mandatory retirement age for each grade, NCOs can only retire once they have reached age 55 or have served for 30 years. All other NCOs who leave the service are demobilized.
- The PLA and PLAAF have recently implemented significant reforms to bring in more college students and graduates to the enlisted force, but continue to face retention challenges.

^{ez} This book provides the USD amount for each RMB entry based on the exchange rate of 1 RMB to 0.14 USD in December 2019. The amount is rounded off to the nearest 0 or 5.

This section provides the history of the PLA's and PLAAF's enlisted force, which has shifted from a pure conscription and volunteer program to a combination of conscription, recruitment, and volunteer program.

Enlisted Force Terms and Concepts

The following terms and concepts, which are organized alphabetically, lay the foundation for the section:⁷⁴⁴

- **Canjun** (参军): The PLA translates this word as “join the army” or “enlist in the army.”⁷⁴⁵
- **Difang daxue biyesheng** (地方大学毕业生), **difang daxuesheng** (地方大学生), and **daxuesheng biyesheng shibing** (大学生毕业生士兵): These terms are translated as “civilian university/college graduates” and “civilian university/college students” and the PLA singles them out in media articles.
- **Renwu Bu** (人武部/ 人民武装部): This term refers to the People's Armed Forces Department (PAFD), which is responsible for conscripting enlisted personnel at the provincial and below levels as well as managing college student recruitment.
- **Ruwu** (入伍): This term refers to the first day that PLA personnel “enter the military.”
- **Shibing** (士兵): This generic term can be translated a number of different ways, including “enlisted man,” “enlisted personnel,” “enlisted corps,” “enlisted soldier,” and “soldier,” depending on the context. Officers are not identified as shibing / soldiers.⁷⁴⁵ The “*Military Service Law of the People's Republic of China*” defines this term as comprising both conscripts (*yiwubing*; 义务兵) and volunteers (*zhiyuanbing*; 志愿兵). For purposes of this book, the term soldier will be used.
- **Shiguan** (士官): This term is translated as “noncommissioned officer” (NCO).⁷⁴⁶
- **Shiguanzhang** (士官长): This term is translated as “master chief,” “master sergeant,” “master-sergeant-in-chief,” “chief non-commissioned officer,” and “Chief NCO.” For purposes of this book, master chief is used.⁷⁴⁷
- **Yiwubing** (义务兵) and **Xinbing** (新兵): The term *yiwubing* historically has been translated as “conscript” or “compulsory serviceman” and *xinbing* has been translated as “new soldier.”⁷⁴⁸ While all new two-year enlisted soldiers are initially called “new soldiers” while they receive their basic training, they are then called conscripts regardless of whether they enlisted voluntarily or were conscripted.^{fb} For purposes of this book, the term conscript and two-year enlisted personnel will be used.
- **Zhanshi** (战士): This term is translated as “soldier” and is the generic term for enlisted personnel, including new personnel who are conscripted or join voluntarily as well as NCOs. For purposes of this book, the term soldier will be used.⁷⁴⁹
- **Zhengbing** (征兵) and **Zhengji** (征集): The most confusing terms are *zhengbing* and *zhengji*, which are translated as “conscription,” “enlistment,” and “recruitment,” but have completely different meanings in English.⁷⁵⁰ For purposes of this book, the term conscription will be used.
- **Zhibiao** (指标): The PLA translates this term as “quota,” which refers to enlisted recruitment quotas by province/municipality/autonomous region and subordinate prefectures, counties, cities, etc., which is managed by the PAFDs.
- **Zhiyuan** (志愿): This term is translated as “volunteer” or “voluntary,” which refers to enlisted personnel who volunteer to join the PLA or new enlisted personnel who have served their initial service and who volunteer to remain on active duty as an NCO.⁷⁵¹

fa A search of the East View Press *PLA Daily* database in 2016 showed this term going back to the early 1950s (almost 12,000 hits). For example, during the Cultural Revolution (1966-1976) tens of thousands of personnel joined the PLA as enlisted personnel and many of them received a direct promotion as an officer within a short period of time.

fb For example, the 2004 *Defense White Paper* used the terms *zhengbing* (征兵) as conscription and *yiwubing* (义务兵) as conscripts to describe the situation at that time for the PLA's new two-year enlisted personnel. Although the 2006 and 2008 *White Papers* did not use either term, the 2010 *White Paper* translated *zhengbing* as recruitment and did not use the term *yiwubing* at all. This represents the PLA's overall attempt to move away from a draft/conscript system to a volunteer system for its enlisted personnel.

Enlisted Force Background (1949 to 1998)

This subsection discusses the history of the PLA's enlisted force to include the evolution of the initial conscription period and post-conscription volunteer period, which has morphed into an NCO program. Changes in the enlisted force have revolved around the first *Military Service Law* that was approved in 1954 and its subsequent amendments that were approved in 1984, 1998, and 2009.⁷⁵² The chapter begins by discussing the enlisted force during the period of the Red Army (1927-1949). This is followed by the lead up to and content of the 1954 *Military Service Law*. The following subsections discuss the problems leading up to each of the subsequent amendments, and the content of each amendment.

In essence, the PLA's enlisted force has evolved from primarily an undereducated or illiterate force of conscripts who served for three or four years and could then remain on active duty for a total of 16 years before being demobilized and sent home to a growing force of educated high school graduates, college students, and college graduates who join for two years and, depending on their specialty, can then serve for a total of 30 years in a newly-developed NCO corps. Whereas the size of the NCO corps is growing and currently accounts for 40 percent of the entire enlisted force, the PLA's NCO corps accounts for 60 percent of its enlisted force and about 80 percent in the Aviation Branch/Arm.

The PLA has recently implemented significant reforms to bring in more college students and graduates as two-year enlisted personnel and recruiting some directly as NCOs, but it is facing certain problems, including how to retain them after their first tour of duty. It also has to revise the NCO military education program to account for NCOs who already have a college education; however, those reforms are not yet evident.

The Early Years (1927-1949)

The PLA traces its origins to the Nanchang Uprising of 1 August 1927 when Nationalist (KMT) troops commanded by CCP leaders rebelled shortly after the conclusion of the first alliance between the KMT and the CCP.^{fc} These rebels fled to the remote mountainous region known as Jinggangshan, located along the border with Hunan and Jiangxi provinces in South China. It was here that they founded the military arm of the CCP, the "First Workers' and Peasants' Revolutionary Army."⁷⁵³ More commonly referred to as the "Red Army," enlisted personnel in this new military were given the right to speak, the right to criticize cadres (officers), and the right to supervise economic expenditures.⁷⁵⁴ Although officers and enlisted soldiers in the Red Army held different positions and different levels of responsibility, they held equal political status and were treated as members of the same class. The Red Army also established regular enlisted force meetings in all companies, battalions, and regiments.

The Nationalists eventually chased the Red Army out of the mountains of Jiangxi and relocated to Yan'an, a remote area in northwest China's Shaanxi Province, following a grueling, circuitous 5,000-mile journey known as the "Long March." During World War II, the CCP formed a united front with the KMT to fight the Japanese. At this time, the Red Army was integrated into the KMT's structure, with Red Army units referred to as the "New Fourth Army" and the "Eighth Route Army." The Red Army continued to grow and expand its influence in northern and western China throughout the war, numbering over one million personnel and two million militia members by the war's conclusion in 1945.⁷⁵⁵

As the fluid nature of the Chinese Civil War (1947-1949) against the KMT forces progressed through the late 1940s, Red Army units, particularly the Eighth Route Army and New Fourth Army, were gradually consolidated into the PLA as they moved around China. The CCP's Central Committee Military Commission (CMC / Central Military Commission) began using the terms Liberation Army and People's Liberation Army as early as 1945 to

fc 1 August (*bayi*) is still celebrated every year as the anniversary of the founding of the PLA.

identify the concept of a single armed force. These terms, however, were not formally used with unit designations (i.e. the PLA 32nd division) until the CMC issued a general order to this effect on 1 November 1948.

During the Civil War, the majority of the enlisted force was composed of volunteer soldiers rather than conscripted personnel, who served at the level of squad leader and below.⁷⁵⁶

The First Military Service Law

With the establishment of the People’s Republic of China (PRC) on 1 October 1949, the PLA was transformed into the military of the ruling CCP and began to modernize. In September 1949, the CCP’s Political Consultative Conference passed a resolution that implemented a militia system to keep local order and lay the foundation for a national mobilization mechanism in preparation for applying compulsory military service at an appropriate time.⁷⁵⁷ In March 1953, Mao Zedong signed an order to establish the *Military Service Law of the People’s Republic of China*, which went into effect in December 1954. In January 1955, the CMC issued the Directive on Recruitment/Conscription of Soldiers, which began the implementation of compulsory service. In July 1955, the military service system officially changed from a voluntary system to a compulsory/conscription system for the initial period as an enlisted person.

This compulsory military service system stipulated the length of compulsory military service (two years). At that time, personnel in the PLA were categorized as either cadres (officers), fighters (enlisted personnel), political activists (political officers), or specialists (those who worked in administrative tasks or served in a support capacity such as aircraft ground crews).⁷⁵⁸

First Enlisted Rank System: 1955-1965

From 1955 to 1965, the PLA implemented a rank system, which included a total of eight grades (等) and 20 rank levels (级), of which the officer corps had five grades and 15 levels, and the enlisted force (士兵) had two grades and five levels.⁷⁵⁹ The two enlisted grades were (1) the conscript force identified as conscripts (义务兵) or soldiers (兵), and (2) those enlisted members who chose to remain on active duty after their conscript period as a volunteer (志愿兵), who were also identified as sergeants (军士). The grades and ranks are shown in Table 4-2 below:

Table 4-2: PLA Enlisted Grades and Ranks: 1955-1965

Conscript (义务兵) / Soldier (兵)	Sergeant (军士)
Private 2nd Class (列兵)	Corporal (下士)
Private 1st Class (上等兵)	Sergeant (中士)
	Sergeant First Class (上士)

The 1984 Amended Military Service Law

Following the implementation of the first *Military Service Law*, the PLA determined that the duration of compulsory service was too short to train and retain a professional army and that the PLA needed to embark on an ambitious program to modernize many aspects of the military, including education, training, and the recruitment of personnel. To resolve these problems, in March 1978, the fifth National People’s Congress (NPC) approved the *Resolutions on the Military Service System and Related Problems*.⁷⁶⁰ As a result of the changes, the PLA enacted reforms in 1979 that allowed conscripts in the Army to serve for three years, while conscripts in the PLAN and PLAAF, which were considered technical services, could serve for four years. Although no information was found, conscripts in the Second Artillery Force, which was considered a technical branch/arm, most likely served for four years as well.

Although the NPC approved the resolutions in March 1979, it still took five years to approve the amended law as follows:⁷⁶¹

- August 1980: The State Council and CMC formed a leading group to amend the law.
- March 1983: A draft of the amended law was submitted to the NPC for approval.
- May 1984: The NPC approved the amended law.

Second Enlisted Rank System: 1988-1999

When the PLA reinstated ranks in 1988, the enlisted ranks were reorganized into three grades and nine levels. Depending on the PLA source document, the first conscript grade was identified as *bing* (兵) or *shibing* (士兵), both of which are translated as soldier, and had two rank levels.⁷⁶² Some PLA sources list the next grade, identified as sergeants (军士), as part of the conscript system (义务兵役制), while others list it as part of the volunteer system (志愿兵役制).⁷⁶³ However, all sources note that this grade had three rank levels. The third grade, which all sources note as part of the volunteer system, was identified as *shiguan* (士官), which is translated as noncommissioned officer, and was divided into co-equal ranks of master sergeant (军士长), and specialty master sergeant (专业军士长).⁷⁶⁴ The PLA enlisted grades and ranks between 1988 and 1999 are listed in Table 4-3 below.

Table 4-3: PLA Enlisted Grades and Ranks: 1988-1998

Soldier (兵)	Sergeant (军士)	NCO (士官)
Private 2nd Class (列兵)	Corporal (下士)	Master Sergeant Class-1 (一级军士长)
Private 1st Class (上等兵)	Sergeant (中士)	Master Sergeant Class-2 (二级军士长)
	Sergeant 1st Class (上士)	Master Sergeant Class-3 (三级军士长)
		Master Sergeant Class-4 (四级军士长)

Enlisted Force Reforms Starting in 1998

The following subsections provide information about the major reforms to the enlisted force that began in 1998, including creating a 30-year career path and recruiting civilian college students and graduates as two-year enlisted personnel with the goal of keeping outstanding personnel as NCOs.

The 1998 Amended Military Service Law

As the PLA began to recover from the chaos of the Cultural Revolution (1966-1976) and began to modernize its force, the PLA determined that the 1984 amended law had not gone far enough. As the PLA modernized, volunteers began to account for a higher percentage of the total personnel. With increasing numbers of volunteers, the regulations for conscripts were becoming redundant.⁷⁶⁵

As an interim measure, in 1988, the NPC approved the “Regulations of the Chinese People’s Liberation Army on the Active-Duty Service of Enlisted Personnel,” which established the system of preferential treatment for both conscripts and volunteer soldiers, and contained stipulations governing their work arrangements following demobilization.⁷⁶⁶ These regulations also re-established the system of grades and ranks for the enlisted force. For the first time, soldiers serving as volunteers after their initial conscription period became known as noncommissioned officers (NCOs) and were accorded the rank of either sergeant or specialist sergeant.⁷⁶⁷

By the end of the 1990s, the PLA attempted to tackle multiple problems it was facing, including the lack of qualified officers and enlisted personnel to man and maintain more technologically sophisticated weapon systems purchased from Russia (Sovremenny submarines and Su-27 fighters), by amending two earlier key regulations that

were then approved in 1998 and went into effect in 1999: *The Military Service Law of the People's Republic of China* and the *Regulations of the Chinese People's Liberation Army on the Active-Duty Service of Enlisted Personnel*. The revised law and regulations sought to restore the appeal of military service and convince educated youths to consider a career in the PLA, to strengthen national defense and modernization, as well as protect the legal rights of service personnel, including those who are demobilized, and their families.⁷⁶⁸ As noted in Chapter 5, the PLA also established the National Defense Student Program for officers.

The amended *Military Service Law* was issued by China's NPC in late 1998 and took effect on 1 January 1999.⁷⁶⁹ The revised law addressed conscription difficulties by shortening the mandatory conscription period to two years for everyone. Prior to reaching the end of their second year of service, conscripts were permitted to apply to become an NCO or take exams to enter a military academy and become an officer. Conscripts not accepted as either an NCO or an officer were demobilized at the conclusion of their two-year conscription period and sent back to their hometown.

One other reason for reducing the conscription period to two years was that the sources of potential conscripts dwindled even further once the first generation of children conceived under China's one-child policy, which was implemented in the late 1970s, turned 18.⁷⁷⁰ PRC statistics for incoming conscripts in 2001 revealed that over 90 percent in eastern cities, such as Shanghai, Nanjing, and Hangzhou, were from single-child families, as were approximately 70 percent in smaller cities and more economically developed rural areas.⁷⁷¹ With no other siblings, parents became more reluctant to part with their children for three or four years.

Only seven months after the passage of the *Military Service Law*, the PRC revised the *Active-Duty Service Regulations for Enlisted Personnel* in July 1999.⁷⁷² These revised regulations established the standard 30-year career path that exists for NCOs today. This career path was broken down into three grades (junior, intermediate, and senior) and six different service periods ranging from three to nine years as shown in Table 4-4 below. Six NCO ranks were created based on the service period that were linked to their salary, promotion, and date of demobilization. It should be noted, however, that not every specialty allows for a 30-year career. For example, NCOs in certain specialties, such as drivers and cooks, cannot serve beyond 12 years at which time they are demobilized and sent back to their hometown.⁷⁷³

Table 4-4: NCO Grades, Service Periods, and Ranks: 1999-2009

Grade Level	Service Period and Years per Period	Rank
Junior NCO (初级士官)	1st Period (3 years)	NCO Class-1 (一级士官)
	2nd Period (3 years)	NCO Class-2 (二级士官)
Intermediate NCO (中级士官)	3rd Period (4 years)	NCO Class-3 (三级士官)
	4th Period (4 years)	NCO Class-4 (四级士官)
	5th Period (5 years)	NCO Class-5 (五级士官)
Senior NCO (高级士官)	6th Period (9 years)	NCO Class-6 (六级士官)

Unlike the officer corps, which has a mandatory retirement age for each grade, NCOs can only retire once they have reached age 55 or have served for 30 years.⁷⁷⁴ All other NCOs who leave the service are demobilized. For example, in May 2020, an Army Master Sergeant Class One NCO retired at age 55 after serving 34 years.⁷⁷⁵

By the late 2000s, the regulations had triggered radical changes within the enlisted force. The overall number and percentage of conscripts in the military had declined as the PLA continued to increase the proportion of NCOs in the enlisted force. For example, in 2004, the proportion of conscripts in the enlisted force had dropped to 53 percent, down from a figure of approximately 70 percent in 2002.⁷⁷⁶ According to authoritative PLA books in 2008

and 2012, as the PLA has downsized, the ratio of officers to enlisted personnel has gone from 1:2 to 1:3 with an ultimate goal of 1:8.⁷⁷⁷ It is not clear what the ratio was in 2019.

In addition to creating a rank and grade system during a graduated 30-year period, the new law allowed for people with specialist skills to enlist, established policies that required discharged personnel to have at least ten years of service before they could be provided a job after being demobilized (which is still difficult given the growing market economy and shrinking government control over jobs), established policies to allow those serving at least 30 years to leave with a pension. In addition, all demobilized soldiers, regardless of how long they served, were authorized a one-time demobilization subsidy.⁷⁷⁸

2009 Plan for Reforming the NCO System

In December 2009, the CMC implemented a new “Plan for Reforming the NCO System” along with three revised regulations for NCO active duty service periods, management, and education and training. The new plan and revised regulations were intended to:⁷⁷⁹

- Keep the overall size of the enlisted force the same.
- Increase the size of the NCO corps while reducing the size of the conscript force.
- Increase the number of intermediate- and senior-grade NCOs while reducing the number of the junior-grade NCOs.
- Increase the number of NCOs recruited directly from civilian college students and graduates (i.e., they do not serve two years as a conscript/volunteer before being commissioned directly as an NCO).
- Increase the education and training requirements for promotion to the next grade level.
- Increase the salary and benefits for intermediate and senior NCOs.
- Allow NCOs to serve beyond 30 years if necessary.

According to *The Chinese Army Today*, the new plan and revised regulations changed the name for each of the ranks, as well as added a third rank in the senior grade NCO level. In terms of service periods, the new plan and revised regulations allows for NCOs to serve for more than a total of 14 years in the senior grade NCO grade.⁷⁸⁰

Recruitment Challenges and the 2011 Amended Military Service Law

Although the 1998 law and regulations focused on building a better two-year enlisted force and an NCO corps, several factors negatively affected the PLA’s ability to recruit qualified personnel, to retain talent, and to provide good post-service jobs because the laws on military wages and benefits were unclear and inadequate.⁷⁸¹ For example, the PLA started enlisting college graduates in 2001, but had recruited only 2,000 as two-year enlisted personnel by mid-2009. In 2009, the PLA actively recruited 130,000 college graduates and students for that year’s conscription cycle. Prior to the 2011 amendment, by law, two-thirds of all new conscripts/recruits had to come from rural areas and one-third from urban areas. As of the early 2010s, most of the PLA’s new recruits were high school graduates. The next four subsections provide an overview of some of the key issues the PLA faced following the 1998 law. This is followed by a discussion of the process by which the law was amended.

Conscription Difficulties in the Two-Track Urban-Rural System and a Growing Economy

By the late 1990s, two decades of economic reform had dramatically altered the landscape of Chinese society. A tremendous increase in opportunities, coupled with an overall loosening of State control, made it exceedingly difficult for the PLA to meet its conscription quotas. The prospect of joining the military no longer had much attraction to a growing number of young people, particularly in China’s wealthier coastal areas. In the booming

southern province of Guangdong, for example, 10,000, or nearly seven percent, of the 150,000 youths eligible for conscription apparently tried to fake nearsightedness on the physical examination to avoid conscription duties.⁷⁸² In another, more extreme example, one male in eastern China's Zhejiang Province invented a criminal history to avoid his conscription obligations stating that it "would better to do four years in jail than three years as a soldier."⁷⁸³ In addition, according to a Shanghai Daily article in November 2011, the rejection rate among those taking the basic physical exam ran about 70 percent in previous years.⁷⁸⁴

This problem was compounded by the PLA's conscription quota of 2:1 for rural and urban conscripts, where students in rural areas are required to receive only a ninth-grade education based on China's two-track education system.⁷⁸⁵ The quota system is a holdover from the early days of the PRC under Mao Zedong, where Communist ideology stressed that the ruling class and aristocracy must be dissolved through populist revolution by the poor working classes.⁷⁸⁶

Problems with the NCO System

In addition to the difficulties in meeting conscription quotas, by the late 1990s the PLA also noticed several problems with its existing, rudimentary NCO system. PLA conscripts had the option to remain on active duty for an additional 12 years as an NCO after the conclusion of their conscription obligation. Once they became an NCO, the PLA found it difficult to motivate these individuals, given their limited number of responsibilities and lack of incentives or promotion possibilities.⁷⁸⁷ This made it difficult for the PLA to attract talented NCOs, as well as to get rid of those whose performance was sub-par. Moreover, in the late 1990s, NCOs received significantly lower salaries and fewer benefits than officers.⁷⁸⁸ Furthermore, once they were demobilized, they were sent back to their hometown due to the constraints of their hukou (status in China's household registration system), where it was difficult to get a job, especially without an education.

China's Growing Civilian College Student Population

One source of new opportunities for young people has been in the field of higher education. Reforms in the late 1990s made it easier for people to get a college education. Specifically, the PRC has dramatically expanded the proportion of its college-age population able to attend college from 1.4 percent in 1978, to about eight percent in 1990, to 26.2 percent in 2013, reaching 42.7 percent in 2017.⁷⁸⁹

In the early 1990s, China's college enrollment rate stood at five percent; however, this began to change in the late 1990s as a result of a baby boom in the early 1980s, when many young people who had been sent to the countryside during the Cultural Revolution (1966-1976) went back to cities, got married, and had children.⁷⁹⁰ Around 1999, when it was time for the new generation to go to college, the Ministry of Education (MOE) implemented reforms to expand the college enrollment rate. It built more schools, hired more professors, and offered more scholarships to poor students. As a result, in 1999, universities enrolled 1.59 million students, up 41.2 percent from the previous year. Since then, the numbers have continued to climb. In 2002, the college enrollment rate reached 15 percent in 2002, 19 percent in 2005, and 26.2 percent in 2013.

Although the number of high school students attending college has increased dramatically, China has a huge number of unemployed college graduates.⁷⁹¹ In July 2010, China's MOE revealed that over 25 percent, or roughly 1.5 million of the 6.3 million students who had graduated that year, were unemployed. Of those who graduated in 2009, 800,000 remained unemployed. These jobless graduates were part of a wider employment crisis. China's first-ever white paper on employment statistics was released in September 2010. Entitled *China's Human Resources*, it reported that the number of registered unemployed was 9.2 million or 4.3 percent of the urban labor force. According to the state-run *China Daily*, roughly one million graduates were living in squalor on the outskirts of China's major cities and commuted into the cities to work each day. They have been termed "ant tribes" or "ant colonies" for their low

social status, poor living conditions, and frenzied job seeking. An official report in 2009 found that after years of study, often using up their families' life savings, the average wage of a college graduate was equal to or less than that of a rural migrant laborer, just hovering above the poverty-level income of 1,500 RMB (USD 210) a month.

At the end of the 2000s, the PLA sought to take advantage of this large group of unemployed and educated young people, but it had to reform its recruitment standards. Until 2009, college students in the PRC were permitted to put off their conscription obligations until graduation, although many never actually served in the military at all, as the PLA did not allow conscripts to be older than 22. By 1999, these educational reforms had created a large group of young people unable to be conscripted. Ironically, these individuals possessed the higher educational levels and technical abilities the PLA deemed necessary for the success of its modernization efforts.⁷⁹² Moreover, once accepted to a university, few of these individuals would have decided to join the PLA over a college education as the latter offered far superior post-graduation employment prospects.

Targeting Civilian College Students and Graduates

During an MND press briefing in 2008, PLA officers stated that recruiting college students and graduates was critical to the PLA's modernization efforts, particularly for the PLAN and PLAAF. The targeting of college students began in 2001 and expanded in 2003 to cover a larger range of universities. It was not until 2008, however, that the MND Conscription Office began actively targeting students with higher level or specialized educational experience, including college graduates.⁷⁹³

At the end of 2009, the PLA recruited 130,000 civilian college graduates and students to serve as two-year enlisted personnel. The PLA established the goal of recruiting some 150,000 college graduates in 2010, although only 100,000 were recruited that year.⁷⁹⁴ There were almost no reports in 2011 or 2012 concerning recruitment goals or recruitment numbers for college graduates, which indicates the PLA likely ran into some problems with the recruitment drive. One of the solutions was to double almost all officer and enlisted force salaries. Although the PLA ran into problems for those years, the percentage of college students/graduates recruited since 2015 has averaged about 35 percent compared as well as recruiting and conscripting high school graduates (about 60 percent). Although starting around 2009 the PLA ceased to adhere to the two-thirds conscription quota for ninth graders, most of who came from rural areas, the quota was officially abolished in 2013 or reduced to about five percent, depending on the location.

Working Through the Reform Process

The PLA has consistently identified a number of problems affecting its ability to recruit and eventually retain a more technically qualified two-year enlisted force and expanding NCO corps.⁷⁹⁵ These issues include a lax selection process impacted by bribery, inadequate training and education; a need for a more thorough and demanding management system; and lagging improvements in wages, subsidies, family housing, welfare, and retirement/demobilization benefits. The PLA has attempted to address these problems with a series of reforms and restructuring initiatives.⁷⁹⁶ Reforms have continued as the PLA struggles to build a professional, highly skilled NCO corps. It is clear from the series of reforms that the PLA has taken a step-by-step approach; however, it appears that the PLA has not thought through the entire process and the implications of each step for the future. As a result, some of the reforms have not worked as predicted.

The 2011 Amended Service Law's Content

As a general rule, reforms in the PLA do not occur overnight. In many cases, reforms are put forth, approved in principle, and are then tested by a certain organization or organizations for a minimum of one to two years. At the

end of that period, the results are examined, and the reforms are revised accordingly. On average, it may still take at least two years to then re-write the reforms and issue them under the proper guidance.

Although the GSD's leading group on amending the *Military Service Law* was formed in 2005, it was not until June 2011 that the amendment was submitted to the Standing Committee of the NPC, which approved it in October. It appears, however, that certain concepts were tested on a large scale during this period, some of which did not meet expectations. The new law preserved the main service system, but to better attract and retain better qualified personnel as two-year enlisted personnel and NCOs, the revised law made adjustments in areas like recruiting in the socialist market economy, policies to encourage college students and graduates to enlist, and responsibilities of the government and society toward demobilized personnel and their benefits. The following bullets identify the key changes in the 2011 *Military Service Law* and its guidance documents:⁷⁹⁷

- Where previously the PAFDs attached to each local government were charged with contacting for registration each eligible male within their areas of responsibility turning 18 during the present calendar year, those interested in military service now voluntarily register online, with no apparent penalties for those who fail to do so.⁷⁹⁸ The registration period, previously confined to October, was also moved earlier to June, in order to more easily capture college and vocational students either at graduation or upon the completion of an academic year.
- As with the previous law, Chinese citizens over the age of 18 must serve in the military upon being requested to do so.
- Previously, students who were taking part in full-time education had a deferment option, but they were too old to be conscripted once they graduated; however, the age limit on graduates from vocational colleges will be expanded to 23, and the age limit on graduates with bachelor degree and above was expanded to 24.
- College students who have not graduated but enlist for active service may resume their studies within two years of leaving the military.
- Undergraduates can keep their admission status or retain their names on the school rolls and resume their interrupted studies after discharge from a two-year-long active-duty service.
- When going back to school, two-year enlisted personnel are given priority in admission if they apply for the National Defense Student Program or apply for direct recruitment as an officer after graduation.
- College graduate recruits with outstanding performance as an enlisted member may be directly promoted to active-duty officer posts.
- The two-thirds quota for rural and one-third quota for urban youth was cancelled or was reduced to five percent except in certain provinces and autonomous regions, including Tibet, Xinjiang, and Yunnan, where the education levels are still lower than the rest of China.
- Conscription for female soldiers will still be open to college graduates, students in colleges and universities, and regular senior high school graduates.
- Restrictions regarding the height, weight, appearance, tattoos, and eyesight have been relaxed.⁷⁹⁹
- China will also improve service members' welfare, including benefits such as vacations, health care, and housing.
- The previous conscription law obliged the government to find employment for service members who are from urban areas after their retirement; however, it is getting increasingly unrealistic as the government has to find jobs for some 300,000 officers and NCOs each year who leave the PLA before their full retirement (退出现役). The new law provides that the majority of service members should find jobs themselves after retirement from military service with a one-off retirement fund offered by the government.
- The new law also provides preferential policies to facilitate demobilized service members' pursuit of employment, such as obliging government agencies and enterprises to favor them in recruitment, and permitting them to enroll in secondary vocational schools without taking entrance exams.

- The new law established a more flexible military service registration system.
- The new law improves wages and benefits for serving and demobilized personnel.
- In order to recruit civilian college and university students and graduates as two-year enlistees, the PLA and MOE established lucrative financial incentives. These incentives include 1) writing off their tuition debt, 2) allowing students who had not graduated to return to school and change their major, 3) having their hometown local government provide a one-time post-departure compensation for personnel who want to start their own business, and 4) requiring state-owned enterprises to hire five percent of all new employees from military personnel who have left the military.
- Of note, the PLA consistently singles out these personnel by identifying them as “civilian college graduate enlisted members” or “civilian college graduate NCOs.”

Recruiting Civilian College Students and Graduates as Two-year Enlisted Personnel

Students receive preferential treatment during the registration process for two-year enlisted personnel.⁸⁰⁰ They also receive preferential government compensation for student loans, and their families (parents) are treated like military family members. College graduates are considered preferentially for promotion to NCO. At the division and brigade level, they are given priority for consideration in technical billets. Enlistees who have a bachelor’s degree or higher and have an outstanding record are eligible to be selected as officers. Enlistees who have received a three-year post-secondary educational program/diploma as a full-time student are eligible to apply to attend a military academic institution for two years to receive a bachelor’s degree and become an officer. Enlisted personnel with a college degree are allowed to take exams to continue their education at the next level after they leave the military. As of late 2019, 30 percent of the college students who joined the PLA before receiving their bachelor’s degree had returned and completed their bachelor’s degree.

Direct Recruitment of Civilian College Graduates as NCOs

The PLA has also implemented a program that allows individual units to recruit civilian college graduates directly as NCOs. For example, during 2010, applicants from Zhengzhou were recruited to fill billets in 28 specialties, including communications, mapping, energy, power technology, water conservancy, nursing, rail and vehicles, heating ventilation and air conditioning (HVAC) technology, and refrigeration and cold storage technology.

The procedures for applying and being approved are the same as discussed above for college students who will graduate and want to join as two-year enlisted personnel. Whereas the PAFDs are responsible for managing the recruitment of all two-year enlisted personnel, individual units are responsible for directly recruiting personnel as NCOs. Information concerning this program is identified below:⁸⁰¹

- Direct recruitment of NCOs refers to units recruiting civilian college students who will graduate in the summer of that year.
- Applicants must be male, single, and have graduated from an institution of higher learning, advanced technical school, or a technician’s college.
- Applicants must already have had their specialty skills evaluated and have received a State intermediate-level or higher vocational qualifications certificate.
- Party members, provincial model workers, National Science and Technology Progress Award winners, as well as the sons and daughters of active duty personnel and martyrs have priority as long as they meet the same criteria as noted above.
- Applicants must not be older than 24.

- There are strict requirements on their specialties, and they must serve for seven to eight years after they begin serving on active duty.
- From 10-25 June, public announcements are made concerning the registration and qualification process.
- Prior to 20 July, applicants must complete a physical examination, complete a political evaluation, have received professional certification, and sign the work agreement.
- Prior to 1 August, applicants must complete their enlistment procedures.
- During early August, the unit approves personnel to enter the PLA and, from 2-10 August, the unit provides transportation for them to begin their training.
- Basic training lasts for about 70 days followed by two months of pre-billet technical training and two months of OJT billet training at the NCO's operational unit.

The following paragraphs provide information about their grades and ranks, salary, and demobilization.

Ranks and Grades in the NCO Corps⁸⁰²

Appointments and promotion to the rank of NCO are made by the receiving unit for NCOs directly recruited from civilian college and university graduates according to the following criteria:

- Those personnel recruited who have a three-year post-secondary educational program/diploma and are engaged in a bachelor's degree but have not yet completed one year in the bachelor's program are given level-1 junior grade NCO status with the rank of corporal. Personnel who have more than one, but less than four years of experience are given level-2 junior grade status with the rank of sergeant. Personnel who have more than four years, but less than eight years of experience are given level-3 intermediate grade status with the rank of sergeant first class.
- Those personnel recruited who will graduate that semester with a bachelor's degree are given the salary of a corporal. After they graduate but have less than three years of work experience, they are given level-2 junior grade status with the rank of sergeant first class. Personnel who have more than three, but less than seven years of experience are given level-3 intermediate grade status with the rank of sergeant first class.

The 2009 plan and revised regulations also changed the name for each of the ranks shown in Table 4-5, as well as adding a third rank in the senior NCO grade level. In terms of service periods, the new plan and revised regulations allows for NCOs to serve for more than a total of 14 years in the senior NCO grade level; however, the exact number of years for each rank in the senior grade level is still not clear. Unlike the officer corps, which has 15 grades and 10 ranks, the enlisted force corps has only three NCO grade levels and a total of eight NCO ranks as shown in Table 4-5. It is important to note that, unlike officers who wear ribbons that identify their grade and number of years served, NCOs do not wear any ribbons.

Table 4-5: New Conscript and NCO Rank Structure as of 2009⁸⁰³

Grade Level	Service Period	Rank	Time in Rank
Conscript (义务兵)	1st year	Private 2nd Class (列兵)	About 9 months
	2nd year	Private 1st Class (上等兵)	1 year
Junior Grade NCO (初级士官) (6 years)	3rd to 8th years	Corporal (下士)	3 Years
		Sergeant (中士)	3 Years
Intermediate Grade NCO (中级士官) (8 years)	9th to 16th years	Sergeant First Class (上士)	4 Years
		Master Sergeant Class-4 (四级军士长)	4 Years
Senior Grade NCO (高级士官) (14 years)	17th to 30th years	Master Sergeant Class-3 (三级军士长)	4 Years
		Master Sergeant Class-2 (二级军士长)	4 Years
		Master Sergeant Class-1 (一级军士长)	6 Years

The following two figures show the current two-year enlisted personnel and NCO rank insignia. Figure 4-4 shows a new enlisted person who is receiving basic training.⁸⁰⁴ New enlisted personnel do not have any rank insignia while they are receiving basic training. They receive their first rank (private first class) when they complete basic training. Figure 4-5 shows the seven ranks for two-year enlistees and NCOs.⁸⁰⁵ The organization for the categories and rank insignia on the right and the Chinese characters correspond with those in Table 4-5.

Figure 4-4: New Two-year Enlisted Personnel



Figure 4-5: Two-year Enlisted Personnel and NCO Ranks



Demobilization⁸⁰⁶

Concerning the regulations for retirement for directly recruited NCOs, some who complete their service during the first three periods (10 years) are eligible to transfer to a comparable government job (assuming one is available). However, they must return to their home of record (e.g., their parents' location), where they can apply for a government position. NCOs who complete their service and are demobilized but are not eligible to transfer to a government job in their home of record must still return to their home of record.

Restrictions on Assignments in Enlisted Personnel's Home Location

As a general rule, since the June 1989 Tiananmen crisis and military crackdown in Beijing, the PLA does not allow enlisted personnel to serve in the same province, autonomous region, or municipality where they grew up. For example, in 2014, more than 20,000 people from Guangdong Province became two-year enlistees, which included 20 percent college and university students and graduates.⁸⁰⁷ After they were selected, they were broken down into more than 300 groups, who were sent to 44 corps-level organizations, including the Lanzhou MR, Nanjing MR, Guangzhou MR, PLAN, PLAAF, and PAP. They travelled by rail, road, and air to their units in 19 provinces, ARs, and municipalities. In addition, in early September 2014, a total of 14 cities and prefectures in Hunan Province had the first group of 5,560 new two-year enlistees depart by rail, road, and vessels en route to Sichuan, Qinghai, Gansu, Guangdong, and Xinjiang. In July 2019, a total of 15,000 people began their pre-selection process as two-year enlisted personnel in Quzhou, Zhejiang Province.⁸⁰⁸ In the end, 900 people were selected for assignments in the Army, Air Force, Rocket Force, Hong Kong Garrison, and Strategic Support Force. Of the 900, 80 percent were college students and 17.5 percent were college graduates, which set a new record high for the city. In September, Quzhou held two separate ceremonies to bid farewell to them before they were sent off by rail to their assignments around China.

Salary and Compensation

In 2016, the financial account for conscripts included several economic benefits listed below, which are divided into money from the conscript's military unit, from the government affiliated with his or her home of record, and the State, which normally refers to the Ministry of Education (MOE):⁸⁰⁹

- Treatment from the military unit (部队待遇):
 - Each conscript receives an allowance for clothes, food, living, travel, and medical:
 - The food allowance (伙食费) for a typical conscript is 18 RMB (USD 2.50) per day, which amounts to 13,000 RMB (USD 1,840) for a two-year period.
 - Clothing expenses (服装费) for two years amount to about 3,600 RMB (USD 510).
 - The following figures represent the subsidies (津贴费) that military personnel receive each month:
 - A private 2nd class receives 750 RMB (USD 105) per month and a private 1st class receives 850 RMB (USD 120) per month for a total of about 20,000 RMB (USD 2,830) for two years. If they serve as a squad leader or squad deputy leader, or serve in a specialized billet or in difficult, remote, or border locations, then they receive special allowances (特殊补贴). Upon separating they receive a one-time allowance (退伍费) of 9,000 RMB (USD 1,275).
 - As such, the total for the food allowance, clothing expenses, salary, and separation allowance comes to a total of 45,600 RMB (USD 6,357).

- o The monthly salary for a level-one junior grade NCO is more than 4,000 RMB (USD 565) and for a senior-level NCOs is more than 6,000 RMB (USD 850), which, based on these figures, NCOs at each rank make more money than their local civilian government counterparts at the same grade level.
- Compensation from the government (政府优待):
 - o Families of college/university/technical school students and graduates who choose to serve in the military receive preferential stipends of 12,000 to 15,000 RMB (USD 1,700 to 2,125) per year from the government, adding up to 24,000 to 30,000 RMB (USD 3,400 to 4,250) during a two-year period.
 - o A one-time award of 10,000 RMB (USD 1,415) is available to those who volunteer to serve in remote hardship areas such as Xinjiang and Tibet.
 - o Upon leaving the military, local governments provide enlisted personnel with a one-time financial assistance payment (经济补助) per year served of 2,000 RMB (USD 285); however, it is not clear how this applies to NCOs, whose families apparently also receive similar compensation.
 - o All college/university/technical school students and graduates who have served in the military can apply for free vocational skills training (职业技能培训) within one year of leaving the military, which accounts for a cost worth anywhere from 4,000 to 8,000 RMB (USD 565 to 1,135) for a total of 32,000 to 52,000 RMB (USD 4,530 to 7,365).
- Financial aid for school from the State (国家助学):
 - o Concerning State financial aid and financial compensation for former enlisted personnel who become college/university students, National Student Loan Compensation and Tuition Fee Exemption Standards state that the amount cannot exceed 8,000 RMB (USD 1,135) per year for bachelor's and special technical degrees and 12,000 RMB (USD 1,700) for graduate student programs, which equate to a total of 24,000 and 36,000 RMB (USD 3,400 to 4,250), respectively.
- Each of the above three payments are received directly from the unit, government, or State for a total of 101,000 to 133,000 RMB (USD 14,305 to 18,840).

PLA “Master Chief” System

This subsection addresses the PLA’s newly created “master chief system” (士官长制度), which officially began as a pilot program in late 2014.⁸¹⁰ Of note, the PLA has different English translations for the term *shiguanzhang* (士官长), including master chief, master sergeant, master-sergeant-in-chief, chief non-commissioned officer, and Chief NCO. For purposes of this book, master chief is used.

In 2015, the basic job of a master chief was identified as assisting officers, acting as a spokesman for enlisted soldiers, serving as a chief trainer during basic training, and being an administrator for the grassroots (e.g., battalion and below) troops. They will focus on front-line combat rather than their previous job of managing technical issues. As such, they will now allow officers to be relieved of trivial management issues so that they can focus more on improving their command, skills, and abilities. As a result, officers in one brigade now have 34 percent more time to devote to unit training.⁸¹¹

At the end of the 1990s, the PLA Navy implemented a test “master chief” program in a destroyer *zhidui*,^{fd} where certain vessels had more than one “master chief” who were organized by their departments on the vessel.⁸¹² At that time, there was not a single senior NCO (command master chief petty officer). The program apparently did not move past the test phase. As a result, it was not until November 2013 that the Army established a test case in a brigade and

^{fd} In the PLA Navy, a *zhidui* (支队) is a division leader-grade headquarters subordinate to a fleet. To illustrate the lack of continuity among PLA Navy sources concerning the translation for *zhidui*, the PLA Navy Dictionary (179) translates *jiangting zhidui* (舰艇支队) as a naval ship brigade. The PLA Navy Encyclopedia (1099) translates the same term as a ship detachment. The 2002 PRC *defense white paper* translates *zhidui* as flotilla. Some Western publications, such as Jane’s Fighting Ships, translate *zhidui* as naval divisions. Other Western sources translate it as flotilla, squadron, or detachment.

not until early 2014 that the General Staff Department authorized a mechanized infantry brigade under the Beijing MR and an infantry brigade under Shenyang MR to serve as an official pilot program for a “Master Chief System.”

By the end of 2014, a total of 36 outstanding NCOs in the pilot infantry brigade were appointed as battalion master chiefs, marking the official appointment of the first group of master chiefs in the PLA. Once the program moved through the test phase and was approved, the PLA began training and assigning master chiefs at the company, battalion, regiment, and brigade levels in each of the services. For example, one brigade in the 42nd Group Army chose 13 out of about 1,000 NCO as master chiefs. The assessment for their selection covers military theory, basic skills, physical ability, etc. Master chiefs at the brigade level are selected from NCOs who have already served as squad leaders for at least four years, have at least a post-secondary educational program/diploma (大专学历), and are Communist Party members.

In April 2015, the PLAAF began training its first group of master chiefs that included 262 personnel from 15 brigade, regiment, battalion, and company test points.⁸¹³ The training lasted for six weeks at the Air Force Dalian Communications NCO School (空军大连通信士官学校), which implies this is the normal training period for all master chiefs throughout the PLA. Although the PLAAF’s master chiefs receive their training at the Dalian NCO School, it appears that the Army has established at least one specialized training unit to conduct the training.

In June 2015, the PLA selected a sergeant first class (上士) NCO as the first female master chief, who was assigned to an Army communications/signals company (通信连) within a communications/signals regiment in the Shenyang MR.⁸¹⁴ Of note, an article in December 2016 identified 36 senior NCOs on the PLA Navy’s (PLAN) Liaoning aircraft carrier, each of whom averaged 20 years on active duty including being assigned to the Liaoning while it was still under construction; however, the article did not mention anything about a single master chief, which implies that there is not one.⁸¹⁵

Master chiefs selected at the company level have served as a squad leader or equivalent billet. Although master chiefs at the brigade level are Party members, it is not clear if they are members of their unit’s Party Committee.⁸¹⁶ Most likely, only one master chief per brigade is allowed to be a member, but he or she may not be an equal member with the officers.

When trying to figure out what their role would be, the PLA noted in early 2014 that it needed to address the following issues:

- How to define the role of a master chief.
- How to clarify his or her responsibilities and his or her relations with the unit officers. For example, the relationship between a unit officer and a master chief is like that between a chief physician and a head nurse in the hospital.
- How to reasonably determine the benefits of a master chief. At present, the basic salaries for NCOs consist of the level salary and service salary. The highest-level NCO is paid as much as that for a regiment level officer. As such, the PLA may consider introducing duty salary and post allowance for master chief at different levels, so as to improve their living standards.
- How to promote the Master Chief System. The PLA can establish battalion master chief and then establish higher level master chiefs. It can spend five to ten years cultivating and selecting the master chiefs of different services in the PLA, in order to achieve a hierarchical Master Chief System.

In addition, one article noted that, prior to the new program, sergeant retention was low. Only a few halfheartedly opted to remain in service as an NCO after their first two years, while most chose to be demobilized. A poll showed that sergeants resented having their rank capped at acting platoon chief no matter how long they served, with no pay raises and only mediocre benefits. The lack of advancement opportunities was the main cause for early

decommissioning. However, even after the pilot program began, some of the master chiefs complained about the program. Specifically, they pointed out that, in spite of having clear job descriptions, they ran into consistent obstacles such as lack of administrative authority. Some of them complained that they were treated more like secretaries who merely passed on instructions from the battalion Commander. Several of them were also given the cold shoulder by new platoon- and company-level officers who had no experience and did not listen to their advice. The PLA has apparently tried to address these issues, such as identifying the issues in the media. It is not clear, however, if the retention rate has increased as a result of this program or if the PLA has solved any or all of the issues noted above.

Unfortunately, the PLA has not published any further articles concerning the success or failure of the system.

Civilian Cadre⁸¹⁷

Key Points

- In addition to active duty officers (cadres), the PLA and PLAAF have traditionally had a civilian cadre system. Civilian cadre wear military uniforms and hold a variety of research, scientific, and cultural positions.
- Since the 2016 reforms and force reduction began, the number of civilian cadres has been reduced, and some personnel may have been transferred to a new system of civilian personnel, who are not part of the 2.0 million man active duty roster.

In 1988, the PLA implemented a civilian cadre (文职干部) system to complement the 15-grade active duty officer (cadre) system. Like active duty military personnel, civilian cadre wear military uniforms; however, they wear different insignia on their shoulders than officers and have their own grade system.⁸¹⁸ Of note, PLA publications such as the *Defense White Paper* also translates this term as “non-ranking officers” and “civil cadres.”⁸¹⁹

Civilian cadre are found in a wide variety of jobs in research, engineering, medical, education, publishing, archives, cultural, and sports units.⁸²⁰ In May 2005, the PLAAF’s nurse corps was composed of military nurses and civilian nurses hired under contract. As of mid-2005, most of the military nurses were active-duty officers, but a few units still used civilian cadre nurses. However, based on the 10th force reduction that began in 2004, the PLAAF was in the process of setting up a three-part structure that included active-duty officers, NCOs, and civilian cadres. The PLAAF began recruiting civilian nurses as NCOs during a test program in 2004.⁸²¹

Based on guidance in April 2006 from the CMC and General Departments to the PLA to expand the size of the civilian cadre force, the PLAAF planned to expand its civilian cadre force by recruiting 600 personnel during 2006 to primarily fill the following types of positions: instructors, engineers, health, translators, accounting, map archives, and song and dance troupe members.⁸²² Unfortunately, no additional information was found concerning the PLAAF for any successive years, but it most likely continued to recruit personnel for the same types of billets.

Based on available information, prior to the 11th force reduction in 2016, the 2.3-million-man PLA possibly consisted of up to 100,000 civilian cadres, which was included in the 2.3 million figure.⁸²³

The PLA’s civilian cadre can be categorized as special technical civilian cadre (专业技术文职干部) and non-special technical civilian cadre (非专业技术文职干部), which are, in turn, organized into three categories (senior, intermediate, and junior).⁸²⁴ As shown in Table 4-6, special technical civilian cadre are assigned one of 10 numbered grades (级), including special grade (特级) followed by grade 1 (1级) at the top and grade 9 (9级) at the bottom. For pay purposes, these grades are equivalent to the 10 officer ranks, with special grade equating to a full general, grade 1 to a lieutenant general, and so on down to grade 9, which equates to a second lieutenant. The special technical posts (专业技术职务) for special technical civilian cadre (专业技术文职干部) are organized into three levels (级): senior (高级), intermediate (中级), and basic (初级). These three levels for special technical grades (等级) are further divided into 14 grades, which range from grade 1 (1级) at the highest to grade 14 (14级) at the bottom. These grades are equivalent to officer

grades, with special technical grade 1 being equivalent to CMC Member, special technical grade 2 equivalent to MR leader, and so on down to special technical grade 14 equivalent to platoon grade. Also as shown in Table 4-6, although special technical civilian cadre are assigned numbered grades, non-special technical civilian cadre are not assigned numbered grades. The grades and billets for special technical and non-special technical civilian cadre are shown in the Table 4-6 below:

Table 4-6: Civilian Cadre Grades

Military, Political, Logistics, and Equipment Officers	Special Technical Civilian Cadre	Non-Special Technical Civilian Cadre
CMC Chairman (军委主席) Vice Chairmen (军委副主席)		
CMC Member (军委委员)	Grade 1 (1级)	
TC leader (正战区职) Former MR leader (正大军区职)	Grade 2 (2级)	TC deputy leader Equivalent (按副大军区职待遇)
TC deputy leader (副战区职) Former MR deputy leader (副大军区职)	Grade 3 (3级)	Corps leader Equivalent (按正军职待遇)
Corps leader (正军职)	Grade 4 (4级)	Corps deputy leader Equivalent (按副军职待遇)
Corps deputy leader (副军职)	Grade 5 (5级)	Department leader (正局级)
Division leader (正师职)	Grade 6 (6级)	Department deputy leader (副局级)
Division deputy leader (副师职)	Grade 7 (7级)	Division leader (正处级)
Regiment leader (正团职)	Grade 8 (8级)	Division deputy leader (副处级)
Regiment deputy leader (副团职)	Grade 9 (9级)	Office leader (正科级)
Battalion leader (正营职)	Grade 10 (10级)	Office deputy leader (副科级)
Battalion deputy leader (副营职)	Grade 11 (11级)	Grade 1 Staff Member (一级科员)
Company leader (正连职)	Grade 12 (12级)	Grade 2 Staff Member (二级科员)
Company deputy leader (副连职)	Grade 13 (13级)	Worker / Clerk (办事员)
Platoon leader (排职)	Grade 14 (14级)	

Civilian cadre also wear two types of shoulder epaulets based on their level as shown in Figure 4-6 below.⁸²⁵ The insignia for each epaulet consists of a six-pointed flower bud in the center of the epaulet with a wreath (for senior grade civilian cadre) or a scroll (for all others) at the shoulder edge.⁸²⁶ This pattern may lead some observers to confuse uniformed PLA civilians for major generals; however, the key to differentiating between the two is the six-pointed flower bud for the civilian cadre compared to the five-pointed star for a general. In addition, the color for the epaulets are different for each service. Civilian cadre also wear ribbons similar to the active-duty officer corps.

Figure 4-6: Civilian Cadre Shoulder Boards



It is not clear what the overall status of the civilian cadre corps is since the 11th force reduction began in 2016. It appears that the number of civilian cadres has been reduced. Rather than leave the military completely, it appears that some of them have transferred over to the civilian personnel system discussed in the next section.

Civilian Personnel⁸²⁷

Key Points

- The PLA created a new civilian personnel system in 2005. These personnel perform many functions of uniformed PLA civilians, but are not counted as part of the PLA's active duty personnel.
- In a 2018 recruitment drive, the PLAAF received roughly 10 percent of the recruited civilians.

In 2005, the PLA created a new category of civilian personnel (文职人员 or 非现役工勤人员) to perform many functions of uniformed PLA civilian cadres. However, unlike civilian cadre, they are not counted as part of the PLA's active duty personnel.⁸²⁸ They may be hired to take on technical billets in teaching, research, engineering, health, recreation and sports, library, and archive management fields, as well as non-technical management and service support billets in non-operational troops. Contracts vary from one to four years, depending on their grade (from one to six—but it is not clear what those grades are and what military grades they are equivalent to). They wear PLA uniforms and ribbons showing their grade, but they do not wear a rank insignia. By the end of 2006, over 20,000 civilian cadre billets had been filled by contract civilians. In November 2014, the General Political Department announced that over 20,000 people applied for 2,203 civilian personnel positions for 2015. Among the applicants, 43 percent had a master's degrees or above. The State Council and State CMC passed new regulations for civilian personnel in 2017.⁸²⁹

Overview of PLA Civilian Personnel Recruitment

Although the PLA has hired civilian personnel since 2005, the process was not nationwide. On 10 July 2018, the CMC Political Work Department announced the official start of its first nation-wide recruitment for civilian personnel. All of the positions were open to the general public, and a unified test was scheduled for 28 August 2018.⁸³⁰ The official website, Military Talent Net (军队人才网), designed to serve as an official platform for all of the recruitment-related activities, was also up and running around the same time (accessible at <http://www.81rc.mil.cn/>). At around the same time, the official civilian personnel recruitment promotional video also began to be circulated on the internet.⁸³¹

In total, there were 7,095 billets (9,297 positions) announced in the 2018 *Civilian Personnel Recruitment Dataset*, and it was later reported that more than 140,000 participants took the exam in 42 cities in 31 provinces, autonomous regions and municipalities, which means that around one in 15 candidates would be recruited.⁸³² The recruitment website was put online on 10 July 2018 whereas the 1st written exam date was set on 26 August 2018. Of the 9,297 positions, the PLAAF announced recruitment for 914 positions, some of which had more than one person.

Following the process, the PLA hired 5,700 personnel in March 2019. Once they were accepted, they received pre-job training for an unidentified period of time in 16 military academic institutions.⁸³³ Among the newly recruited civilian personnel, 91 percent had a bachelor's degree, and 34 percent had a master's degree or higher, among which 44 percent had a master's degree or above in teaching, scientific research, engineering and medical treatment and other major positions, and 27 percent were the graduates of top domestic or foreign universities.

The following photo shows their uniforms and insignia.⁸³⁴



Civilian personnel are divided into two categories: management billets (管理岗位) and special technical billets (专业技术岗位).⁸³⁵ The management billets are divided into nine grades based on the PLA's organizational structure shown below. The ribbons at the right show the grade for management billets on the left and the 13 grades for special technical personnel on the right. The lines on the left indicate whether they are a deputy leader (1 line) or a leader (2 lines). It is not clear what the lines on the ribbons on the right indicate.

- Clerk (办事员)
- Staff (科员)
- Office leader (科级正职) and deputy leader (科级副职)
- Division leader (处级正职) and deputy leader (处级副职)
- Bureau leader (局级正职) and deputy leader (局级副职)
- Department deputy leader (部级副职).

Like the civilian cadre billets discussed earlier, the special technical billets are organized into three levels (级): senior (高级), intermediate (中级), and junior (初级). These three levels for special technical grades (等级) are further divided into 13 grades, which range from grade 1 (1级) at the highest to grade 13 (13级) at the bottom. Of note, while civilian cadre have 14 grades, civilian personnel only have 13.

Reserves

Key Points

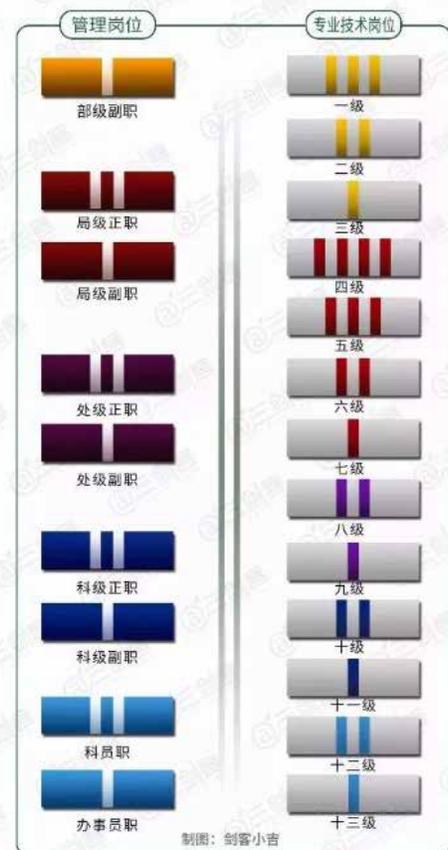
- PLA reserve units and personnel primarily consist of civilians who serve only part time in uniform.
- The PLAAF appears to have a very limited number of reserves, including a reserve airfield, a missile regiment, and a radar battalion.

By law, the Chinese Armed Forces are composed of the following three components:⁸³⁶ 1) the People's Liberation Army, 2) the People's Armed Police (PAP), and 3) the People's Militia.⁸³⁷ The PLA is comprised of both 1) active duty personnel and units and 2) PLA reserve units and personnel, most of whom are civilians and serve only part time in uniform. The reserve force was established in 1955, was disbanded in 1958, and was re-established in 1983. Since then, it has been reorganized and updated along several times with the modernization of the active-duty force.⁸³⁸ The term *yubeiyi* (预备役) refers to civilians who serve as reserve officers and enlisted personnel (预备役军官和士兵), but who do not have active-duty status, and also refers to reserve units (预备役部队) that are organized to augment active-duty PLA forces. The guiding document for the reserve force is the *PRC Reserve Officer Law* [中华人民共和国预备役军官法].⁸³⁹

Reserve service is divided into reserve service for officers and enlisted soldiers.⁸⁴⁰ Citizens registered for reserve service are identified as reservists. Reserve officers are chosen mainly from officers and civilian cadres who have been discharged from active service (退出现役), cadres of the people's armed forces departments and the militia, graduates from non-military institutions of higher learning, and other citizens who meet the qualifications of reserve officers. Reserve officers who hold posts in reserve forces, or are pre-regimented to active forces are reserve officers of Category One, and the other reserve officers are in Category Two. Reserve officers are classified as operational, political, logistics, armaments, and specialized technical officers and their posts are classified as division, regiment, battalion, company and platoon levels, and for specialized technical officers, as senior, intermediate and junior levels. The military ranks for reserve officers are divided into eight grades in three categories: reserve major general; reserve senior colonel, colonel, lieutenant colonel and major; reserve captain, first lieutenant and second lieutenant. Reserve enlisted soldiers range in age from 18 to 35. On the basis of age and military qualities, they are classified into Category One and Category Two. Once they become a reservist, they can remain on duty until they meet the same maximum retirement age as an active duty officer or enlisted member.⁸⁴¹ The different grade and rank structure for officers and enlisted force personnel is discussed in greater detail in the relevant sections of this chapter. Reserve enlisted personnel are also selected from enlisted personnel who were discharged from active duty before serving their full term for retirement.

In June 2020, the State Council issued the *Decision Concerning Adjustment of the Reserve Unit Leadership Structure* [关于调整预备役部队领导体制的决定], which unified command of

军队文职人员岗位等级标志



PLA reserve units under the Party Central Committee and CMC, removing the former dual-leadership shared with provincial governments.⁸⁴² (This action parallels a change in the chain of command of the People's Armed Police that took effect in 2018.⁸⁴³) The CMC National Defense Mobilization Department (军委国防动员部) oversees reserve force (后备力量) construction through its Militia and Reserves Bureau (民兵预备役局).⁸⁴⁴

The bulk of the PLA reserve unit strength historically has been based on and still supports the Army, though the number of Army reserve units will be reduced as reserve units in the other services are increased.⁸⁴⁵ Army reserve units are organized into divisions, brigades, and regiments based on provincial boundaries. The Army's reserve units are commanded by their respective Military District headquarters and in peacetime are affiliated with the TC Army headquarters. During war, they are assigned to active duty units.⁸⁴⁶ Reserve units are led by a small number of active duty PLA officers, who serve as the unit's "backbone," and are composed mainly of reserve officers and soldiers/enlisted members.⁸⁴⁷ Reserve enlisted soldiers all wear the same insignia of rank and do not appear to have the equivalent of active duty NCOs.

It appears that the PLAAF has only a very limited number of reserves, which, in peacetime, are overseen by their respective TCAF headquarters, and will be subordinated to PLAAF units in war. For example, in November 2005, the PLAAF created its first reserve airfield station (预备役场站) under an Air Force Command Post (now a Base) near Guangzhou in the Guangzhou MRAF.⁸⁴⁸ During the 2010s, other reserve airfield stations were identified in the Beijing, Lanzhou, and Jinan MRAFs.⁸⁴⁹ Since the 2016 reorganization, at least one other airfield station was created in the Eastern TCAF that conducts joint training with the Eastern TC's Army Aviation and Naval Aviation. The airfield stations are considered alternate airfields (备降机场), which do not have a permanent air unit but are used as a stopover location for aircraft flying through the region. They are organized like a regular airfield station as discussed in Chapter 3 and are apparently manned primarily by reservists. The reservists conduct maintenance and logistics on the aircraft during their stay. Reserve airfield stations are responsible for watching over airfields and serving as backup airfields, as well as being responsible for servicing deployed aircraft. They are an important part of the PLAAF support force. The PLAAF has expanded the role of these reserve airfield stations and has strengthened their familiarity with new equipment, skills, and combat methods. By strengthening reserve airfield stations, it takes some of the burden off regular airfield stations, allows for regular units to allow their personnel to rest and for the unit to reorganize, ensures safety, and reduces how much units must deploy support personnel when their aircraft deploy to another airfield. Some of the activities included protecting against bird strikes, refueling, and electrical charging. According to the 2008 *Defense White Paper*, "As stipulated in the *Outline for the Military Training and Evaluation of the Reserve Force*, one third of the authorized strength of a unit must undergo 30 days of training annually."⁸⁵⁰ As such, it is not clear whether the reserve airfields are open all year and have rotational reserve teams that for serve for 30 days of training at a time, or whether they are only open for a certain number of days each year.

In addition, the PLAAF has a few reserve AAA (预备役高炮) divisions, regiments, and brigades since the 2000s and still exist in the 2020s;⁸⁵¹ however, as discussed in Chapter 3, the PLAAF's active duty AAA units have basically been abolished. The PLAAF has at least one reserve SAM regiment (预备役导弹团) in an unidentified TCAF that, in July 2018, gathered over 50 active-duty and 40 reserve equipment repair and maintenance backbone personnel to conduct comprehensive major repair and maintenance work on a type of missile that this regiment received recently.⁸⁵² Possibly a different or the same reserve SAM regiment was identified in Shanghai in 2019.⁸⁵³ Finally, the PLAAF has created at least one reserve radar battalion (预备役雷达营) in Shanghai's Fengxian District and possibly more battalions in other locations.⁸⁵⁴ It is not clear how often or how long reservists serve in their reserve role each year.

fe In 2020, the following reserve units were identified: an Eastern TCAF Reserve AAA Brigade near Wuhu, Anhui, involved in flood relief; a Southern TCAF Reserve AAA Division with subordinate regiments transferred from the Army; and a Western TCAF Reserve AAA Division in Chongqing involved in flood relief.

PLA reserve units were reported to number about 510,000 personnel in 2009, but this figure was expected to be adjusted as Army reserve units are decreased and the Navy, Air Force, and Rocket Force add new reserve units.⁸⁵⁵ Finally, according to a military spokesperson in July 2020, China will reduce the number of ground forces reserve troops and increase the size of reserve forces belonging to other services and arms.⁸⁵⁶

Marriage, Family, Housing, and Benefits

Key Finding

- The PLA and PLAAF are continuing to improve their marriage, family, housing, and benefits policies in order to attract and retain qualified personnel.

In order to understand the PLA and PLAAF personnel as a whole, it is important to understand key issues concerning marriage, family, housing, and benefits in the PLA. As such, Dr. Marcus Clay wrote *Understanding the “People” of the People’s Liberation Army: A Study of Marriage, Family, Housing, and Benefits* for CASI in 2019.⁸⁵⁷ For greater details, please see the publication, which includes the following Key Points:

1. Family and personnel issues are a major concern of the PLA during the most recent period of military reforms, as seen in the numerous discussions of such matters in official PLA Chinese language publications both online and in print.
2. PLA military male and female members continue to need approval from their units to get married, and restrictions still exist disallowing a civilian male or female partner in a military marriage to file for divorce. Of note, however, male civilian spouses are extremely rare in the PLA. It appears that most of the female service members are either married to another service member or unmarried. Men must be at least 25 and women 23 before they can get married. Until 2011, with a few exceptions, enlisted personnel were not allowed to marry someone from their unit’s vicinity or to marry someone from within his/her unit; however, officers were allowed to do both.
3. The political departments at various levels of the military play a large role in assisting male personnel to find potential life partners through organized matchmaking events, usually held at military units. Such “matchmaking” programs are often organized at the service level. For the Air Force, a “Military Matchmaking Gathering” (军旅姻缘会) program was created in 2006, and it has been held consecutively since then. By 2016, a total of more than 430 marriage-age civilian women and military men “fell in love” through this program and a total of 93 couples eventually registered to marry.⁸⁵⁸ One point of interest, however, is that matchmaking service provided by the military seems to be only open to male military officers and NCOs^{ff} based on their age—between 25-28, as shown in one matchmaking event held in Beijing.⁸⁵⁹
4. The PLA continues to use a qualification system to determine whether married military members are allowed to live together with their families. Generally speaking, the PLA does not allow its new officers and NCOs to live together with their new wives and families until they meet a general minimum time-in-service ranging from 10-12 years. The current policy stipulates that officers stationed in regular locations need to reach the company leader-grade level and NCOs who are Master Sergeant Class Four and above (served 10 or more years) to be qualified to have families “accompanying” them. Ultimately, this is a legacy policy that may be adjusted as the Chinese society continues to evolve; however, it just takes time. But this is also a Party control issue.

^{ff} A survey of multiple websites recruiting civilian female participants of such organized matchmaking events seem to suggest that both officers and NCOs meeting the age requirement are participants of such events. Enlisted soldiers, however, are not included in such events. As stated earlier, the PLA does not allow enlisted soldiers to get married during their enlistment. See, for example, <http://www.lyd.com.cn/n/774028>.

5. Housing shortages remains a major concern of the military, and various measures have been taken to build new and renovate existing housing to accommodate the needs of military families who qualify for provided housing. The housing shortage was partially due to senior military officers abusing the provided housing policies. Eviction work has been intensified in the Xi Jinping era. On 1 August 2015, the PLA began to implement its Housing Provident Fund (HPF) Loans to allow military members to borrow up to 400,000 RMB (USD 56,660) from the HPF with maximum 20-year term to purchase commercial properties.
6. The PLA has significantly improved its leave and pay policies as it seeks to use monetary incentives to attract and retain qualified personnel. As more active-duty military members belong to China's single-child generation, the leave policy has changed from allowing the military members to visit their parents staying in their hometowns once every four years, to once every two years, and eventually to once a year for a period of 40-45 days. It should be noted, however, that leave is rarely granted during peak exercise seasons. Most leave is taken around Chinese New Lunar Year, which occurs in late January to early February. In 2006, PLA officers and NCOs reportedly received pay increases ranging between 80 and 100 percent. Again in 2017, they received another 40 percent increase. In 2018, a division-leader-grade PLA officer, roughly equivalent to a U.S. O-7, made roughly 264,000 RMB (USD 41,969) annually in total compensation.

PRC Ministry of Veterans Affairs

Key Finding

- The Ministry of Veterans Affairs, established in 2018 following protests from veterans demanding unpaid benefits and support in previous years, is charged with the welfare of 57 million military veterans.

At the first session of the 13th National People's Congress on 19 March 2018, the PRC created the Ministry of Veterans Affairs (中华人民共和国退役军人事务部) as a ministry of the State Council with the overall responsibility for 57 million military veterans, including those who served in the Red Army prior to 1949. Some of its responsibilities come from the Ministry of Civil Affairs and the Ministry of Human Resources and Social Security, as well as the CMC's Political Work Department and Logistic Support Department.⁸⁶⁰ Establishing the new Ministry was partially in reaction to hundreds of veterans who staged two days of demonstrations in February 2017 outside the Beijing headquarters of the Party's anti-corruption watchdog, the Central Commission for Discipline Inspection, demanding unpaid retirement benefits. That protest followed an even bigger demonstration in October 2016 that saw thousands of veterans stage a quiet sit-in outside the commission's headquarters. The 2016 demonstration was partially in response to the beginning of the 300,000-man force reduction that began in 2016. Through a series of preferential measures, the veteran support system is progressing at provincial, prefectural, county, township (sub-district), and village (community) levels. At the national level, the establishment of the new ministry is a high-visibility initiative that the government has taken to demonstrate support for the military and PLA families.

Mental Health Issues

Key Finding

- Researchers have examined different environmental factors that affect the mental health of PLAAF personnel, developed a pilot mental health database, and are increasing mental health screenings, personnel, and related programs to improve troops' quality of life.

Over the past several years (2010s), the PLA as a whole has been concerned about mental health issues throughout its force, including officers and enlisted personnel.⁸⁶¹ As such, the PLA has conducted very detailed surveys. PLA research indicates four key environmental stress factors affect mental health: 1) the natural environment (heat, cold, altitude, and humidity); 2) the artificial environment (acceleration, vibration, noise, and radiation); 3) the social and psychological environment (loneliness, living and working in confined spaces, and living a secluded, mundane life); and 4) the operational environment (continuous operation, inadequate sleep, danger, and increased training at all times of the day over multiple days).

China's borders are mostly lined with rugged terrain. Today, China's defense prioritizes the southeastern seaboard, the South China Sea, as well as the Sino-Indian frontier, where the average elevation exceeds 4,500 meters. With the exception of the vastly urbanized southeastern region, the Tibetan Plateau and the South China Sea islets prove to be corrosive environments on one's mental wellbeing. According to Chinese researchers, the plateau environment takes the greatest toll on military mental health, followed by tropical, oceanic, over water, acceleration, frigid, cabin, tunnel, and airtight environments. A 2014 study found that PLAAF personnel stationed at plateau locations are in poorer mental and physical health as opposed to lowland-based PLAAF personnel, mainly a result of the rugged surrounding environment, lack of social support, and job burnout.⁸⁶² In addition, a 2019 study on PLAAF personnel assigned to ground forces (空军地面部队) units and organizations, such as aircraft maintenance, SAM, and radar units, found that, during training in plateau environments, the majority of sampled group suffered from hyperhemoglobinemia and upper respiratory infections, another testament to the deleterious effects of high altitudes.⁸⁶³

Mental health and wellness has become a significant part of PLAAF new soldier training. When compared to other services and force of the PLA, the PLAAF ranked second-to-last in terms of service members' mental wellbeing, behind the Strategic Support Force, Army, and Navy, but ahead of the Rocket Force. To raise mental wellbeing, PLAAF experts have been collecting data on pilot mental health from 2008 onwards, slowly building up a "Pilot Combat Psychology Database (飞行员作战心理信息数据库)" over a period of ten years that would serve as the foundation for mental health-related work among PLAAF airmen.⁸⁶⁴ Since 2016, newly enlisted personnel were given mental health screenings each September as part of an experimental program by the Air Force Military Medical University Aviation Medical Research Institute (空军军医大学航空医学研究所).⁸⁶⁵ As a part of this greater emphasis on mental health and wellness, new soldiers also received a recitation of WeChat-delivered letters from their parents in order to encourage completion of basic training tasks.⁸⁶⁶ Additionally, the PLAAF Pilot Recruitment Bureau Nanjing Selection Center (招飞局南京选拔中心) has written an open letter to parents as a reminder to invest greater care and love for children who hope to become pilots one day, as mental wellbeing is critical to capable PLAAF airmen.⁸⁶⁷ PLAAF units in respective TCs are stepping-up mental health work through various methods, such as training more mental health workers to serve at various PLAAF levels (Southern TC),⁸⁶⁸ establishing a new mental health service center dedicated to PLAAF personnel (Central TC),⁸⁶⁹ and devising new ways to help enlistees cope with stress from training under "real war conditions" (Western TC).⁸⁷⁰

Chapter 5: PLAAF Education System

Introduction

This chapter provides information about the PLAAF's education system from 1949 to 2019. It is divided into the following six sections. Although the chapter discusses the history and organizational structure of the flight institutions, it does not discuss the training, which is discussed in Chapter 6. It should be noted up front that the PLAAF's education system is completely different from that of the USAF, which presented challenges in organizing the information and presenting it to a Western audience. Readers should keep in mind the fundamental differences between the USAF and PLAAF education systems as they read this chapter to avoid mirror-imaging a USAF education experience onto the PLAAF system.

- Key terms and concepts
- History of the PLA's academic institutions
- Profiles of the PLAAF's 10 current academic institutions
- The PLAAF's National Defense Student Program
- Air Force Military Professional/Vocational University
- The PLAAF's Dual-Enrollment Program and Teenagers Aviation Schools of the Air Force.

Key Terms and Concepts

Key Points

- PLA terminology for education concepts and schools differs greatly from Western terminology, and are not always translated in a consistent manner, so familiarity with the Chinese terminology can be helpful. As a key example, PLA academic institutions are organized into officer universities, officer *xueyuan*, and NCO *xuexiao* (both Chinese terms are described in further detail below).
- The PLA has three levels of education—basic, intermediate, and advanced—which are based on the PLA's officer and NCO grade system.

This section provides information about key PLA terms and concepts concerning its education system.⁸⁷¹ It also includes information about the PLA and PLAAF education levels, education and training components, leadership and management system, and class year identification and time-in-service issues. All of this is important because the PLA and the U.S. military use different terms and have different concepts for their education systems. Therefore, in order to better understand how the PLA and PLAAF are organized and managed, it is important to understand education concepts and programs through a PLA lens.

Key Chinese Terms and Concepts

The PLA and U.S. military have similar terms for their education systems, but they have different meanings. Specifically, in the U.S. military, the term “professional military education” (PME) encompasses a range of

courses designed for officers and enlisted personnel throughout their careers.^{fg, 872} The PLA does not use the term “professional military education.” The closest term used for this concept is *peiyang xunlian* (培养训练) or just *peixun* (培训), which the PLA translates as “cultivation and training,”⁸⁷³ “development and training,”⁸⁷⁴ or just “training.”⁸⁷⁵ At times they also use *junshi jiaoyu* (军事教育), which is translated as “military education,” or *junshi zhiye jiaoyu* (军事职业教育), which is translated as “military professional education”⁸⁷⁶ and “education of military profession.”⁸⁷⁷ These terms refer to the education and training required for NCOs and officers to move up their career ladder. This includes billet training as well as an understanding of theory and technical issues. For purposes of this book, the term “military education” or just “education” will be used.

The PLA defines “military professional education” as “education outside of military academic institutions.”⁸⁷⁸ Under this concept, the PLA system offers continuous education, including mostly internet-based long-distance learning, to all PLA personnel. It also includes the National Defense Student undergraduate and graduate programs as well as some graduate programs at civilian academic institutions for certain officers. In other words, it does not involve education within the PLA academic institutions discussed in this chapter.

The PLA also uses the terms *xueli jiaoyu* (学历教育) and *renzhi jiaoyu* (任职教育) that it translates as follows; however, the PLA is not consistent in how it translates the terms:

- *Xueli jiaoyu* is translated as “academic credential education,” “academic education,” or “education of officer candidates for academic credentials, which offers undergraduate education for pre-commissioned officers and graduate education for officers” in military academic institutions.⁸⁷⁹ In other words, this is the basic education component for theory, such as that which is received for four years at the Air Force Aviation University (AUAU).
- *Renzhi jiaoyu* is translated as “professional education in military academic institutions” and “pre-assignment education,” which consists of basic-, intermediate-, and advanced-level officer institutions and NCO schools, and offers pre-assignment training and rotational training for active-duty officers and NCOs at each level (basic, intermediate, and advanced) of their career before they assume their billet. It is also translated as “vocational education.”⁸⁸⁰ For purposes of this paper, it is identified as “pre-assignment education.” Some pre-assignment educational institutions also offer graduate courses in military science as officers move up their career ladder.⁸⁸¹ In other words, this component provides the technical and the command component of pre-assignment education and training.

Furthermore, the PLA has the following three terms for different types of academic institutions; however, the PLA’s *Dictionary of Modern Military Education* (sic) (现代军校教育辞典)⁸⁸² and *PLA Military History* (中国人民解放军军史)⁸⁸³ do not have a single entry for any of the three terms:

- *Daxue* (大学): As a general rule, the term *daxue* is translated as “university.”⁸⁸⁴ In some cases, the PLA also translates it as “college.”⁸⁸⁵ Also, as a general rule, *daxue* can have subordinate officer *xueyuan* and, in some cases, an NCO *xuexiao*.
- *Xueyuan* (学院) This is the most complicated term, because the PLA translates it as academy, college, and institute.⁸⁸⁶ In some cases, the PLA also translates it as university.⁸⁸⁷ Two official PLA publications also translate the same name as college in one and as academy in the other.⁸⁸⁸
- *Xuexiao* (学校): As will be shown in this chapter, prior to 1986, the majority of officer academic institutions were identified as *xuexiao*. This term has typically been translated as “school” and, since 1986, only refers to NCO

^{fg} U.S. military PME includes pre-commissioning education for officers but does not include education at civilian academic institutions in residence or by correspondence.

schools; however, the PLAAF translates the term *xuexiao* as academy for the Air Force Communication NCO Academy (空军大连通信士官学校).⁸⁸⁹ In addition, the PLA sometimes translates the term *xi* (系) as school, even though it is an academic department.

PLA academic institutions are organized into officer universities and *xueyuan*, and NCO *xuexiao*. Unfortunately, the PLA is not consistent when it uses an “official” English translation. For example, different official PLA publications translate the three Air Force Flight *Xueyuan* as Flight Colleges or as Flight Academies⁸⁹⁰ and the Air Force Command College is also identified as the Air Force Command College.⁸⁹¹ Complicating matters, very few academic institutions have a website, and even those that do are not consistent with the English translation for their name.

English names for these institutions are typically found on badges, logos, website banners, entrance signs at academic institutions, dictionaries, encyclopedias, official PLA websites, and official PLA media articles such as from *Chinamil.com* and the MND. For purposes of this book, unless there is an official English name for an academic institution, the name will use *daxue*, *xueyuan*, or *xuexiao*. If no official English name is found for the academic institution, the name will be enclosed in brackets followed by the Chinese name in parenthesis, such as [Air Force Maintenance *Xuexiao*] (空军机械学校).^{fh}

Each academic institution generally focuses on a particular range of specialties, such as engineering, aviator education and training, infantry, medical, or logistics (i.e., services), and commanding officers. Of note, in Chinese terms, a commanding officer is any officer who holds a leadership billet, such as the Commander or Deputy Commander, all the way down to a Deputy Director of a 3rd-level office.⁸⁹² This term is discussed in more detail in Chapter 4. While most universities, such as engineering universities, have multiple subordinate officer *xueyuan* as well as a subordinate NCO school, some universities, such as the AUAF, do not have any subordinate *xueyuan* and are very narrow in scope.^{fi} While *xueyuan* do not have any subordinate *xueyuan*, some of them do have a subordinate NCO school. All academic institutions have subordinate administrative organizations, academic departments, and research offices.

To further confuse the issue, the PLA has another term whose Pinyin (Romanization of Chinese characters based on how they are pronounced) is *xueyuan*, but the characters are different. This term for *xueyuan* (学员) is translated as “cadet” for personnel attending their undergraduate time in a military academic institution;⁸⁹³ however, the same term is translated as “student” for personnel attending an NCO school, a graduate student program, or pilots attending one of the three flight academies after they have graduated as a cadet in the Air Force Aviation University. For purposes of this book, unless specified, the Pinyin term *xueyuan* will refer to college, academy, or institute. The PLA also uses the term *xuesheng* (学生) and translates it as student for personnel attending graduate programs or training in a training unit. It also uses the term *xuebing* (学兵), which is translated as student for enlisted personnel who are receiving specialty training at a training institution.⁸⁹⁴ In addition, the PLA has two terms for reserve officers who are part of the National Defense Student Program discussed later. Students are referred to as *houbei junguan* (后备军官) or *houbei ganbu* (后备干部), which is translated as “reserve officer” and “reserve cadre,” respectively.⁸⁹⁵ Once they graduate and are assigned to their permanent duty station, they are no longer called reserve officer or cadre.

fh The terms *jiwu* (机务) and *jixie* (机械) are both translated as “maintenance.”

fi For example, the PLA Air Force’s Engineering University (空军工程大学/空工大) has the following eight subordinate academic institutions: Air Defense Missile College (防空反导学院), Air Traffic Control and Navigation College (空管领航学院), Aviation Engineering College (航空工程学院), Aviation Maintenance NCO School (航空机务士官学校), College of Science (理学院), Engineering College (工程学院), Graduate School (研究生院), Information and Navigation College (信息与导航学院).

Education Levels

The PLA has three levels (等级) of education: basic (初级), intermediate (中级), and advanced (高级). Each of these is based on the PLA's officer and NCO grade system discussed in the Chapter 1. In addition to dividing PLA academic institutions into academic and pre-assignment education institutions, historically, the PLA has divided officer cadet and post-cadet education into two basic categories: command academic institutions (指挥院校) and special technical academic institutions (专业技术院校).⁸⁹⁶ Furthermore, the PLA divides its academic institutions into three types: command (指挥), special technical (专业技术), and NCO (士官). While officer command and special technical academic institutions include graduate school programs, no NCO schools included bachelor's degree or graduate school programs as of 2018.⁸⁹⁷

Personnel can receive the following types of degrees, diplomas, or a certificate through the military education system:

- Certificate (学历证书/学位证书): NCOs and officers who do not receive a degree, including for 1-year programs such as the Command *Xueyuan* commanding officer programs, receive a certificate.
- Secondary technical/professional program/diploma (中专),^{fj} which is a 1-year program for two-year enlisted personnel and is required in order to be selected as an NCO.^{fk}
- Post-secondary educational program/diploma (大专学历),^{fl} which is a 2- to 3-year program for NCOs and officers.
- Bachelor's degree (本科), which is a 4-year degree for cadets.
- Master's degree (硕士).
- Doctorate degree (博士).
- Post-doctoral (博士后).⁸⁹⁸

According to the *Dictionary of Modern Military Education*, officer academic education institutions are responsible for providing bachelor's degrees to pre-commissioned officers and for providing graduate education (研究生教育).⁸⁹⁹ Pre-assignment education institutions are responsible for providing cultivation and training for all categories of officers and NCOs (各级各类军官和士官岗位任职培训).

The Meaning of *Zhihui*

To understand what the service Command Colleges do, it is important first to know what the term *zhihui* (指挥), which is best translated as “command,” means in the context of academic institutions, career tracks, organizational structure, and operations. With this as a basis, it is also important to know what the PLA's five career tracks are and how the PLA defines and organizes its “commanding academic institutions” (指挥院校).

Most importantly, no available PLA dictionary or encyclopedia has a single entry or translation for the term *zhihui* (指挥); however, every PLA dictionary and encyclopedia uses this term in multiple combinations, including *zhihuiyuan* (指挥员) *zhihui jinguan* (指挥军官) and *zhihui yuanyao* (指挥院校) discussed below.

fj The two-year educational program known as *zhongzhuan* (中专) is a secondary vocational educational program that grants a diploma upon completion of all requirements. It focuses on providing vocational and technical job training.

fk Of note, until 1994, this program was available in PLA officer academic institutions for officers who joined the PLA as enlisted personnel during the Cultural Revolution and received a direct promotion as an officer around the age of 15-17.

fl The three-year professional education program known as *dazhuan xueli* (大专学历) is a post-secondary educational program in China that grants a non-degree diploma upon completion of all requirements. It is roughly an equivalent to the associate degree granted in the United States.

Commander (指挥员)

Zhihuiyuan appears to be the generic term for Commander as compared to specific terms such as *silingyuan* (司令员) or *zhang* (长), as in Division Commander (师长). Based on how *zhihuiyuan* is used, it sometimes refers to a single person and other times refers to the leaders (领导) and principal officers (主官) as a group, to include the Commander, PC, Deputy Commanders, Deputy PCs, and Directors of the four first-level departments (Headquarters, Political, Logistics, and Equipment). The *Air Force Dictionary* translates *zhihuiyuan* as Commander and defines it as the leading cadre (领导干部) at each level who are responsible for combat/operations command (作战指挥). The Commander's primary combat/operations responsibilities are: organizing intelligence and reconnaissance (情报侦察), issuing decisions (定下决心), clarifying missions/tasks (明确任务), formulating combat plans (制定作战计划), organizing coordinated actions and support (组织协调动作和各种保障) within the PLAAF and with other services and branches/arms, inspecting combat preparations situation (检查作战准备情况), and implementing battlefield coordination and control (实施战场协调与控制).⁹⁰⁰ According to the *PLA Military Dictionary*, which does not translate each term into English, *zhihuiyuan* is: 1) The principal military [track] officer(s) (军事主官) at every level in the military; 2) The leading cadre (领导干部) at each level who is/are responsible for combat/operations command (作战指挥) or military functional work (军事行政工作); 3) The general term (泛称) for military officer.⁹⁰¹ It is also defined as the officer(s) who is/are responsible for all command of combat/operations at a particular level (对本级作战负责全部指挥负责的军官).⁹⁰²

Commanding Officer/Cadre (指挥军官/ 指挥干部)

According to various PLA publications, such as the *Military Cadre Work* volume of the *China Military Encyclopedia*, *zhihui jinguan* is translated as “commanding officer” and is defined as officers who have the grade of platoon leader and above and are in one of the four PLA officer career tracks—military, political, logistics, and equipment—and are identified as military commanding officers (军事指挥军官), political commanding officers (政治指挥军官), logistics commanding officers (后勤指挥军官), and equipment commanding officers (装备指挥军官). These tracks are discussed later in Part 1. Commanding officers are categorized by their career track, grade, missions/tasks, and by their service and branch/arm.⁹⁰³

Staff Officers (参谋军官)

The term *cannou jinguan* is the generic term for staff officers in all four departments (Headquarters, Political, Logistics, and Equipment); however, three other terms also refer to specific types of staff officers: *cannou* (参谋), *ganshi* (干事), and *zhuli* (助理). *Cannou* and *zhuli*, sometimes referred to as assistants, refer specifically to staff officers in the Headquarters Department, Logistics Department, and Equipment Department, while *ganshi* refers only to staff officers in the Political Department.⁹⁰⁴

Command College (指挥院校)

According to the *Modern Dictionary of Military Education Institutions*, a command college or command college is an educational organization provides basic training and education for pre-commissioned cadets (生长干部) who will serve in commanding officer (指挥军官) and staff officer (参谋军官) billets and provides military education to post-cadet commanding officers and staff officers. Prior to the 14th All-Army Academic Institution Conference in June 1999, the PLA had three levels of commanding academic institutions: senior/advanced-level, intermediate/mid-level, and basic level as shown below.⁹⁰⁵ [Note: Command colleges do not necessarily have to have the word “command” in their name, but they do have to provide training and/or education for commanding officers and staff officers.] Following the 14th Conference, however, all basic-level colleges were identified as specialty colleges (专业院校), leaving only two official levels of command colleges: senior/advanced- and intermediate/mid-level.

- Senior/advanced-level command college (高级指挥院校): The PLA National Defense University (国防大学) is the only institution at this level.
- Intermediate/mid-level command college (中级指挥学院): Most, but not all, of these colleges have the word *zhihui* in their names, such as the Air Force Command College. Although various logistics colleges provide this level of command education, they do not have *zhihui* in their name. These colleges are responsible for providing combined arms military education as well as individual service and branch/arm military education for regiment-level military, political, logistics, and equipment track officers. They also provide military education for staff officers serving in the Headquarters Department at the group army, division, and brigade levels, as well as for political and logistics personnel working in the headquarters. Finally, they provide military education for combined arms combat, political, and logistics instructors.
- Senior/advanced- and intermediate/mid-level command colleges also offer graduate student degrees.
- Basic-level command college (初级指挥学院): Even though this level was re-designated as specialty colleges in 1999, certain colleges still identify themselves as basic-level command colleges. This level includes each Army college; the PLA Navy's surface vessel colleges, submarine college, and service colleges; and the PLAAF's flight academies, navigation, AAA, and service colleges. They are divided according to institutions that provide four-year bachelor's degrees (本科) and three-year post-secondary education programs (专科). They recruit high school graduates and enlisted personnel. Upon graduation, they serve as platoon and company Commanders, vessel branch chiefs (部门长), and Air Force pilots and navigators. Of note, not all officers, including pilots, who receive their bachelor's degree have the opportunity to return to this level of college for military education.

Additional Terminology

The following bullets provide several additional relevant academic-related terms for this book. The terms are organized in alphabetical order:

- Academic degrees (学术学位)⁹⁰⁶
- Academic department (系),⁹⁰⁷ which is short for “学系.” In some cases, this is translated as a “school,” such as the Nursing School (护理系)⁹⁰⁸
- Functional and administrative department (部/ 部门)
- Associate professor (副教授)⁹⁰⁹
- Authorized disciplines (授权点)⁹¹⁰
- Bachelor's degree majors (本科专业)⁹¹¹
- Commanding officer (指挥类 or 指挥军官)⁹¹² refers to anyone who will serve in a leadership billet at any level, such as the deputy in an office
- Development and training (培训/ 培养训练)⁹¹³
- Defense vs Defence (国防):⁹¹⁴ The PLA translates *Guofang* as both defense and defence and is not consistent between publications about which translation it uses
- Degrees (学位):⁹¹⁵ bachelor's (本科), master's (硕士), and PhD/doctorate (博士)
- Diploma (学历):⁹¹⁶ Educational experience, which means not a degree (学位)⁹¹⁷
- Direction for each specialty (方向划分)
- Discipline categories (科学门类)⁹¹⁸
- First-level master's degree authorized disciplines (一级学科硕士学位授权点)⁹¹⁹
- Full-time studies (全日制)⁹²⁰

- Majors/Disciplines (学科):⁹²¹
 - Economics (经济学)
 - Engineering (工学)
 - Law (法学)
 - Literature (文学)
 - Management (管理学)
 - Military Science (军事学)
 - Philosophy (哲学)
 - Science (理学)
- Master's degree advisor (硕士导师)⁹²²
- Master's degree authorized disciplines (硕士授权领域)⁹²³
- Non-commanding officer (非指挥类 or 非指挥军官) is anyone who will not serve in a leadership billet
- Part-time studies (非全日制)⁹²⁴
- PhD advisor (博士生导师)⁹²⁵
- Post-doctoral (博士后)⁹²⁶
- Post-doctoral research station (博士后流动站)⁹²⁷
- Post-secondary educational program/diploma (大专学历)^{fm}
- Professional degrees (专业学位)⁹²⁸
- Professor (教授)⁹²⁹
- Secondary professional program/diploma (中专)^{fn}
- Specialties (专业)⁹³⁰
- Specialty codes (专业代码)
- Specialty master's authorized discipline (专业硕士授权点)⁹³¹
- Specialty types (专业类别)
- Teaching and research department (教研室), which is simply identified as a department⁹³² and are subordinate to academic department (系)
- Training type (培养类型).

PLAAF Education and Training Components

According to the *Air Force Encyclopedia*, the PLAAF's education and training system (教育训练体制) consists of the following three main components:⁹³³

- Leadership and management system (领导管理体制)
- Academic institution cultivation and training (培训体制)
- Flight training system (飞行训练体制).

The following paragraphs provide information about the first two components. The flight training system is discussed later in this chapter as well as in Chapter 6.

^{fm} The three-year professional education program known as (大专) is a post-secondary educational program in China that grants a non-degree diploma upon completion of all requirements. It is roughly an equivalent to the Associate's Degree granted in the United States.

^{fn} The two-year educational program known as (中专) is a secondary vocational educational program that grants a diploma upon completion of all requirements. It focuses on providing vocational and technical job training.

PLAAF Leadership and Management System

The education and training leadership and management system has five tiers: PLAAF HQ, MRAF / TCAF HQ, corps, division (academic institutions, aviation troop training bases, brigades), and regiments. The former Military Training Department (军事训练部/ 军训部) and now the Military Training Bureau (军事训练部) in the PLAAF HQ's Headquarters / Staff Department is the highest organization for leading PLAAF education and training. Each of the other four tiers has an equivalent department for leading training at their level.⁹³⁴ The most significant exception, however, is that the Political / Political Work Department's Cadre Department/Bureau (政治部干部部/局), not the Military Training Department/Bureau, is responsible for managing the National Defense Student program.^{fo, 935}

Based on a review of PLAAF-related books, journals, newspapers, and internet articles, the Headquarters Department in each MRAF HQ and the 15th Airborne Corps HQ has a Training Division (训练处); some divisions and brigades have a Training Office (训练科), while others have a combined Operations and Training Office (作训科); and all regiments have a combined Operations and Training Branch (作训股). There are no training organizations below the regiment level.

PLAAF Officer Cultivation and Training System

Currently, the PLAAF's academic education system is divided into two levels of cultivation and training: basic and specialized education (基础与专业教育) and advanced education (深造教育).^{fp, 936} Whereas all cadets who attend a PLAAF college, including pilots, receive both their basic education and specialty training before they graduate, students in the National Defense Student program discussed later do not receive any technical training until after they graduate. Pilot recruitment, education, and training are discussed in Chapters 4 and 6.

One of the key differences between the PLAAF and USAF is that PLAAF cadets receive both their theory education and basic technical training at their cadet academic institution and are assigned directly to their operational unit upon graduation. Non-aviation cadets receive their basic education either at the Air Force Engineering University (AFEU) or at a PLAAF specialty college. Those cadets who receive their basic education at AFEU are then assigned to one of the PLAAF's colleges to complete their specialty training and receive a bachelor's degree. Those cadets who do not attend AFEU remain at the same college to complete their specialty training and receive either a three-year post-secondary educational program/diploma or bachelor's degree. With the exception of new graduates who serve in remote areas and pilot cadets who graduate from the Air Force Aviation University and then receive their flight training at one of the three flight academies, the first year is considered a probationary (见习) period during which they spend the first six months as a squad (enlisted troop) leader.^{fq, 937} They do not wear their rank until they complete their first year.

Advanced education for intermediate- and senior-level officers (lieutenant colonels, colonels, senior colonels, and major generals) is conducted in only a few military academic institutions. It appears that only some officers have the opportunity to receive advanced education, which may or may not include a graduate degree. For example, command track officers receive intermediate- and senior-level education at the Air Force Command College (空军指挥学院), which does not appear to result in a graduate degree, while some technical officers attend specialized programs in various PLAAF colleges, such as AFEU, the Air Force Early Warning College, or Air Force Logistics College, to obtain graduate degrees. Certain command track officers, such as radar and SAM Commanders, can, however, attend specific graduate programs in a PLAAF college or a civilian university where they receive an advanced degree. Unfortunately, little information was found concerning officers receiving graduate education

fo Overall, the General Political Department's Cadre Department [中政治部干部部], not the Military Training and Service Arms Department (总参谋部军事训练与兵种部), manages the overall National Defense Student Program.

fp The term *jichu* (基础) is normally translated as "basic" but is sometimes translated as "foundation."

fq New officers who are assigned directly to a unit along the interior border do not have to undergo any probationary period.

at civilian academic institutions. Some officers (senior colonels and major generals) receive their senior-level education at the National Defense University (NDU).

Class Year Identification and Time-in-Service

All new cadets are identified by the year they enter their education and training, not the year they graduate. They use one of two designators, such as 19级 or 2019级 for cadets beginning in 2019. In addition, time spent as a cadet in a military academic institution counts as total time-in-service. For example, when a profile of an officer states he or she has served for X number of years, that figure includes their time as a cadet, which, based on when they joined the military, could be anywhere from two to four years. However, this is not the case for the National Defense Student program. Their time as a student does not count toward their time-in-service.

History of the PLA's Academic Institutions

Key Points

- PLA academic institutions focused on improving literacy early on, and were heavily disrupted by the Cultural Revolution.
- In recent decades, the PLA has worked to transition its institutions from primarily providing academic-type degrees, primarily bachelor's degrees, to focus more on professional military education.
- The number of PLA academic institutions has decreased in recent decades.

This section provides a background of the PLA's academic institutions going back to 1949, summarizing the evolution of the PLA's academic institutions as organized into six periods.⁹³⁸

PLA Military Educational Institutions Conferences

Since 1950, the PLA has held 16 Conferences of PLA Military Educational Institutions (全军院校会议). The conferences have resulted in major reforms to the entire PLA academic structure, which includes PLA and People's Armed Police (PAP) institutions as well as both officer and NCO institutions.⁹³⁹ The conferences often implemented new policies based on guidance from the CCP Party Congress, and each conference issued guidance for the future. For example, the 16th Conference issued the "Military Academic Institution Education Reforms and Development Plan Guidance 2011-2020" (军队院校教育改革和发展规划纲要2011-2020).⁹⁴⁰ The most recent 16th Conference was held in July 2011, during Hu Jintao's tenure as CMC Chairman. There has yet to be a conference held under Xi Jinping since his tenure began in 2012, even though major changes to the military academic structure occurred in 2017.

Overall, reforms stemming from the 16 conferences have significantly improved PLA education levels. To put these changes into perspective, a 2000 PLA article explained that many officers were illiterate through 1949, and as late as the late 1960s, 93.4 percent of officers had less than a high school education, with that number only improving slightly (to 91.9 percent) by 1978. The article continued: "The situation underwent quite a tremendous change in the late 1980s, when 42.3 percent of officers had a college educational level (i.e., a two- to three-year post-secondary program or a four-year bachelor's degree) or above. In 2000, that figure had risen as high as 71.8 percent."⁹⁴¹

The Six Academic Institution Reform Periods

The PLA breaks down academic reforms stemming from the 16 conferences into six periods, which are summarized below.⁹⁴² As noted below, in various periods the PLA has divided its academic institutions into five

categories—command (指挥), political (政治), technical (技术), flight (飞行), and enlisted force (士兵)—which are further organized by level (General Departments) and service and branches/arms.

Period 1 (1949-1958)

At the first conference in 1950, the PLA had 57 officer institutions that rose to 246 by 1956 when the sixth conference was held.⁹⁴³ During the 1950s, most officers were still illiterate or barely literate.⁹⁴⁴ As such, the primary focus was to relieve them of illiteracy. At that time, the main content of the training classes set up by the units was teaching people how to read and write.⁹⁴⁵ Meanwhile, however, the enlisted force remained illiterate. From 1950 to roughly 1980, some officers only studied for six months to two years before they received a two-year secondary technical (中专) educational diploma or three-year post-secondary (大专) diploma, which focused on reading and writing. They then assumed their operational billet without only a little specialty training. The PLA did not stop offering high school equivalency degrees for officers until 1995. Some academic institutions developed additional longer programs of study over three to five years, such as the GLD's Quartermaster School (军需学校), the General Political Department's Political College/Academy (政治学院), and the CMC's Engineering College/Academy (军事工程学院).⁹⁴⁶ Each institution averaged about 1,000 cadets at any time, but it is not clear what degrees they received.

Period 2 (1958-1966)

From 1957 to 1965, the PLA had four Conferences of PLA Military Educational Institutions (院校会议), each of which involved adjustments that primarily revolved around reducing the number (减少数量) of institutions while increasing quality (提高质量). As such, the number was reduced from 246 in 1957 to 116 in 1965.⁹⁴⁷ However, the total number fluctuated somewhat, such as rising from a total of 111 academic institutions in 1962 to 116 in 1965.

Period 3 (1966-1976)

From 1966 to 1985 (periods 3 and 4), the total number of institutions fluctuated dramatically in both directions as a result of the Cultural Revolution.⁹⁴⁸ At the beginning of 1969, there was a total of 125 academic institutions, including 45 command and political, 65 technical, and 15 flight. However, by the end of 1969, a total of 82 academic institutions had been abolished (撤销), leaving only 43, including one political, 20 engineering and technical, six medical, and 15 flight.

Although the PLA had various one- to three-year programs for officers at its academic institutions starting back in the 1950s, it appears that it did not begin providing a one- to two-year secondary educational program/diploma and a two- to three-year post-secondary educational program/diploma for special technical officers until the 1970s. However, officers attending command academic institutions for one year were still not receiving any type of degree in the 1970s.⁹⁴⁹ From 1966 to 1980, a high proportion of officers received direct promotions as an officer from within the enlisted force based on political reliability rather than operational capabilities.⁹⁵⁰ According to official PLA publications, prior to being selected, enlisted personnel who received these direct promotions averaged one to three years of service. In addition, “intellectuals,” “technical officers,” and anyone with a college education were looked down on. This was especially true for the PLAAF, which was considered a technical service.

Period 4 (1976-1985)

In early 1977, there were a total of 112 academic institutions, including those that were reestablished (恢复) and “adjusted” (调整) as a result of the reduction during the Cultural Revolution; that number increased to 115 at the end of 1977.⁹⁵¹ Under Deng Xiaoping's guidance, distrust of educated officers began to fade in the early 1980s. For example, during an interview in 1985, PLAAF Commander Zhang Tingfa, who was a career political officer, discussed changes by saying, “People throughout our country are talking about respecting knowledge and talented people

and taking loving care of intellectuals. So is the PLAAF, because knowledge and talented people are indispensable for the modernization of our troops.”⁹⁵² The PLA ceased the direct promotion system in 1980, when it began requiring all officers to receive education at one of the PLA’s academic institutions, which included either a two-year secondary technical (中专) educational program or three-year post-secondary (大专) program or a four-year bachelor’s degree.⁹⁵³ A high proportion of those officers still came from those determined to be outstanding enlisted personnel, but they had to attend an academic institution before they received their officer promotion. Based on a decision made at the 12th CCP Party Congress in 1982, the PLA began placing greater emphasis on education for its officer corps.^{fr, 954} The number of officers with college degrees quickly rose to nearly 25 percent.

In addition, in order to help make up for the shortfall of educated officers, the PLA began military-political training for 2,000 directly-recruited civilian college graduates in 1983 for one year in military academic institutions. Upon graduation, they were assigned as platoon Commanders. As the number of military academies grew during the 1980s, fewer civilian college graduates were being assigned to command positions, but the education level was still not optimal. In May 1987, *Xinhua* reported that “only graduates from military academic institutions were eligible to be officers and these graduates made up 80 percent of the officers at the platoon and company levels. Furthermore, 75 percent of the officers at the division and corps levels had received advanced training [not necessarily college degrees].”⁹⁵⁵ This report indicates that the remaining officers at those levels were holdovers from the previous system of recruiting officers from the enlisted ranks. Based on various *Xinhua* reports, it appears that, by the end of the 1980s, civilian college graduates were no longer assigned to operational units, but were assigned as either civilian cadres, a system that was created in 1988, or as officers with technical skills. Discussions with PLAAF officers in the 2000s indicated that the program to bring in civilian college graduates as pilots was not successful due to friction between the civilian college graduates and the PLAAF flying academic institution graduates. Therefore, the PLAAF’s program of training civilian college graduates as pilots was disbanded. It was basically replaced in 2011 by the Dual-Enrollment Program discussed later in this chapter.

Period 5 (1985-1999)

In response to new operational concepts in the 1980s, the senior PLAAF leadership joined other services in placing a greater emphasis on officer training and education.^{fs} Qualitative improvements were introduced for academic education, flight training, combined-arms training, and joint exercise training. Academic excellence was increasingly stressed in the PLAAF, as it was throughout the military. To support this objective, the PLAAF, like the rest of the PLA, closed some schools to consolidate resources and upgraded many schools into academies/colleges around 1986. By 1986, the PLA as a whole had increased the number from 1977 of 115 up to 117; however, this was downsized yet again to 67 in 1998. For the first time, new pilots were expected to graduate from PLAAF academies with college-level degrees. In terms of academic degrees, the PLAAF did not begin bachelor’s degree programs for non-aviation cadets until 1982.^{ft, 956} The first PLAAF pilots to receive a bachelor’s degree was in 1987.⁹⁵⁷ Seven PLAAF academies/colleges also began master’s degree programs in 1985 in technical fields, and the PLAAF began programs for doctoral degrees in 1992.⁹⁵⁸ It is not clear why each component of the PLAAF did not meet the degree requirements at the same time, but the overall PLA was still trying to deal with the aftermath of the Cultural Revolution and to create both a technically qualified and educated force for all of its services and branches/arms.

fr For example, a *Xinhua* report states, “The PLA General Political Department recently made a decision demanding that all cadres below 40 years of age reach an educational level of junior middle school or above before 1985 and reach an educational level of senior middle school or secondary technical school before 1990. Some are even required to reach a college and university educational level.”

fs The 8th and 9th Flying Schools were abolished, and the 11th Flying School was changed to the Test Flight and Training Center. The SAM, Weather, Political, Radar, and Communications Engineering academies, as well as the Engineering and Air Force Command colleges, have begun awarding master’s degrees.

ft As a benchmark, USAF undergraduate pilot training is accomplished in 12 months with approximately 85 hours in the T-6 primary trainer and 95 hours in the advanced T-38 trainer. Fighter pilots subsequently receive 20 T-38 hours in fighter fundamentals prior to attending a fighter transition course that runs four to seven months with 40-60 flight hours.

For enlisted troops, the CMC officially approved enlisted schools in August 1985 but did not open them until June 1986.⁹⁵⁹ NCO schools provided only officer two-year secondary professional programs/diplomas (中专学历) and three-year post-secondary educational programs/diplomas (大专学历). Through the present day, NCO schools have not had and most likely will not have any bachelor's degree programs.^{fu}

During the 14th CCP Party Congress in 1992, the program of recruiting civilian college graduates as officers was revived, but the emphasis was on graduates with technical skills. Part of the reason for reducing the number of civilian college graduates in operational units was that graduates from the PLA's academic institutions were filling those positions.⁹⁶⁰

According to some reports, by the end of the 1990s, the Second Artillery Force had recruited 1,600 civilian college students, and the PLA Navy had recruited 2,700.⁹⁶¹ Other reports indicate that almost all of the civilian college graduates were assigned to civilian cadre or technical positions. As discussed further later in this chapter, in 1998, Jiang Zemin instructed the PLA to create the National Defense Student Program (国防生), organized by service, in 118 civilian science, technology, and engineering universities; however, the PLA began abolishing this program in 2017,⁹⁶² and it is not clear what new program will replace this. There are differing reports on how the PLA utilized these civilian college graduates, with some differences in how the ground forces and the technical services (naval, air, and missile forces) assigned their civilian educated officers.

Period 6 (1999-Present)

Since the 14th Conference of PLA Military Educational Institutions in 1999 through to 2017, the number of institutions remained fairly constant (ranging from 64-67), but there several changes still occurred. Although the number of civilian college graduates assigned to operational units in command positions from 1997 to 2000 was fairly small, the total number of civilian college graduates recruited by the PLA had grown considerably. According to *Liberation Army Daily* and *Xinhua* reports from June and November 2000, since the 14th Party Congress in 1992, the PLA had recruited 46,000 college graduates,^{fv} of which 6,200 were assigned to the General Staff Department. In 2000, 786 college graduates joined the PLA after only three months of military training, indicating that the earlier requirement for one year of military training had been reduced. Of the 786 graduates, 125 (16 percent) had master's or doctoral degrees, and 280 (35.8 percent) were women. At the end of 2000, the PLA employed 36,577 civilian college graduates, of which 2,740 (7.5 percent) had post-graduate degrees and 30,101 (82.3 percent) had undergraduate degrees. By the end of 2000, China had also sent military students to study in 22 foreign countries.⁹⁶³

Although *Xinhua* reported that over 700 college graduates with master's or doctoral degrees had become Regiment and Division Commanders between 1985 and 2000, the problem of an undereducated officer corps still faced the PLA in 2000.^{fv} Under Jiang Zemin's guidance to "strengthen the military through science and technology," the PLA tried to push greater integration between the military and civilian academic institutions. However, even though the CMC ordered in 1997 that 70 percent of the officer force would be comprised of military academic institution-trained officers, according to an April 2000 *Xinhua* report, only 46 percent of the officers at or above regiment levels were college graduates.

After three years of discussions following the 15th Party Congress in 1997, the State Council and CMC issued in June 2000 the "Decision on Establishing a Military Officer Cultivation System Relying on General High Level

fu Concerning NCOs, the PLA did not use the characters *shiguan* (士官), best translated as "noncommissioned officer" (NCO) but also translated as "sergeant" for the Army, Navy, and Air Force or "petty officer" for the Navy, until 1988. The 1988 "Regulations of the Chinese People's Liberation Army on the Active-Duty Service of Enlisted Personnel" (中国人民解放军现役士兵服役条例) established the system of preferential treatment for both conscripts and volunteer soldiers, and contained stipulations governing their work arrangements following demobilization. These regulations also reestablished the system of grades and ranks for the enlisted force. Soldiers serving as volunteers in the PLA became known as noncommissioned officers (士官) and were accorded the rank of either sergeant (军士) or specialist sergeant (专业军士).

fv One report said 40,000 while another report said 46,000.

fw The *Xinhua* article did not make a distinction between graduates from civilian and military colleges, nor did the article make the distinction between combat unit Commanders and division/regiment-level equivalent positions in the headquarters, which is most likely the case.

Education” as part of Jiang Zemin’s overall guidance to merge military education into the national education program and to “train officers by both military and civilian schools.” The “Decision” had two major components, including recruiting civilian college graduates for the PLA and training PLA officers in civilian colleges. The driving force for this program was that the military academies could not satisfy the PLA’s requirements for qualified people in science and technology. Besides cultivating technical personnel, the program also allowed for an appropriate number of graduate students to be chosen to supplement command positions.

The 16th Conference was held in July 2011, during Hu Jintao’s tenure as Chairman of the CMC. In June 2017, that number of academic institutions was reduced from 67 to 37 by abolishing, merging, or downgrading existing institutions or creating new ones.

Trends in Institutional Reforms

Apart from the overall decrease in the total number of institutions in recent decades, some other trends are apparent. First, following the 13th Conference of PLA Military Educational Institutions in 1986, the PLA upgraded its officer schools (学校) to colleges/academies (学院) in order to allow them to offer bachelor’s, master’s, and doctoral degrees.⁹⁶⁴ The Air Force 2nd Aviation Preparatory School was the first to begin transitioning in 1983 from a two-year secondary professional program/diploma (中专) to a three-year post-secondary educational program/diploma (大专学历) and to a four-year bachelor’s degree (本科).⁹⁶⁵ The first master’s degree programs were offered by the Air Force Meteorology College (which recruited its first students in 1985),⁹⁶⁶ Air Force Engineering University Missile College (which first recruited in 1986),⁹⁶⁷ and Air Force Radar College (which first recruited undergraduate students in 1986 and graduate students in 1993).⁹⁶⁸ The first doctoral degree programs were offered by Air Force Radar College (which recruited its first students in 1993) and Air Force Engineering University Missile College (which first recruited in 1996). It appears that the first post-doctoral research stations (博士后流动站) were established around 1990 and were created at multiple institutions through the 1990s and into the early 2000s.⁹⁶⁹

Second, following the 14th Conference in 1999, the focus of education in the PLA academic institutions shifted from engineering and technology to a focus on military theory education for command and staff officers. Along those lines, the PLA deprioritized “academic education” in favor of focusing more on “professional education” at its institutions. According to the *Modern Military Academic Institution Education Dictionary*, academic education institutions are responsible for providing bachelor’s degrees to new officers (生长军官本科学历教育) and for providing graduate student education (研究生教育). Professional education institutions are responsible for military education for billets for all categories of officers and NCOs (各级各类军官和士官岗位任职培训).⁹⁷⁰

Third, in 2017 as the PLA reduced the total number of PLA officer and NCO academic institutions to 37, it further restructured the remaining institutions: “several of their grades^{fx} were reduced, the number of service support personnel was reduced, and the proportion of civilian staff to make up the frontline teaching and research forces was increased.”^{971, fy} Among the PLAAF institutions, the Air Force Airborne Troop College was converted into a training base, which means that the students apparently no longer receive four years of academic and technical training before they begin their specialty training. The PLA also subordinated its academic institutions to the following organizations: the CMC, Army (PLAA), Navy (PLAN), PLAAF, Rocket Force (PLARF), and Strategic Support Force (PLASSF).

fx Within the PLA, each organization is assigned a bureaucratic “grade” commensurate with the grade of the Commander and the Political Commissar. This determines its level of relative importance. A reduction in grade results in the loss of bureaucratic importance for the organization, as well as all of its leaders, and all subordinate organizations and personnel.

fy In addition to the 37 PLA institutions, there are also six People’s Armed Police (PAP) institutions, which are not discussed in this book.

Profiles of the PLAAF's 10 Current Academic Institutions

Key Finding

- PLAAF academic institutions have been consolidated into the PLAAF Command College, three flight academies, an NCO academy, and engineering, aviation, early warning, medical, and logistics institutions.
- Four PLAAF institutions participate in international exchanges.

This section provides a brief summary of how PLAAF institutions are organized, followed by short profiles for the PLAAF's current nine officer and one academic institutions listed below that were identified in June 2017. Appendix C at the end of this book provides a table and brief history of all of the PLAAF's aviation and non-aviation academic institutions.

The first two PLAAF organizations are corps leader-grade; the middle six are corps deputy leader-grade; while the last two are of division leader-grade.⁹⁷² The PLAAF's 10 current institutions are:

1. Air Force Command College (空军指挥学院)
2. Air Force Engineering University (空军工程大学)
3. Air Force Aviation University (空军航空大学)
4. Air Force Early Warning Academy (空军预警学院)
5. Air Force Harbin Flight Academy (空军哈尔滨飞行学院)
6. Air Force Shijiazhuang Flight Academy (空军石家庄飞行学院)
7. Air Force Xi'an Flight Academy (空军西安飞行学院)
8. Air Force Medical University (空军军医大学)
9. Air Force Logistics College (空军勤务学院)^{fz, 973}
10. Air Force Communications NCO Academy (空军通信士官学校).^{ga, 974}

Organizational Structure of PLAAF Academic Institutions

This sections briefly describes the typical organization of military academic institutions within the PLAAF.

Functional and Administrative Departments

Until the PLA reorganization that began in 2016, military academic institutions had at least the following three functional (业务) and administrative (行政) departments (机关/部门), which were always listed in protocol order:⁹⁷⁵

- **Training Department** (训练部): The Training Department served the same purpose as a Headquarters Department in other organizations. It was also responsible for all policy issues as well as managing all training matters. Every university had a Training Department, and most, but not all, of its subordinate *xueyuan* had their own Training Department.
- **Political Department** (政治部): The Political Department was organized the same as all other PLA Political Departments and serves the same functions. Every university had a Political Department, and most, but not all, of its subordinate *xueyuan* had their own Political Department.
- **Xueyuan/School Affairs** (院务部 or 校务部): It is not clear what the *Xueyuan*/School Affairs Department was responsible for, but it was most likely in charge of managing the facilities and logistics issues for all academic

fz The term *qinwu* (勤务) is translated as both “service” and “logistics” and basically means the same. The PLA / PLAAF are not consistent in how they translate *qinwu*. Based on multiple China National Knowledge Infrastructure (CNKI) articles, it appears that the official English name is Air Force Logistics College even though the name best translates as Air Force Service College. Of note, the Army and Navy use the same Chinese terms, but their institutions appear to be translated as “Army Logistic University” and “Naval Service Academy.”

ga Although the PLA translates *xuexiao* as school, it has made an exception for this institution and translates it as academy.

institutions, including universities, standalone *xueyuan*, and NCO schools. While every university had this department, some, but not all, of their subordinate *xueyuan* had their own department as well.

However, based on interviews by the lead author of this book with separate visiting delegations from the PLAAF's Command College and PLA National Defense University (NDU) in 2018, as well as an authoritative PLA book, this structure has now changed. NDU has the following five functional and administrative departments, each of which is corps leader grade (正军职):⁹⁷⁶

- General Office (办公室)
- Education and Training Department (教育训练部)
- Scientific Research Department (科研部)
- Political Work Department (政治工作部)
- Management/Administration Support Department (管理保障部).

Based on the overall organization changes that began when the PLA as a whole implemented a major reorganization in early 2016, the PLAAF Command College also underwent some major changes.⁹⁷⁷ Although major organizational changes occurred, such as downgrading the National Defense University, the Command College remained a corps leader-grade organization, which is the same grade for the commandant and PC. Its Deputy Commandants and Deputy PC are corps deputy leader-grade officers. The Command College's previous functional and administrative structure consisted of four major departments—Training Department (训练部) (which served as the Headquarters Department), Political Department (政治部), College Affairs Department (院务部) (which managed all facilities), and the Military Science Research Department (军事科学部)—as well as a

General Office (办公室). Each of those organizations was a division leader-grade organization. The new structure, however, consists of the what the PLA calls the “seven divisions and one office” (七处一办) as shown below in protocol order, all of which are also division leader-grade organizations:

- General Office (办公室)
- Teaching Affairs Division (教务处)
- Teaching and Support Division (教育保障处/教保处)
- Scientific Research Academic Division (科研学术处)
- Political Work Division (政治工作处)
- Discipline Inspection and Supervision Division (纪检监察处)
- Security Management/Administration Division (安全管理处)
- Supply Support Division (供应保障处).

Based on the interview and a PLAAF book, the new structure applies to all PLAAF academic institutions except the three flight academies and the Aviation University, which are organized like an operational unit and have a Staff Department, Political Work Department, and Support Department.⁹⁷⁸ As noted later, each flight academy, but not the Aviation University, also has an MUCD. Prior to the 2011 reorganization of the flight academies, each flight academy was a division leader-grade organization with subordinate training regiments. Under the new structure, each flight academy is a corps deputy leader-grade organization with subordinate training brigades. Rather than academic departments, each flight academy has a subordinate basic trainer aircraft brigade for the third-year students and one or more advanced trainer aircraft brigades for the fourth-year students.

Depending on the institution's mission and curriculum, it also has a Scientific Research Department (科研部), which is responsible for overseeing all of the institution's technical training curricula and systems research work.⁹⁷⁹ The Scientific Research Department also has subordinate classrooms and laboratories, where personnel from the department provide training to the cadets. For example, the National University of Defense Technology's Scientific Research Department has a Weapons and Equipment Development Research Center (武器装备发展研究中心).

The Graduate School (研究生院) is also considered a functional and administrative organization but not a department. It provides overall guidance for the graduate programs in each subordinate college. It does not have any students assigned to it. It is a corps deputy leader-grade organization.

Each university most likely has all of the above departments. Depending on their size, specialty, and location, each of the university's subordinate *xueyuan* has some, but not all, of the departments. *Xueyuan* not subordinate to a university have most likely also changed their functional and administrative structure to match that of the university or a standalone *xueyuan* similar to the PLAAF Command College.

Academic Departments and Specialties

Each institution has several academic departments (*xi* / 系) and associated specialties (*zhuanye* / 专业), which prepare graduates to assume their operational duties. For example, the Air Force Engineering University's Air Defense Missile College (空军工程大学防空反导学院) has six academic departments—Command Engineering, Computer Engineering, Electro-Mechanical Engineering, Radar Engineering, Guided Missile Engineering, and Systems Engineering—and 12 academic specialties.⁹⁸⁰ The subordinate departments and specialties are usually listed in protocol order in books, media articles, and on the web.

Mid-Level Education

Unlike the USAF, where officers attend the Air University's Squadron Officer School, Air Command and Staff College, and the War College for their professional military educations, this is not the case for the PLAAF. As a general rule, the PLAAF divides its post-cadet education for officers by career track, which is discussed in the personnel chapter.⁹⁸¹ As such, regardless of their career track, officers who serve as a commanding officer attend their mid-level and advanced-level education at the Air Force Command College, where they receive a certificate only. They do not receive a master's degree. For non-commanding officers, such as a logistics officer, they return to their original cadet academic institution, where they can receive a master's degree. As a general rule, no officers from other services attend those courses. About the only time that PLA officers receive any joint education is at the PLA NDU at the corps level.

Profile Template for the PLAAF's 10 Academic Institutions

These profiles are summarized from longer versions in a 2020 study by Ken Allen and Mingzhi Chen called *The People's Liberation Army's 37 Academic Institutions*. Each profile is based on a standard template summarized below:

- **Names:** Chinese name (院校名称) and acronym (简称) if available, official English name(s), translated English name if no official name was found, and English acronym if available.
- **Background.**
- **Campuses (校园/校区) and Locations (地点).**

gb No official English translation was found for this college, so the best translation is Air Defense Missile College.

gc The PLAAF has five career tracks: command (also called the military track), political, logistics, equipment, and technical track. He, ed., [*Science of Air Force Training*], 252. It should be noted that this implies that advanced studies education is usually not conducted in civilian colleges; however, this situation appears to be changing, as the PLAAF has begun to send officers in certain technical specialties to civilian colleges for post-graduate study.

- **Subordination** (主管部门/隶属).
- **Staff and students**,⁹⁸⁰ including professors (教授) and staff, as well as the number of students if known.
- **Degrees** (学位): Degrees offered by the institution, including either a two-year secondary technical (中专) educational program or three-year post-secondary (大专) program for NCOs (士官职业技术教育); bachelor's degree (本科) programs; master's degree (硕士) programs; doctoral degree (博士) programs; and/or post-doctoral (博士后) programs.
- **International Exchanges and Cooperation** (国际交流与合作): Foreign students (外军留学生), study abroad programs (留学), and/or any activities of note.

Categories are not included on profiles when the information was not found. For example, international exchanges were not found for every institution. The profiles on the three PLAAF flight academies were also merged together given their organizational similarities compared to the other institutions. Concerning NCO schools, there are three total NCO institutions within the PLAAF, including one standalone NCO academy, one school subordinate to a university, and one school subordinate to an academy. In addition, the Aviation University and Logistics College have training programs for NCOs, but they are not organized into a school.

Air Force Command College

Name: 空军指挥学院. Official English name:⁹⁸¹ Air Force Command College (AFCC).⁹⁸²

*Background:*⁹⁸³ The AFCC is the highest academic institution within the PLAAF. Its roots can be traced back to the PLAAF College (中国人民解放军空军学院), which was built on the basis of the PLA Military College Air Force Department (中国人民解放军军事学院空军系) in 1958. The college was abolished in 1969. In 1974, the Air Force Military and Political Cadre School (空军军政干部学校) was established at the original site of the Air Force College, under the direct leadership of PLAAF HQ with grade of corps leader or deputy leader (军级). At that time, the Cadre School was tasked with training Air Force commanding officers who were responsible for military, political, and logistics affairs at the battalion, regiment, and division levels. In 1978, the Cadre School was renamed again as the Air Force College, which was tasked with training commanding officers in charge of military, political, logistics, and aviation at the battalion, regiment, and division levels. In 1986, the Air Force College was renamed as the AFCC. The college had a grade of corps leader and was tasked with training mid- to senior-level Air Force commanding and staff officers as well as graduate-level personnel involved in research on and teaching military operations and tactics. As part of the 2017 military reform, a “new” AFCC was formed after implementing some unspecified “adjustments.”

*Campuses and Locations:*⁹⁸⁴ Beijing

*Subordination:*⁹⁸⁵ PLAAF HQ

*Staff:*⁹⁸⁶ The college has 120 professors and over 30 researchers.

*Degrees:*⁹⁸⁷ The college offers two-year post-secondary education for Air Force aviation cadres at the platoon and company level to become staff members (参谋人员) at the regiment and division level. AFCC has bachelor's, master's, and doctoral degree programs as well as post-doctoral research stations.

International Exchanges and Cooperation: In 2010, PLAAF media published detailed articles about the PLAAF Command College's 10th Anniversary of its Foreign Student Training Program.⁹⁸⁸ Of note, no U.S. Air Force officers have participated in this program. Based on conversations with various USAF personnel, although the U.S. has had a few Army officers attend the PLA NDU's International College of Defense Studies' foreign student course, the USAF has never requested to participate in the Command College's program nor has the PLAAF requested to have a USAF officer attend. The key issues have been that 1) Taiwan military officers attend various U.S. military academic institutions, such as War Colleges and NDU, which the PRC objects to, and 2) there are U.S. counterintelligence

concerns. Given that tensions have increased between the U.S. and PRC during the 2010s, there is little possibility this will be an option on the future.

The program, which the four General Departments authorized as an All-Army Test Point in early 2000, began training students in March 2001. From then until March 2010, it held 35 courses. During this period, the college has trained 511 officers from 62 countries, most of which are developing countries, but some from developed countries have participated. The limit for attendance in any single course is just over 20 countries. According to statistics, 22 of the 511 officers who have attended the course have achieved flag rank, serving as Deputy Commanders, unit Chiefs of Staff, and Base Commanders.

The college held a ceremony in March 2010 to celebrate the 10th anniversary since the program was approved in 2000, even though it did not start training students until 2001. PLAAF Deputy Commander Lieutenant General He Weirong, then responsible for PLAAF training, represented PLAAF HQ at the anniversary, along with representatives from the four General Departments and other relevant PLAAF HQ departments.

According to the articles, the Command College is responsible for training foreign Air Force intermediate- and advanced-level officers. The courses are taught in three languages (Chinese, English, and one unidentified language, which is probably Russian), and focus on four unidentified academic areas and seven unidentified specialties. The only country mentioned that has had a long-term two-way exchange program is Pakistan.

Each year, the PLAAF also sends students from its Command College's Campaign Command Course (战役指挥班), which is the college's advanced course, abroad for two weeks to allow them to gain first-hand knowledge of foreign air forces. For example, about 30 students visited the United States in 1998; 41 students visited Australia and New Zealand in 1999; and 58 students, including eight major generals, visited India in 2003.⁹⁸⁹ One of the PLAAF's Deputy Chiefs of Staff led each of these delegations.

The Command College's Foreign Training Academic Department (外训系), which occupies a seven-story building, manages the program. Previously, the courses were held with students from only one country, one language, or one specialty at a time, but that model has been replaced, and now students from multiple countries, languages, and specialties attend together. The new model was implemented in 2009, when PLAAF students participated for the first time in the course.

In 2009, the college initiated a four-month command specialty course for 31 pilots.⁹⁹⁰ For the first time, the course included students from multiple countries and the PLAAF. Specifically, the 21 foreign students came from 12 countries, including Bangladesh (major, MiG-29 pilot), Malaysia (lieutenant colonel), Uganda, Nigeria, Myanmar, Sri Lanka (lieutenant colonel, administrative officer), Egypt (lieutenant colonel, F-16 pilot), Singapore (major), and Tanzania. Of the 21 foreign students, 11 were pilots. In addition, ten PLAAF pilot students were included in the class. The PLAAF officers ranged from majors to colonels and served as flight group (battalions) Commanders, combat and transport air regiment

Deputy Commanders (lieutenant colonels and colonels), and at least one division-level Command Post Commander (colonels). It appears that each PLAAF pilot was paired with a foreign counterpart during the course, and they all spoke English.

In 2010, a ceremony was held at the college for the graduating class. Attendees in the audience included representatives from several embassies in Beijing as well as military attachés from 11 countries. Each graduate received a certificate from the college's commandant, Major General Ma Jian (马健), and PC, Major General He Ligu (何立国). Of the 21 foreign and PLAAF pilots, 11 were squadron Commanders who completed the Command Specialty English Language Combined Course. While attending the course, the students study Sunzi's *The Art of War* and learn about Chinese culture. During the course, they spend time in the college's Campaign Training Center. They also visit Shanghai, Nanjing, Hangzhou, Shaoxing, Yiwu, and other historical sites. One of the Command College instructors had previously studied at the United Kingdom's Royal Navy Academy.

From 2011 to 2012, the Command College's Foreign Training Department held another course that included foreign and PLAAF pilots with a focus on tactics and combat methods, including simulated training. Besides six PLAAF pilots from operational units, a total of 69 officers, including several pilots, from 41 countries participated in the training. The countries included Venezuela, the Philippines, Pakistan, Chile, Singapore, and Saudi Arabia. During the training, the pilots held models and simulated various tactics and techniques, including close-in engagements, as well as reconnaissance and counter-reconnaissance. To date, the Command College has had air force participants from 75 countries attend the course from 2001-2011.⁹⁹¹

In addition to hosting the foreign officer course, the Command College has also sent faculty abroad to several countries, including Russia and Italy, to study abroad for at least one year.⁹⁹² For example, a 2004 issue of *Air Force News* had a half-page article covering interviews with four members of the PLAAF's Command College who had the opportunity to study abroad. The four members are as follows: (1) Zhou Zhongping (周中平) was the Director of the college's Communications Command Automation Teaching and Research Office and studied at the Italian Air Force's War College; (2) Fan Wu (范武) was an instructor in the college's Aviation Troop Tactics Teaching and Research Office and studied at the British Royal Naval Academy; (3) Jin Cunxian (靳存现) was an instructor in the Foreign Language Teaching and Research Office and studied at the Pakistani National Modern Language University, and (4) Ye Jianghua (叶江华) was Director of the college's Combat Simulation Center and studied at Russia's Gagarin Air Force Academy for three years.⁹⁹³

The Command College also has longer courses for foreign students. For example, in 2005, 88 foreign students from 25 countries graduated from an unidentified one-year course.⁹⁹⁴

In 2014, the Command College for the first time awarded a Master's in Military Command degree to 20 two-year students from 16 unidentified countries.⁹⁹⁵ The degree was available in five specialties and three languages (English, French, and Russian). This was the first time for any foreign military officer students to be conferred with a master's degree in military at any Chinese military academy. The ceremony also celebrated the completion of the 15th group of foreign students.

The International Military Cooperation Office of the MND organizes on an annual basis tours for foreign military attachés to visit the college.⁹⁹⁶

Air Force Engineering University

Name: 空军工程大学. The acronym is 空工大.⁹⁹⁷ Official English name: Air Force Engineering University (AFEU).⁹⁹⁸

Background: AFEU was created in Xi'an, Shaanxi Province in July 1999 by merging three existing colleges, each of which was retained as a subordinate college.⁹⁹⁹ AFEU became one of the PLA's five comprehensive universities (综合大学) that were identified in 1999.¹⁰⁰⁰ In 2004, AFEU added the Natural Science College (理学院) as a new college. In 2012, the three colleges noted above were renamed as the Aeronautics and Astronautics Engineering College (航空航天工程学院), which was again renamed as the Aviation Engineering College (航空工程学院) in 2017, the Air and Missile Defense College (防空反导学院), and the Information and Navigation College (信息与导航学院). It also created the Air Traffic Control (ATC) and Navigation College (空管领航学院)^{gd} and the Equipment Management and Unmanned Aerial Vehicle (UAV) Engineering College (装备管理与无人机工程学院). In 2017, it also incorporated the former Air Force 1st Aviation College (空军第一航空学院), which was responsible for noncommissioned officer (NCO) aircraft maintenance education and training, into the university and renamed it as the Aviation Maintenance NCO School (航空机务士官学校). AFEU also has a Graduate School, which was created in 2017.¹⁰⁰¹ Since 2000, AFEU has published the *Journal of Air Force Engineering (Natural Science Edition)* (空军工程大学学报(自然科学版)) on a

^{gd} In 2012, the PLAAF began taking the 12 officers out of the top of the control tower to put them in the command post in the bottom of the control tower. They were replaced with other officers who were identified as flight adjusters (飞行调配员) and who had only the responsibility of air traffic control. AFEU's Air Traffic Control and Navigation College assumed the responsibility for educating and training these new officers.

bimonthly basis.¹⁰⁰²

Campuses and Locations:¹⁰⁰³ Five campuses total. The main campus and two others are in Xi'an, Shaanxi Province, with additional campuses in Sanyuan County, Shaanxi Province; and Xinyang, Henan Province.

Subordination: PLAAF HQ¹⁰⁰⁴ Staff Department

Staff:¹⁰⁰⁵ Professors and staff: AFEU has about 700 professors, associate professors, and senior experimenters (教授, 副教授, 高级实验师700余人).¹⁰⁰⁶

Students: AFEU has about 10,000 students total, including 1,500 graduate students (规划在校学员10000余名, 其中研究生1500余名).¹⁰⁰⁷ Since it began, AFEU has had about 130,000 graduates, including about 120 who became flag officers.¹⁰⁰⁸

Degrees: Either a two-year secondary technical educational program or three-year post-secondary program for NCOs in the Aviation Maintenance NCO School. AFEU has 28 undergraduate academic specialties, 31 master's degree specialties, and 28 PhD academic specialties,¹⁰⁰⁹ as well as post-doctoral scientific research programs.¹⁰¹⁰

International Exchanges and Cooperation: AFEU's official website has a tab that shows 39 photos of interaction with foreign militaries; however, none of the photos have any text.¹⁰¹¹ The photos are a combination of students' activities and meetings with senior foreign leaders. In 2017, AFEU had 20 foreign students, including students at the Information and Navigation College and the Aviation Maintenance NCO School.¹⁰¹²

Air Force Aviation University

Name: 空军航空大学. Official English names: Air Force Aviation University¹⁰¹³ and Aviation University of the Air Force¹⁰¹⁴ (AUAF).¹⁰¹⁵

Background: AUAF was created in June 2004 by merging the Air Force's 2nd Aviation College (空军第二航空学院), which was responsible for educating and training aircraft maintenance personnel, the Air Force Changchun Flight Academy (空军长春飞行学院), and the Air Force 7th Flight Academy (空军第七飞行学院).^{gc, 1016} The three original colleges were created in Changchun starting in 1946 when the Northeast Old Aviation School (东北老航校) was established. Since the 1950s, each one changed their names a few times before being merged in 2004. In August 2011, the Air Force 13th Flight Academy in Bengbu, Anhui Province was subordinated to AUAF and renamed the Flight Instructor Training Base (飞行教官训练基地).¹⁰¹⁷ AUAF was created as part of the CMC's 2110 Project (2110工程).^{gf} As of 2017, a total of 140,000 personnel had been educated and trained in all of the institutions, including about 80,000 pilot cadets. Of these, more than 300 have become corps (deputy leader and/or leader) grade or above leading cadre. It has a total collection of more than 510,000 books.¹⁰¹⁸

AUAF is organized into three basic teaching patterns of basic education, professional education and flight training (形成了基础教育, 专业教育, 飞行训练三大教学格局).¹⁰¹⁹

Campuses and Locations: From 2004-2017, AUAF had 12 campuses divided among six provinces and seven cities.¹⁰²⁰ In 2017, AUAF was reduced to ten campuses divided among four provinces and five cities.¹⁰²¹ It is not clear which campuses disappeared nor whether they were merged with other campuses. The main campus is in Changchun, Jilin Province.¹⁰²² The Flight Instructor Training Base is now considered the Bengbu Campus of AUAF (see the discussion later in this subsection). The Base is responsible for providing combined training for new flight controllers (飞行指挥员) in the tower, new flight instructors (飞行教员), and teaching management cadre (教学管理干部) for all of the PLAAF's flight academies. It is also responsible for teaching various courses to operational aviation unit flight instructors.¹⁰²³ It is not clear where the remaining campuses are located.

^{gc} Note that the official translation for *feixing xueyuan* (飞行学院) has changed from flight college to flight academy. In 2013, the PLAAF changed the official English name of the Shijiazhuang Flight College to Flight Academy, and in 2017 it changed the names of the Harbin and Xi'an Flight Colleges to Flight Academies as well.

^{gf} 2110 Project involved military education reform program, apparently based on the mostly civilian 211 Project, to build academic disciplines (also known as *zhongdian* 重点, or focal points) and specialties in line with the needs of future combat and army building.

Subordination: PLAAF HQ¹⁰²⁴

Staff:¹⁰²⁵ AUAF has nearly 300 professors and associate professors, more than 100 special-grade pilots, nearly 100 doctoral and post-graduate advisors, and several dozens of people who have received awards and honors.¹⁰²⁶

Degrees: Either a two-year secondary technical educational program or three-year post-secondary program for NCOs¹⁰²⁷, and four years of education are known as pre-commissioning officer academic credential education (生长军官学历教育).¹⁰²⁸ Also has bachelor, master, and doctoral degree programs. In late 2017, AUAF recruited an unidentified number of personnel as graduate students for a master's degree program that started in 2018. The program was organized into two basic categories—scientific and military.¹⁰²⁹ The program is managed through AUAF's Training Department's Graduate Student Division (空军航空大学训练部研究生处).

Pilot Recruitment: See Chapter 4 and other sections of this chapter.

International Exchanges and Cooperation: As of 2006, AUAF had provided education and training for at least 1,200 foreign pilot cadets from 13 unidentified countries.¹⁰³⁰ It has also hosted visits from foreign air force cadets from the United States, France, England, Brazil, India, and North Korea, as well as other countries, for the Air Force International Trainees Week (空军国际学员周).¹⁰³¹ AUAF has also hosted the Chinese and Foreign Air Force Academic Institution Commandants' Forum (中外空军院校长论坛).¹⁰³²

Air Force Flight Instructor Training Base: The 13th Flight Academy was renamed the Air Force Flight Instructor Training Base (空军飞行教官训练基地) on 28 April 2012 and was re-subordinated to the Air Force Aviation University, but it remains in Bengbu.¹⁰³³ According to a 2012 *Air Force News* article, which was accompanied by four photos showing JL-8 (aka K-8) aircraft, the new training base is responsible for providing combined training for new flight controllers (飞行指挥员) in the tower, new flight instructors (飞行教员), and teaching management cadre (教学管理干部) for all three of the PLAAF's flight academies. The instructors came from pilots who had studied abroad and who had already transitioned into new aircraft. Through 2016, it had carried out cooperative training with the PLAN Naval Aviation Academy three times. Of note, no information was found to indicate the PLAAF has any female flight instructors.

It is also responsible for teaching theory education to operational aviation unit flight instructors. Prior to the change, the 13th Flight Academy had been an anomaly within the system concerning its location, subordination, and training responsibilities, for two main reasons. First, this college is located in Bengbu, Anhui Province, and was responsible for training new fighter cadets in a basic trainer for one year and in an advanced trainer for one year after they completed their 30 months of basic education at the Air Force Aviation University.¹⁰³⁴ Although Bengbu is located in Anhui Province, which was part of the Nanjing MRAF, it appears that the college switched from being subordinate to the Nanjing MRAF to the Jinan MRAF sometime between July 2003 and February 2004. This information is based on a review of *Air Force News* articles from January 2002 through December 2018.¹⁰³⁵ Second, there are no indications that the new training base converted its training regiments to brigades.¹⁰³⁶ As of June 2017, the base was still organized into training regiments. The primary reason for this is that the base is most likely a division leader-grade organization, and the PLAAF does not have brigades subordinate to divisions. In October 2015, the base received JL-9 new type trainer aircraft.¹⁰³⁷ The base's aircraft have also participated in various events such as the China Victory Day Parade (September 2015) troop review in Beijing and a Zhuhai Airshow.

Air Force Early Warning Academy

Name: 空军预警学院. Official English name: Air Force Early Warning Academy,¹⁰³⁸ another name found was Air Force Prewarning College.¹⁰³⁹

Background: The academy was created in 1952 as the Air Force Radar School (空军雷达学校) in Nanjing, Jiangsu Province.¹⁰⁴⁰ In 1955, it was subordinate to the Air Defense Force (防空军), which was a separate service until it was

merged with the PLAAF in 1957, and it was renamed the Air Force Radar Technical Specialty School (空军雷达技高专学校). In 1958, it was merged with the former Air Defense School (防空学校) and was renamed the Air Force Radar Branch/Arm School (空军雷达兵学校) and was moved to Wuhan, Hubei Province. In 1969, it was renamed the Air Force 4th Specialty School (空军第四专科学校). In 1975, it was renamed the Air Force Radar School (空军雷达学校). In 1983, it was renamed the Air Force Radar Academy (空军雷达学院).¹⁰⁴² In 1992, it was upgraded from division leader grade to corps deputy leader grade. In 2004, the organizational structure changed such that the Air Force Radar Branch/Arm Training 4th Regiment (空军雷达兵4团) and the Air Force 1st Aviation College/Academy's Suizhou (Hubei Province) NCO Group (空军第一航空学院随州士官大队) were merged into the academy. In August 2011, the name changed to its current name—Air Force Early Warning Academy.¹⁰⁴¹

Campuses and Locations: The academy has four campuses in Hubei Province.¹⁰⁴² Although it is not clear which campus houses a radar training site, it is reportedly the largest such site in China.¹⁰⁴³

Subordination: PLAAF HQ¹⁰⁴⁴ (Staff Department)

Staff:¹⁰⁴⁵ The staff includes an unidentified number of Chinese Academy of Science academicians (中国科学院院士), 20 personnel who have been identified as outstanding military leaders and top military talents, and about 200 professors (教授) and associate professors (副教授).

Degrees: Either a two-year secondary technical educational program or three-year post-secondary program for NCOs.¹⁰⁴⁶ It does not appear that any NCOs receive a bachelor's degree. The academy also has bachelor's, master's, and doctoral degree programs as well as post-doctoral research stations.

Air Force Harbin, Shijiazhuang, and Xi'an Flight Academies

Because the Air Force's three flight academies (飞行学院)—Harbin, Shijiazhuang, and Xi'an—are organized the same and do not include cadet education and training, their profiles have been merged into this single section and organized differently than the other profiles. In addition, the organizational structure for the three Air Force flight academies are similar to each other but are different than the other 34 PLA academic institutions for the following key reasons:¹⁰⁴⁷

- The flight academies are not cadet academic institutions.
- The flight academies are responsible for training future pilots who have already graduated from the Air Force Aviation University with a bachelor's degree. Upon graduation from their flight academy, they receive a second bachelor's degree.
- Although the Chinese use the same characters for *xueyuan* (学员) for both AUAF and the flight academies, the English translation is “cadet” for AUAF and “student” for the flight academies.
- Each flight academy is organized like an operational unit, such that they have a Staff Department, Political Work Department, and a Support Department.
- Each flight academy has subordinate numbered training brigades, which are also organized like operational units. Prior to 2012, all of the brigades were regiments.
- The academies do not have academic departments or specialties (专业).
- The flight academies do not offer any post-graduate degrees (master's or doctoral degrees). Only a few pilots receive a master's degree, which are received at other military or civilian academic institutions.

Names: All three institutions were established in August 2011 by merging six previous flight academies together.

At that time, they were identified in English as the Air Force Harbin Flight College (空军哈尔滨飞行学院), Air Force

gg Note: Prior to 1983, except for universities, all PLAAF officer academic institutions were schools at which time they were renamed *xueyuan* (college/academy). The only remaining schools were NCO schools.

Shijiazhuang Flight College (空军石家庄飞行学院), and Air Force Xi'an Flight College (空军西安飞行学院).¹⁰⁴⁸ In 2013, the PLAAF changed the official English name of the Shijiazhuang Flight College to Flight Academy, and in 2017 it changed the names of the Harbin and Xi'an Flight Colleges to Flight Academies as well.¹⁰⁴⁹ For purposes of this book, the term flight academy is used.

Personnel: Because each academy is organized like an operational air unit, the key personnel include the Party Standing Committee Members—the Commander, PC, Deputy Commanders, Deputy PC(s), Secretary of the Discipline Inspection Committee, Chief of Staff (Director, Staff Department), Director of the Political Work Department, and the Director of the Support Department—as well as the Party Standing Committee Members for each training brigade. In addition, instead of professors and associate professors, the other key personnel are flight instructors (飞行教员).

Background: All three academies had their origins in 1949-1952, when the PLAAF created ten aviation schools (航空学校).¹⁰⁵⁰ By 1966, there were 17 aviation schools, which included some that only trained support personnel. Several of the schools began as a flight preparatory school (航空预备学校)¹⁰⁵¹ before becoming the numbered aviation school. A full list is provided in Appendix C.

Starting in the 1960s, the 16 schools were merged, abolished, reestablished, moved to new locations, renamed, and/or given new missions. In 1968, the number was reduced from 16 to 14. In 1986, the number was reduced to ten and they were upgraded from schools to *xueyuan* (学院), which, as noted above, were originally translated as “colleges” but have been renamed as “academies.” Of the four other schools, the 16th School was reorganized as the Air Force Navigation College (空军领航学院) in Xi'an,¹⁰⁵² the 11th School became the Air Force Flight Test and Training Center (空军飞行实验训练中心) at Xi'an Yanliang,¹⁰⁵³ and two were abolished. As shown in Table 5-1, the PLAAF had seven flight academies prior to the merger in 2011.¹⁰⁵⁴ Concerning military unit cover designators (MUCDs), the only PLAAF's flight academies are the only PLA academic institutions who are assigned an MUCD. The reason for this is they are organized like and treated as operational units. Table 5-2 shows the flight college number, city, province, and MRAF subordination, the Ministry of Education code, grade, MUCD, and the mission.

Table 5-1: Pre-2012 PLAAF Colleges/Academies¹⁰⁵⁵

Flight Academy	City, Province (MRAF)	MOE Codes	Grade	MUCD ¹⁰⁵⁶	Mission
1st	Harbin, Heilongjiang (Shenyang)	90051	Division Leader	93163	Transport, bomber, and tanker crews
2nd	Huxian, Shaanxi (Lanzhou) and Jiajiang, Sichuan (Chengdu)	90052		95588	
3rd	Jinzhou, Liaoning (Shenyang)	90053		93356	Fighter and fighter-bomber pilots
4th	Shijiazhuang, Hebei (Beijing)	90054		93670	
5th	Wuwei, Gansu (Lanzhou)	90055		94129	
6th	Zhuozhou, Hebei (Beijing)	90056		93706	
13th	Bengbu, Anhui (Nanjing)	90057		94580	

Current Flight Academy Background: Table 5-2 provides information about the history of the three current flight academies, each of which was reorganized in August 2011 by merging six existing flight academies. The table includes their current name, former flight academies, current subordination, MOE code, grade, and their current mission.¹⁰⁵⁷ It is not clear what the current MUCDs are. [Note: The 13th Flight Academy was renamed the Air Force Flight Instructor Training Base (空军飞行教官训练基地) on 28 April 2012 and was re-subordinated to the Air Force Aviation University, but it remains in Bengbu.¹⁰⁵⁸]

Table 5-2: Current Flight Academies

Flight Academy	Former Academies	Subordination	MOE Code	Grade	Mission
Harbin	Merged 1st and 3rd Flight Academies	Northern TCAF	91027	Corps Deputy leader	Transport, bomber, and tanker crews; fighter and fighter-bomber pilots
Shijiazhuang	Merged 4th and 6th Flight Academies	Central TCAF	91028		Fighter and fighter-bomber pilots
Xi'an	Merged 2nd and 5th Flight Academies	Western TCAF	91029		Transport, bomber, and helicopter crews

No information was found concerning the campuses associated with each of the three flight academies; however, even though two former colleges were merged to form a current academy and the former 1st, 2nd, and 4th colleges form the current main campuses (本部), the other three former campuses most likely still exist as branch campuses (分院).

Air Force Medical University

Name: 空军军医大学 (第四军医大学). Official English name: In June 2017 the PLA officially changed the name of the PLA Fourth Military Medical University to become the Air Force Medical University.¹⁰⁵⁹ However, it is still identified in some media as the PLA Fourth Military Medical University and as the Air Force Medical University (Fourth Military Medical University).¹⁰⁶⁰ It is also identified as the Military Medical University of the Air Force.¹⁰⁶¹ The English acronym are AFMU¹⁰⁶² and FMMU.¹⁰⁶³

Background:¹⁰⁶⁴ In 1951, the PLA created five Military Medical Colleges (军医学院) identified as the 1st, 2nd, 3rd, 4th, and 6th Military Medical College. Over the years, they have been merged, abolished, changed locations, and renamed, such that, as of 2017, there are three remaining Military Medical Universities as shown below:

- Army Medical University (陆军军医大学), which is also known as the PLA 3rd Military Medical University (解放军第三军医大学), and is located in Chongqing.
- Air Force Medical University (空军军医大学), which is also known as the PLA 4th Military Medical University (解放军第四军医大学), and is located in Xi'an, Shaanxi Province.
- Naval Medical University (海军军医大学), which is also known as the PLA 2nd Military Medical University (解放军第二军医大学), and is located in Shanghai.

The university is a national key university with the responsibility of training senior- and mid-level medical professionals for the Air Force. In 1954, it was established in Xi'an, Shaanxi Province, by merging the former Fourth Military Medical University (第四军医大学) in Xi'an with the former Fifth Military Medical University (第五军医大学) in 1954 in Nanjing, Jiangsu Province. In 2017, it was then resubordinated under the Air Force after incorporating the Air Force Aeromedicine Institute (空军航空医学研究所) located in Beijing and renaming it as the Air Force Medical University (空军军医大学). The University was accredited nationally as one of the first batch of 20 key universities by the CCP Central Committee in 1959, one of key academies under construction by the PLA in 1995, one of first batch of 22 key academies under construction of the "211 Project" (211工程) in 1997, and one of the academies under construction of the national first-rate disciplines in 2017.

The university presently has three education levels, providing bachelor's degrees, master's degrees, and professional education. As the first batch of units with doctoral and master's degree authorization approved by the State Council, the University offers master's degrees, doctoral degrees, and postdoctoral research stations.

Campuses and Locations:¹⁰⁶⁵ The main campus is in Xi'an, Shaanxi Province.

Subordination:¹⁰⁶⁶ PLAAF HQ

Staff:¹⁰⁶⁷ The university has about 200 professors (教授) and an unidentified number of associate professors (副教授). Altogether, the university has 583 master's degree advisors (硕士生导师) and 312 PhD advisors (博士生导师).

Degrees: The university offers bachelor's degree programs, including four-year programs and five- and eight-year medical programs.¹⁰⁶⁸ It also offers master's and doctoral degrees, as well as postdoctoral research stations.¹⁰⁶⁹ There is also a Continuing Education Department (继续教育组).^{gh, 1070}

International Exchanges and Cooperation:¹⁰⁷¹ The university's library has a Foreign Language Teaching Center. From 2013-2018, the university successfully assigned more than 2,000 persons to visit and attend international conferences, study abroad, or conduct academic exchanges in the international renowned teaching, medical and research institutes, and has received nearly 1,000 foreign experts and scholars for visiting the university. The university has established a cooperative relationship with nearly 30 academic institutions from America, England, Japan, France, Germany, Australia, and other countries. The Continuing Education Department has an Adult Education and Foreign Exchange and Training Teaching and Research Department. In addition, the Pharmacy School has hosted the China Pharmacology Conference, the World Pharmacological Conference-Xi'an, the International Conference on Drug Metabolism, the National Pharmacology Teaching Reform Seminar, the National Industrial Biochemistry and Molecular Biology Academic Conference, the National Medical and Pharmaceutical College Teaching Reform and Micro-course seminar, the Qinba Mountain Area Chinese Medicine Development Collaborative Innovation Center kick-off meeting, and many other provincial academic annual conferences.

Air Force Logistics College

Name: 空军勤务学院. Official English name: Based on multiple *CNKI* articles, it appears that the official English name is Air Force Logistics College even though the name best translates as Air Force Service College.¹⁰⁷² In addition, an entry for Air Force Duty College was found in the PLA's *Dictionary of Modern Military Education* [sic], but this does not appear to be correct.^{gi, 1073}

Background:¹⁰⁷⁴ Overall, the college is responsible for merging command, management, and technology into a single location (空军勤务学院是一所集指挥, 管理, 技术于一体) with majors/disciplines (学科) in Military Science (军事学), Engineering (工学), Economics (经济学), and Management (管理学). The following bullets provide information on the background of the college:

- October 1954: Created in Taiyuan, Shanxi Province, as the PLA Air Force Rear Service School (中国人民解放军空军后方勤务学校) and was subordinated to PLAAF HQ.
- May 1958: Moved to Xuzhou, Jiangsu Province, and renamed the PLA Air Force Logistics School (中国人民解放军空军后勤学校).
- 1969: The school was abolished during the Cultural Revolution.
- 1977: The school was reestablished with the same name.
- June 1986: The name was changed to the PLA Air Force Service College (中国人民解放军空军勤务学院).
- August 1991: The name was changed to the Air Force Logistics Management Technical College (空军后勤管理技术学院) and it was subordinated to the General Logistics Department.
- June 1993: The name was changed to the Air Force Logistics College (军空军后勤学院) and was resubordinated under PLAAF HQ.

gh Note: This is not the same as U.S. military professional military education (PME).

gi Of note, the Army and Navy use the same Chinese terms, but their institutions appear to be translated as "Army Logistic University" and "Naval Service Academy."

- 2003: The name was changed to the Xuzhou Air Force Logistics College/Academy (徐州空军后勤学院).
- August 2011: The name was changed to the Air Force Logistics College (空军勤务学院).

Campuses and Locations:¹⁰⁷⁵ The main campus is in Xuzhou, Jiangsu Province.

Subordination: PLAAF HQ¹⁰⁷⁶

Staff:¹⁰⁷⁷ It has about 200 professors (教授) and associate professors (副教授) and about 80 master's degree and PhD advisors (导师).

Degrees: Either a two-year secondary technical educational program or three-year post-secondary program for NCOs. It also appears to provide three-year post-secondary programs for non-commanding officer cadets.¹⁰⁷⁸ It also has bachelor's, master's, and doctoral degree programs.¹⁰⁷⁹

Air Force Communications NCO Academy

Name: 空军通信士官学校 (formerly 空军大连通信士官学校). Official English name: Air Force Communication NCO Academy as of June 2017. As a general rule, the PLA translates the term *xuexiao* (学校) as school, which applies only to NCO academic institutions; however, in this case it translates *xuexiao* as both a school and an academy, which normally is a *xueyuan* (学院).

Background:¹⁰⁸⁰ The academy was created in June 1986 as the Air Force Dalian NCO School (空军大连士官学校), which was one of the PLA's first batch of NCO schools. In August 1992, the name changed to the Air Force Dalian Communication NCO School (空军大连通信士官学校). It is not clear when the PLAAF changed the English name from school to academy, but it was most likely in the 2010s. In June 2017, the name was changed to the Air Force Communication NCO Academy (空军通信士官学校).

Campuses and Locations:¹⁰⁸¹ The main campus is located in Dalian, Liaoning Province.

Subordination:¹⁰⁸² PLAAF HQ since 2001.

Staff:¹⁰⁸³ In 2012, the academy had a total of 452 staff cadres, including 270 instructors and 73 civilian personnel.

Degrees: Either a two-year secondary technical educational program or three-year post-secondary program for NCOs.¹⁰⁸⁴ The three-year program includes two years at the academy and one more year of practice (实习) at an operational unit. In 2012, the academy had 2,440 students, organized into three categories—1,360 NCO students (士官学员), 640 technical soldiers (技术兵), and 440 NCOs receiving promotion training (士官晋级培训).¹⁰⁸⁵ At that time, it had already had 17,000 graduates (an average of 650 per year since 1986). The academy does not offer any bachelor's, master's degrees, or PhD degrees.

Although no information was found concerning which grade and rank NCOs must have in order to become a student, they are most likely junior-grade NCOs (初级士官) with the rank of corporal (下士) or sergeant (中士). The reason for this is that, since 2005, promotion to a higher grade has been explicitly tied to the successful completion of educational or training programs, with the general requirement (or at least overall goal) being that junior-grade NCOs should attain a three-year secondary technical degree, intermediate NCOs require a three-year post-secondary educational program/diploma, and senior NCOs an undergraduate degree, or equivalent.¹⁰⁸⁶

The PLAAF's National Defense Student Program

Key Points

- The PLA's National Defense Student Program (1998-2020) was one of the PLA's largest scale recent experiments to increase the number of new college graduates entering the force, but was recently disbanded, indicating it did not meet the PLA's needs.
- The PLAAF participated in the program via partnerships with 19 universities, and will almost certainly participate in any follow-on programs that the PLA introduces. At least some PLAAF recruitment includes direct recruitment of civilian undergraduates.

Under then-CMC Chairman Jiang Zemin, the PLA reduced the number of PLA academic institutions in 1998 to 67 and implemented the National Defense Student (国防生) Program, which is also called the Reserve Officer Program, to educate undergraduates as officers in 118 civilian engineering, science, and technology universities.¹⁰⁸⁷ Note that, although the students were considered reserve officers during their time at school, they became active duty officers once they graduated and assumed their billet.

In May 2000, the State Council and CMC issued the “Decision Concerning Establishing a System for Civilian Colleges to Educate and Train Military Officers.” Of the 118 institutions, 20 were PLAAF programs, each of which has its own website.¹⁰⁸⁸ The 20 universities with PLAAF programs are shown in Table 5-3 below.

Table 5-3: 20 Universities with PLAAF National Defense Student Programs

University Name	Location
Beijing University of Aeronautics and Astronautics (北京航空航天大学)	Beijing
Changchun University of S&T (长春理工大学国防科学技术学院)	Changchun, Jilin
Changchun University of Technology (长春工业大学)	Changchun, Jilin
Changsha University of S&T (长沙理工大学)	Changsha, Hunan
Hebei University of Technology (河北工业大学)	Tianjin, Hebei
Hunan University (湖南大学)	Changsha, Hunan
Lanzhou Jiaotong University (兰州交通大学)	Lanzhou, Gansu
Lanzhou University (兰州大学)	Lanzhou, Gansu
Nanjing University of Aeronautics and Astronautics (南京航空航天大学)	Nanjing, Jiangsu
Nanjing University of Information S&T (南京信息工程大学)	Nanjing, Jiangsu
Peking University (北京大学)	Beijing
Shandong University of Technology (山东理工大学)	Zibo, Shandong
Shenyang Institute of Aeronautical Engineering (沈阳航空工业学院空军后备军官学院)	Shenyang, Liaoning
Shenyang University of Technology (沈阳工业大学国防生教育学院)	Shenyang, Liaoning
Southeast University (东南大学)	Nanjing, Jiangsu
Tsinghua University (清华大学)	Beijing
University of Electronics S&T (电子科技大学)	Chengdu, Sichuan
Wuhan University of Technology (武汉理工大学)	Wuhan, Hubei
Xidian University [Xi'an Electronics S&T University] (西安电子科技大学)	Xian, Shaanxi
Xihua University (西华大学后备军官学院)	Chengdu, Sichuan

Apparently, after 19 years, the program did not meet its goals and, as a result, the PLA did not recruit any new students in starting in 2017.¹⁰⁸⁹ As such, the existing students from the classes that started in 2013–2016 completed their undergraduate programs and the entire program ceased to exist when the last class recruited in 2016 graduated in 2020. It is not clear what the effect on students who immediately went into graduate programs was. Although

the program was apparently replaced by direct recruitment of civilian university/college graduates, no details were found.¹⁰⁹⁰ See Chapter 4 for additional information on the history of the National Defense Student Program.

Prior to graduation, some National Defense Students spent a short period of time at an operational unit observing the unit's daily activities. Upon graduation, National Defense Students had several options, including attending graduate school. If they did not attend graduate school, they were assigned either directly to an operational unit or to a training organization where they received on-the-job training for their specialty.

Based on analysis of multiple sources, including interviews with PLA personnel, the PLA and PLAAF academic institutions were managed by the former GSD's Military Training Department and the PLAAF Headquarters Department's Military Training Department, respectively, but the National Defense Student Program was managed by the GPD's Cadre Department and the PLAAF Political Department's Cadre Department. As a result, there was virtually no oversight of the National Defense Student Program by the training organizations.¹⁰⁹¹ There was no restriction on the number of National Defense Students selected for graduate studies in universities with a National Defense Student program; however, the number of graduate students in other universities could not exceed 15 percent of the total number of National Defense Students for any given year.¹⁰⁹²

Upon graduation, the National Defense Students were assigned to an operational unit, a PLAAF academic institution as an instructor, or a training unit where they received their specialty training for a couple of months. In addition, about 40 percent of National Defense Students moved directly to graduate school. Finally, once they assumed their billet, almost all National Defense Student graduates served in technical, rather than command, billets.¹⁰⁹³

Air Force Military Professional/Vocation University

Key Finding

- Two official names were found for the university: Air Force Military Professional University and Air Force Military Vocation University.¹⁰⁹⁴
- Created in June 2008, the university's key functions are not known, but it appears to be focused on distance learning at the regiment level and above for both officer and enlisted personnel.

As part of its effort at creating a more highly educated force, the PLAAF established the Air Force Military Professional/Vocation University (空军军事职业大学) in Beijing in June 2008, and its first classes began in September of that year.¹⁰⁹⁵ The PLAAF's Commander is the university's commandant, and PLAAF PC is the PC. The university has branch campuses in each of the PLAAF's four departments, each MRAF / TCAF HQ, and the Airborne Corps headquarters. Every independent unit at the regiment level and above also has its own study center.^{gj}¹⁰⁹⁶ Officer corps and enlisted force students originally received courses on CDs and can study online individually or in groups.¹⁰⁹⁷ Courses for the officer corps are organized by the five career tracks and three tiers (basic, intermediate, and advanced), and the enlisted force is divided into NCOs and two-year conscripts/enlistees.¹⁰⁹⁸ The courses are taught by personnel from the PLAAF's academic and research institutions, as well as outside experts.

The university uses various teaching methods, including self-study, group discussion, live online courses, and OJT.¹⁰⁹⁹ The university offers secondary technical, three-year post-secondary educational program/diploma, bachelor's, and master's degrees. Any officer or enlisted member who fails to complete the course on schedule cannot be promoted. One article from February 2015 shows a ceremony for 25 personnel who just graduated from the program.¹¹⁰⁰ The graduates included one enlisted female and two enlisted males. Unfortunately, very little information was found about the program.

^{gj} In early 2009, the PLAAF created the Military Professional Education Department to manage the university and to link up with the China Central Radio and TV University

Although not stated, one of the apparent goals is to keep personnel occupied during their non-duty hours, especially since a high percentage do not have their families live with them. In addition, based on various photos, the PLAAF has apparently spent a fair amount of money to provide libraries and study rooms on each facility that may or may not be related to participating in the academic program.

The PLAAF's Dual-Enrollment Program and Teenagers Aviation Schools of the Air Force

Key Finding

- Two additional programs for pilots, the “Dual-Enrollment Program” and the Teenagers Aviation Schools of the Air Force, seek attract and retain top flying talent and cultivate pilots’ skillsets for conducting informatized warfare.

This section briefly discusses two programs that the PLAAF has implemented to help educate and train its next generation of pilots.¹¹⁰¹ The two programs, which are part of China’s military-civil fusion (MCF) program, are the Dual-Enrollment Program (DEP / 双学籍) and the Teenagers Aviation School of the Air Force (TASAF). Overall, these two programs are considered a valuable part of the PLAAF’s education system. The PLA Naval Aviation has the same two programs, but this section focuses only on the PLAAF versions.

In 2018, the PLAAF reported that it had “achieved the best aviation recruitment result both in quantity and quality” since it began to organize its self-directed recruitment program in 1988.¹¹⁰² The PLAAF’s 2018 aviation recruitment cycle attracted more than 123,000 high school graduates to apply, and, through multiple rounds of selections and draconian testing, it accepted 1,480 into its pilot training program in July 2018.^{gk}

The DEP program is essentially a program allowing top pilot cadets—i.e. active-duty military personnel—to be simultaneously enrolled in China’s most selective civilian universities and military aviation academic institutions. The TASAF program targets male high school students aged 14-17 who, if selected, will then attend Air Force Aviation University as a cadet and then one of the flight academies to receive their flight training.¹¹⁰³

The Dual-Enrollment Program

Guided by the stated principle of seeking innovative pathways to shorten the talent cultivation cycle to order to generate “warfighting capability” more efficiently, the PLA began to explore pilot education and training through MCF in 2011, and perhaps not surprisingly, it turned to some of China’s most well-known civilian universities to jumpstart this “strategic measure.”¹¹⁰⁴ The program is still officially known as a program of “military-civilian joint cultivation (军民联合培养)” albeit was more commonly referred to as DEP, or shuang xueji, in most of the PLAAF official pilot recruitment announcements and materials. Initially, the PLAAF worked with Tsinghua University (Tsinghua / 清华大学), the most well-regarded Chinese university known for its top-grade science, technology, and engineering programs, in 2011. In 2012, the program expanded to include Peking University (PKU / 北京大学), and Beijing University of Aeronautics and Astronautics (BUAA / Beihang / 北京航空航天大学). DEP follows a “3+1” model which enrolls a highly-selective group of high school graduates who specialize in science and engineering subjects (理工科) simultaneously at one of the three elite universities and AUA.

gk Women were not eligible to participate in the 2018 PLAAF aviation recruitment cycle. Since 1952, the PLAAF has recruited approximately 600 female cadets in a total of 11 batches. In November 2018, the PLAAF announced that it planned to recruit 40 female pilot cadets in its 2019 cycle, and noted that female aviation cadets “would be flying different types of aircraft, taking on more diversified missions, participating in international exercises and training and other international exchange activities” which would “better present the image of [the PLAAF] as a great power air force.” See: “空军招40名第12批女飞行学员成绩优秀可联合培养” 2018年11月10日00:53北京晨报<http://www.chinanews.com/sh/2018/11-10/8673403.shtml>.

DEP students were required to complete the compulsory core courses and aeronautics engineering physics and other specialized courses on astronautics and aeronautics offered by Tsinghua; and during the summers, they participated in intensive military training to hone their basic military skills, such as parachuting, shooting, survival in the field, and mobility training. As planned, in July 2014, the first “Tsinghua Class” of pilot cadets were transferred to AUAF to complete their studies in aviation theories and conduct flight training. In June 2015, 28 cadets graduated with dual graduation certificates awarded from both Tsinghua University and Air Force Aviation University. By June 2016, they had also completed their two years of advanced flight training at the Shijiazhuang Flight Academy, where they conducted training with non-DEP pilot cadets. Zhao Jingbo, Chief of Staff of the flight academy, observed that while judged by the same standards, the Tsinghua Class pilot cadets “stood out” and achieved a higher success rate.¹¹⁰⁵ In September 2019, Tsinghua University included the first group of five female pilot cadets to the program.¹¹⁰⁶

PKU and BUAA joined Tsinghua in 2012 to explore this “joint cultivation” model and included this program as part of their “National Defense Student Aviation” class (飞行国防生班). It was reported that, unlike the Tsinghua program, which was established as an independent program from the very beginning, the aviation programs at PKU and BUAA were added to the existing “National Defense Student” program as a new focus. In December 2019, 180 DEP pilot cadets from the three universities visited the China Aviation Museum in Beijing’s Changing District.¹¹⁰⁷

Although, as noted earlier in this chapter, the National Defense Student program ceased to exist in 2020, the DEP programs have most likely become separate programs under each of the three universities and they are most likely directly subordinate to PLAAF HQ’s Staff Department.

Teenagers Aviation School of the Air Force^{gl}

The establishment of DEP appears to have addressed the PLA’s urgent need for “better quality” aviation talents suitable for informatized warfare, while maximizing the service years of pilots who are at their optimum age remained to be a major concern. The PLAAF believed that, as its demand for talented pilots increased, the traditional way of pilot cadet selection out of high school graduates was insufficient.¹¹⁰⁸ This is because, according to one Chinese military expert, “they were exposed to aircraft and flying relatively late in life,” and “combined with the long training cycle, the optimum combat years [of each pilot] had been significantly shortened.”¹¹⁰⁹

Since the 1980s, the main source of the PLAAF’s pilot cadets have been high school graduates, college students, and college graduates; however, they are recruited separately and must meet higher standards. Since 1999, the PLAAF has begun building partnerships with a number of high schools to form 44 “Early Training Bases (早期培训基地),” through which more than 2,000 PLAAF pilot cadets were developed. Nevertheless, as the military’s requirement for educational levels increased, the PLAAF Aviation Recruitment organizations deemed this “Early Training Base” model “outdated.”¹¹¹⁰ In 2010, it began building new “experimental” pilot programs in Hebei at Baoding No. 1 Middle School (保定市第一中学) to carry out reforms of the old system. Determined to attract “better quality” junior middle school graduates, the PLAAF offered scholarships, tuition reimbursement, and monthly stipends to cover the students’ entire high school studies. Upon graduation, they were required to apply to AUAF and would enjoy preference including bonus points on their two-day college entrance exam known as gaokao (高考). For those who were eliminated from becoming a pilot cadet, they would be offered opportunities to become aviation mechanics or aviation-related combat service personnel.

Likely encouraged by the results of the experimental project carried out in Hebei, in 2011, the Air Force moved ahead and created a “Junior Aviation Military Academy of the Air Force”¹¹¹¹ (空军飞行少年军校), also known as “Air Force Aviation Junior Class”¹¹¹² (空军飞行少年班) at Wuhan No. 6 High School in Hubei Province, Jilin Experimental High School, and Beizhen High School in Shandong.¹¹¹³ The “Junior Military Academy” did not have a unified campus,

gl This is the official English translation of the name of the program used by the Air Force. The program’s logo was designed by a civilian public relations company named Qilu (奇璐助空军青少年航空学校形象发布) 2015-08-12 16:09” http://www.sohu.com/a/27051363_229973.

and it was composed of multiple “aviation experimental classes” housed at selected high schools mentioned above. The selection of locations of the schools were determined by the past aviation recruitment record—the provinces that historically produced more pilots had been chosen to host the “Academy.” This program was open to male high school students only, and it was not until 2013 when Wuhan No. 6 High School’s aviation experimental class admitted ten female students for the first time.¹¹¹⁴ Similar to the creation of DEP, the official announcement of the establishment of the Junior Military Academy stated that it was a program jointly ran by AUAF and civilian high schools, and it was designed to train “military aviation talents, future Air Force aviation Commanders, and backbone forces of [China’s] aerospace mission.¹¹¹⁵ The “aviation experimental classes,” albeit housed at civilian high schools, were separately managed by the military and a designated high school leadership team, and it followed a distinctive curriculum named *Early Cultivation Course of the Air Force Pilot Talent* (空军飞行人才早期培训教程), which combined civilian high school curriculum and foundational aviation theories.¹¹¹⁶

Name Change and Expansion

In 2015, the Ministry of Education, Ministry of Public Security and the former PLA General Political Department (GPD)¹¹¹⁷ jointly approved the establishment of 16 Teenagers Aviation School of the Air Force (TASAF / 青少年航空学校).¹¹¹⁸ In fact, by the end of 2014, the Air Force had already established 11 “aviation experimental classes” under its Junior Aviation Military Academy, totaling 293 students. As a result, out of the 96 graduates of 2014, 39 were selected to join AUAF.

In 2015, the first five schools recruited a total of 405 students. In August 2018, 178 of the students (44 percent) were selected to attend AUAF.¹¹¹⁹

Chapter 6:

PLAAF Training System

This chapter provides a high-level overview of PLAAF training with a focus on the Aviation Branch/Arm and Airborne Force Branch/Arm, as well as the former Surface-to-Air Missile Branch/Arm. The chapter uses NASIC's *People's Liberation Army Air Force 2010* and various reports, including CASI's *2019 Primer*, as foundational texts, and updates the information accordingly.¹¹²⁰ Other chapters discuss related issues, including Chapter 2, which covers strategic guidance on desired capabilities and effects that are shaping training, and Chapter 5, which covers the education component for new officers before they assume their permanent billets. The chapter also briefly discusses training with foreign air militaries, which is covered in greater detail in Chapter 7. This chapter is divided into the following ten sections:

- Key training terms and concepts
- Training guidance and system
- Training cycle and progression
- Aviation Branch/Arm training for new pilot cadets
- Aviation Branch/Arm unit training
- Airborne Corps training
- Surface-to-Air Missile unit training
- Training in other branches/arms and specialty units
- The PLAAF's Five Key Training Brands
- Other recent trends in PLAAF training and operational proficiency.

Key PLAAF Training Terms and Concepts

Key Points

- PLAAF training terminology has specific definitions for certain concepts, including altitude levels, flight conditions, and weather conditions.
- PLAAF use of the terms “tactics” and “combat methods” refers to specific types of training and activities, with combat methods appearing to precede tactics and form the basis for tactics.

Key Training Terms and Concepts

The following bullets provide some key training terms and concepts in alphabetical order:

- *Altitude levels*: The PLA defines minimum altitude (also identified as extreme low or very low altitude) (超低空) as less than 100 meters, low altitude (低空) as 100 to 1,000 meters, medium altitude (中空) as 1,000 to 7,000 meters, and high altitude (高空) as 7,000 to 10,000 meters, and ultra-high altitude (also identified as very high altitude) (超高空) as 15,000 meters and above.¹¹²¹
- *Composite training* (综合训练) refers to more than one flying subject in a single sortie.

- *Drill* (演练) refers to a drill by a unit that takes place for one or more days and incorporates several training subjects but is not at the scope of an exercise.
- *Flight subject* (飞行科目) refers to a training subject during a flight.¹¹²² Normally, a flight subject, or simply called a subject, includes night and day flying, flying in simple and difficult weather conditions, flight techniques and combat techniques, basic tactics and applied tactics, and different combinations of them.
- *Flying days and periods*: The PLA's *Military Dictionary* states that "a flying day is divided into three flying periods (场次), including day, night, and after midnight."¹¹²³ A flying period refers to a single combat, training, alternate landing, transit flight, test flight, special flight, or cargo flight mission.¹¹²⁴ Historically, the PLAAF's three distinct flying periods have been day (0800-1600), evening into night (1600-2400), and after midnight (2400-0800). During the 2000s, the PLAAF instituted "large flying periods" (大场次) that move from day into evening, evening into after midnight, and after midnight into day. The PLAAF also began conducting what it calls "rolling-type" (滚动式) training that can last up to 24 hours and transitions through all three flying periods.¹¹²⁵ Large flying periods and rolling-type training require greater maintenance support before and after the activity is conducted.¹¹²⁶
- *Flying in weather conditions*: The PLAAF uses different terms to refer to flying during the day and night under visual flight rules (VFR / 目视飞行训练) and instrument flight rules (IFR / 仪表飞行训练) conditions. These terms are often confused with "flying in weather," which is distinguished by the use of modifiers such as good, poor, cold, hot, rainy, snowy, or minimum weather conditions.
 - "Four-weather conditions" (四种气象) and "flying in difficult-weather conditions" (复杂气象) refers to flying during night and day under VFR and IFR conditions.
 - "Three-weather conditions" (三种气象) refers to flying at day and night under VFR conditions and at day under IFR conditions.
 - "Flying in simple-weather conditions" (简单气象) usually refers to flying under day and night VFR conditions.¹¹²⁷
- *Foundational training* (基础训练) is the prerequisite for applied training. It includes basic military knowledge, basic maneuvers, and basic skills.
- *Sortie* (架次) refers to a single aircraft taking off a single time. If four aircraft take off two times each, this would count as eight sorties.¹¹²⁸ The PLAAF appears to define sortie as a single takeoff, landing, and the activity that occurs between them.
- *Training* (训练) refers to training that occurs on a daily basis for individual training subjects.
- *Training subjects*: The PLAAF has two separate sets of characters for *kemu* (课目和科目)—both of which are translated as "training subject." Based on a review of PLAAF and Naval Aviation reporting, it clearly appears that only PLAAF Aviation and Naval Aviation Branches/Arms use the first term *kemu* (课目). Meanwhile, all PLAAF and PLAN branches/arms use the other *kemu* (科目). Together, *kemu* are the basic training items required for all officers and enlisted personnel to understand how a particular weapon system works. Furthermore, each individual and operational unit must pass through a set of *kemu* in a specific order before the individuals and unit pass their training certification.¹¹²⁹ Each *kemu* is composed of multiple items (项目). The PLA has three basic types of *kemu*:¹¹³⁰
 - Common training subjects (共同科目), which are sometimes referred to as basic training subjects (基础科目).
 - Skills training subjects (技术科目).
 - Tactical training subjects (战术科目).

- *Training topics* (课题) comprise specific components of a training subject.¹¹³¹ Aviation *keti* are training topics that can be at the tactical (战术), campaign (战役), and strategic (战略) levels of conflict. For example, training over water for penetration of defenses at minimum-altitude, attack formations, and air defense suppression formations, airborne early warning and monitoring, avoiding electronic countermeasures (ECM), conducting counter-fighter intercepts, construction of a marine landing corridor with air support, direct-fire preparations toward island reefs, and joint assault on an enemy to guide and protect at-sea formations are considered various types of training topics.

Three-Tiered Training Approach

The PLAAF has a three-tiered approach to training.¹¹³² On a daily basis, the PLAAF conducts individual, element, and unit training that usually focuses on one training subject at a time. The next step for elements and units is to conduct training drills (演练) that focus on combining several training subjects. Training events usually last one or more days. Finally, PLAAF units conduct individual or multi-unit exercises (演习) that can last for several days. Not all exercises are comprehensive. They can focus on a single area, such as logistics support; on a single branch/arm, such as aviation; on combined arms, such as aviation and airborne troops; opposition forces that include a “Red Force” and “Blue Force”; or joint forces that include more than one service, such as the PLAN and PLAAF. In the PLA, the “Red Force” always refers to the PLA, while the “Blue Force” always refers to the opponent.

Developing Tactics and Combat Methods

Tactics (战术) and combat methods (战法) are two key terms that are used either separately or together. Each term refers to some very specific types of training and activities. PLAAF writings consistently refer to developing and employing tactics and combat methods in the same sentence, but no PLAAF source materials have a clear definition for combat methods. One PLAAF source, however, states that the biggest difference between combat methods and tactics is that combat methods precede tactics and are the basis for tactics. According to the source, once you develop combat methods, you can then conduct tactics training.¹¹³³

Although there is no set list for each one, a list of tactics that have been identified, including flying in clouds, is identified later in the Unit Training subsection. The PLAAF considers firing missiles from aircraft or SAM launchers as combat methods and are part of the “three attacks and three defenses.”^{gm}

The PLAAF also appears to develop its tactics and combat methods in different locations. It appears that the primary organization responsible for developing tactics is the PLAAF Command College’s Tactics Teaching and Research Office. The next step is to have the Test and Training Base in Cangzhou / Cangxian (Hebei Province) test the tactics in the air. There are examples, however, where operational units have been tasked to develop tactics, such as flying in clouds and poor weather. Concerning combat methods, it appears that the PLAAF HQ tasks specific operational aviation, SAM, AAA, and radar units to develop certain and test combat methods at their unit and at the Test Flight and Tactics Base at Dingxin (Gansu Province).¹¹³⁴ For example, the 2nd Air Division’s 2nd Flight Group at Suixi (Guangxi Province), led by Lieutenant Colonel Wang Shaohua, was tasked in 2000 to develop combat methods to counter cruise missiles.¹¹³⁵

gm “Three attacks and three defenses”: The PLA considers the three attacks and three defenses as combat methods (*zhanfa*; 战法). *San da* (三打) is best translated as the “three attacks,” but is sometimes translated as the “three strikes” or “three offenses.” Of note, the PLAAF sometimes reverses the order to the “three defenses and three attacks.” The PLA initiated the concept in 1999, which refers to attacks against stealth aircraft, cruise missiles, and armed helicopters. *San fang* (三防) is best translated as the “three defenses.” Originally, this referred to defense against chemical, biological, and nuclear attack. In 1999, the PLA initiated the “new three defenses,” which refer to defense against precision strikes, electronic jamming, and electronic reconnaissance and surveillance. The word “new” is usually dropped, so it is not always clear which “three defenses” is being discussed, but in today’s context, it generally means the program initiated in 1999.

Several articles in *Air Force News* during the 2000s provide insights into the process of developing tactics and combat methods at that time. Each operational unit that developed combat methods was identified as a “test point” (试点). In almost every case, the unit’s personnel had little to no experience with the new mission. The following points illustrate the process of developing combat methods at that time. Although they relate to aviation combat methods, the process is similar to the other branches/arms. The steps are listed below:^{gn}

1. Create a combat methods study group. For example, in early 2004, a Jinan MRAF air regiment created a “Leading Small Group for Combat Method Research” to develop combat methods for a new domestically produced fighter-bomber aircraft.¹¹³⁶
2. The leading small group studies the theory for that particular type of combat method. This can be done by bringing in specialists from other PLAAF institutions and, sometimes, civilian colleges. In addition, the people in charge of the project at the unit have sometimes gone on temporary duty (TDY) to places like the Air Force Engineering College in Xi’an to do research.
3. Begin developing the concepts on paper and receive theoretical evaluation approval for them.
4. Move into the aircraft to develop and revise the concepts.
5. Test the concepts at Dingxin. This process can take several months.^{go}
6. Receive a technical evaluation and approval of the new methods.
7. PLAAF HQ writes the necessary regulations and authorizes implementation of the new methods throughout the force.

Based on the amount of PLAAF reporting on developing and conducting combat methods for all its branches/arms, it is clear that this is an important foundation for conducting tactical training. One of the keys is to determine which units have been tasked as test points and to track the development through each cycle. Once the demonstration phase is completed, every unit is then expected to implement the new combat method. As a general rule, based on analysis of the different combat methods tests, it used to take about two years to complete the seven-step process, but this appears to have changed in the late 2010s by shortening the timeline for each step.

Of particular importance is how the PLAAF determines that a tactic or combat method should be changed and how long it takes to change a tactic or combat method. Historically, units and pilots had to adhere to the OMTE and relevant regulations and any changes required a detailed review, testing, and implementation process; however, that appears to have changed to some degree when the PLAAF began the *Golden Helmet* competition and implemented the “free air combat” system. It now appears that, if a pilot determines that a particular combat method or tactics did not work during an intercept sortie, that he can raise the issue to his unit’s leaders. It is not clear, however, if pilots can conduct unscripted changes to their required maneuvers on the spur of the moment. For example, if a pilot conducted a sortie and lost, it does not appear that, during the next sortie, he can randomly implement a different maneuver that has never been tested or approved.

It appears that, as early as 2003, the PLAAF began to consider breaking away from scripted air-to-air engagements and allowing pilots to at least make recommendations for adjustments. Specifically, a Jinan MRAF air division equipped with new aircraft (likely Su-27s) began implementing new combat methods throughout the unit in July 2003, and, over a three-month period flew 100 sorties using the new methods that had already been tested and approved for implementation by the highest level in the PLAAF. It was not until 2011 that the PLAAF implemented what it calls “pilot autonomy” and “free-air combat.” Previously, flight Commanders in the tower

gn These steps are discussed in detail in a series of articles about Wang Shaohua, who was assigned to the 2nd Air Division’s 2nd Flight Group in Suixi. He later became a Deputy Regiment Commander and then a Regiment Commander in the same air division. See photo caption in *Air Force News*, 26 February 2002.

go Wang Shaohua apparently remained at Dingxin for 6 to 12 months during 2001-2002 before the final test was evaluated and approved.

commanded pilots for “each step and each movement.” Now, each pilot has the autonomy from creating their own flight plans to takeoff to landing, including free-air combat, which allows them to conduct actual combat training by having a better understanding of every aspect of their aircraft and weapon systems.

Based on a review of multiple articles during the late 2010s, it appears that the seven-step process has changed, and the two-year process may have been reduced; however, it is not clear exactly what all of those changes are. Some units have been tasked to research and develop new combat methods. For example, in early 2018, an Eastern TCAF aviation unit organized night flight training according to the normalization of actual combat standards; however, it tested and improved a certain type of combat aircraft’s night time combat methods in a plateau environment and worked on the unit’s all-weather operational capabilities.¹¹³⁷ In 2018, a Southern TCAF bomber unit received its first H-6K bombers (aka “God of War” / 战神) and was tasked with conducting extensive research on operational directions, mission characteristics, and new aircraft variant capabilities, and, as a result, were able to develop more than ten new combat methods, which it tested out during various training events with success.^{gp, 1138} However, when they applied the same combat methods in major training events and missions, such as the Air Force’s key training brands or combat patrols in the South China Sea, they found them to be inadequate. As a result, before each major training event, they had to devote additional time to figuring out ways to make improvements. Although the report indicated they were often able to complete missions with excellent results, they still found the process frustrating. Some individual pilots have also taken it upon themselves to take the initiative to try to develop new combat methods. For example, in January 2018, an Eastern TCAF unit upgraded and verified the use of combat methods for a new airframe.¹¹³⁹ One of the unit’s pilots, who was also a *Golden Helmet* winner, received an award for innovating a new combat method. In addition, in 2016, a Southern TCAF air brigade Deputy Chief of Staff transitioned to a new type of airframe and created a few sets of new tactics and combat method, and, despite incomplete radar intelligence, he was able to correctly identify the targets and switched his tactics while engaged with the adversary.¹¹⁴⁰

Training Guidance and System

Key Points

- PLAAF training guidance stems from two types of documents, the PLA’s *Outline of Military Training and Evaluation* and PLAAF training guidance concepts.
- The PLAAF combines education and training into a single system.

PLAAF training is subject to guidance and direction from multiple organizations, including the CMC, the former four General Departments and current CMC departments, and PLAAF HQ. This section briefly introduces the primary vehicles for conveying training guidance to PLAAF training and operational units—the PLA’s *Outline of Military Training and Evaluation* (OMTE) and PLAAF training guidance concepts¹¹⁴¹—along with the system that promulgates this training guidance.

Outline of Military Training and Evaluation

According to PLA writings, the former General Staff Department (GSD), which served as the Army HQ, first published an *Outline of Military Training* (军事训练大纲) in 1955 that was applicable to all PLA forces.¹¹⁴² The outline is described as the general plan for military training. It provides the underpinning laws governing military training and the foundation for organizing and implementing military training.¹¹⁴³ Each document is divided into separate

gp Of note, no Chinese sources were found that had the English term “God of War” or any other translation for the term *zhanshen* (战神); however, that is the standard translation by Google Translate and other sources. Multiple articles clearly identified the “God of War” as the H-6K. In addition, the H-6K has been identified in Ministry of National Defense articles in English as a “medium-range bomber,” “long-range bomber,” and “strategic bomber.”

volumes according to different objectives and levels. Each volume is further divided into several subsections by the branch/arm, type of weapon system, or specialty. The PLA simply refers to the full set of documents as the dagang (大纲) or outline.

Since 1955, revised documents were approved and issued in 1957, 1978, 1980, 1989, 1995, 2001, 2009, and 2018. From 1955 to 1989, the GSD remained the overall manager for the outline. However, when the 1989 version was published, the overall responsibility was divided accordingly, whereby the GSD issued the outline for the Army, while the Navy, Air Force, and former Second Artillery Force issued their own documents for the first time. In 2001, the word “evaluation” was added, such that the new name became the *Outline of Military Training and Evaluation* (军事训练与考核大纲) or OMTE. Once the draft of a new outline is provided to each PLA component, it normally takes at least two years to rewrite the regulations and approve the final version. Although the overall OMTE is not available to the public, a review of multiple articles over the years helps provide a general understanding of its content.

It appears that one of the primary reasons that the word “evaluation” was added the document’s title is because the PLA was finally able to actually record everything that was happening and to review it digitally on a screen after the fact. For example, it was not until 1999 that the PLAAF added a Flight Parameter Recording System (飞行参数记录系统), which is usually referred to as “feican” (飞参), into its aircraft.¹¹⁴⁴ This system is discussed in more detail later in this chapter in the section on unit training.

The PLAAF’s first OMTE was issued by the GSD in 1957. The PLAAF’s former Headquarters Department’s Training Department and current Staff Department’s Training Bureau is responsible for issuing the PLAAF’s OMTE, which is described as “the comprehensive plan for air force training.”^{89, 1145} It includes training goals, principles, content, implementation phases and procedures, timing, methods, and quality-control inspection procedures for all PLAAF organizations. The OMTE is actually a collection of separate volumes dealing with different objectives. It includes subsections devoted to the PLAAF’s Table of Organization (organizational structure), occupational specialties, and weapon systems. For example, the PLAAF’s 2001 OMTE that went into effect in April 2002 included 16 volumes and 86 subsections devoted to: headquarters command staff and departments; each of the four branches and five specialty units; logistics; equipment maintenance; and other specialty areas.¹¹⁴⁶ Once a revised OMTE is issued, the PLAAF issues new or revised training regulations that units need to implement the OMTE; all training must adhere to the relevant regulations.

After at least two years of review and testing, the seventh iteration of the OMTE went into effect on 1 January 2009.¹¹⁴⁷ Overall, the 2009 OMTE:

- Expanded the training focus on non-warfare military actions to include non-traditional security issues.
- Increased the proportion of information technology knowledge and simulation training on highly advanced air, naval, and guided missile weapons.
- Standardized the methods and objectives of network training, various types of training that has been consolidated at Bases, and confrontation training.
- Clarified the conditions, methods, and requirements of training under complex electromagnetic conditions, training at night, training under complex weather conditions, and psychological adaptability training.

Although the latest OMTE was issued for review and testing in 2015, the CMC did not approve and publish the first part until 25 January 2018.¹¹⁴⁸ Nonetheless, according to reporting from the PLA’s *Air Force News*, this latest version was in use as a guiding document from 2015, throughout the re-organization, and up through final approval

gq The PLA issued an *Outline of Military Training* (OMT) in 1957, 1978, 1980, 1989, and 1995. Prior to the 1989 version, the GSD issued the OMT for all services and branches/arms. In 1989, the GSD issued the OMT only for the ground forces, while the PLAN, PLAAF, and Second Artillery issued their own OMT. When the GSD issued a revised version for the ground forces in June 2001, it added the word “Evaluation,” so that it is now called the *Outline of Military Training and Evaluation* (OMTE). In April 2002, the PLAAF completed a 2-year revision of its 1995 OMT and issued it as an OMTE.

in 2018 despite not being “officially published.” This is not uncommon, as new policies sometimes take a few years to iron out any kinks before being officially adopted.

This latest OMTE focuses on building an Air Force that “integrates air and space capabilities and coordinates offensive and defensive operations.”¹¹⁴⁹ In November 2017, PLAAF Commander Ding Laihang visited the Air Force Command College, the Air Force Research Academy, and an unidentified main communications station in Beijing. The purpose of his visit was portrayed as surveying and emphasizing the importance of studying the 19th Party Congress’ reports and consolidating the status of CMC Chairman Xi Jinping’s thought on building a strong army as the guiding principles. Ding also emphasized that the construction and development of the PLAAF should be led by building a “strategic air force.” During the meetings, Ding stated:

“The PLAAF is focusing its efforts on studying warfare, studying actual combat and how to use actual-combat training principles, increasing joint exercises and training with foreign countries, and exploring new models of flight instructor training, new training and war readiness mobility drills, training for capability of using the planning command system under the new base-brigade system, regularized training in the open/far seas and plateau regions, and actual-case training.”^{gr, 1150}

The first part of the OMTE focused on increasing combat power by establishing a system of training content and mechanisms that are combat-realistic, joint, scientific, and standardized. At the beginning of 2017, the PLAAF reported the following changes to the previous OMTE to employ new maneuvers, new training subjects, as well as combinations of old and new maneuvers to create unique training subjects:¹¹⁵¹

- In previous editions of the OMTE, pilots were required to strike air targets in front of them only at their backside or from either side of the rear. Now, strikes from any direction were authorized.
- Previously, collecting data that focused on maneuvering was the main concern; now realizing objectives of tactics and combat methods^{gs} is emphasized.
- Previously, pilots were required to fly predetermined routes; now the key is to take whatever means are needed to create conditions that are conducive to shooting down the enemy aircraft.
- Previously, pilots were not allowed to fly with “personal feelings”; now they are required to achieve “human and aircraft becoming one” through “feeling with their body and observing with their eyes” (用身体去感知眼睛去观察) (i.e., rely on and use their instincts).¹¹⁵²
- The new OMTE-guided training focuses on freeing the pilots’ attention from inside the cockpit to outside of the aircraft to prepare for a fight (i.e., to not rely solely on their instruments to gain awareness).
- The new OMTE focuses on improving the pilots’ combat capabilities with “actual combat training,” parting from the dual-constraints of old equipment and old mentalities.
- When deficiencies in training are identified, pilots are assigned an individually-tailored remedial training regimen, which is also identified as supplemental training.
- The new OMTE provides methods for identifying pilots for remedial training.^{gt}

gr The term *yuanhai* (远海) has been translated as open seas and far seas as shown in the following sources: “Open Seas” (远海), *PLA Military Terminology* dictionary, 2nd ed., 2011, 952, and in the official English version of the 2013 *Defense White Paper on China’s Military Strategy* translates this as “open seas”; however, the 2019 *Defense White Paper* translates this as “far seas.” Based on the context of training articles mentioning this, the Chinese meaning usually refers to the training and/or exercises to increase the ability for long-range navigation for operations outside China’s borders.

gs Usually the PLAAF addresses tactics (*zhanshu* / 战术) and combat methods (*zhanfa* / 战法) together as discussed later in this chapter

gt Remedial training can occur for many different reasons such as long periods of time since last flight (53 days or more), deficiencies in training scores, skill improvement, etc.

- The new OMTE has led to a 17 percent increase in the number of sorties, a 46 percent increase in the length of simulated training, and an increase in the proportion of tactical basic training by nearly four times.^{8u}
- Guiding concepts for training have been updated.
- Finally, the OMTE no longer distinguishes between military officers and political work officers, as a unified standard has been established.¹¹⁵³ The implication here is that, in previous versions, separate training regiment were laid out for military officers and political work officers. In the latest version of the OMTE, there is no longer a distinction, so all officers in the military and political tracks will follow a universal standard.

During 2018, the PLA took additional steps from both a policy and training perspective to enhance and supplement the OMTE. The most prominent example of this came on 1 January 2019 when the second part of the OMTE was released after rigorous trials and demonstration. The second part of the outline reportedly includes more than 900 programs; however, no information is available. With the second part of the outline in effect, the building of the main body of the outline is basically complete.

Given previous patterns (1955, 1957, 1978, 1980, 1989, 1995, 2002, 2009, and 2018) a new OMTE will most likely be put out for testing around 2024-2025 and be approved in 2026-2028. Prospects for the next OMTE are discussed in Chapter 8.

Training Guidance Concepts

Under the name of the PLAAF Party Committee, the PLAAF occasionally issues two other types of Air Force-specific training guidance: “training guiding thought” (训练指导思想) and “training basic principles” (训练基本原则).¹¹⁵⁴

According to the PLAAF’s *Science of Air Force Training*, the PLAAF’s “training guiding thought” determines the overall direction for Air Force training, such as the current emphasis on “confrontation training,” and “training basic principles” provide specific standards for the conduct of PLAAF training, such as “training according to regulations.”

Neither of these types of guidance appear to have a direct USAF counterpart. For example, the USAF’s 100-page *Air Force Basic Doctrine* (AFDD-1) provides a fairly detailed explanation of the principles of war and the tenets of air and space power.¹¹⁵⁵ In comparison, the PLAAF’s “training guiding thought” and “training basic principles” are merely short statements consisting of several characters to provide a general guide to training. The PLAAF may have documents that provide further explanation of each type of guidance, but they are not available to the public.

What is PLAAF “actual combat”?

Based on a review of how the PLAAF uses the term “actual combat” for its aviation troops, it appears to include:

- Conducting unscripted training
- Conducting confrontation training
- Training in a complex electromagnetic environment
- Flying in all-weather conditions
- Flying at night
- Flying over water
- Covering long distances to attack or defend
- Flying on continuous days
- Training in unfamiliar airspace and at alternate airfields
- Conducting dissimilar aircraft training
- Allowing pilots to take the initiative during intercept training.

PLAAF Training Guiding Thought

PLAAF “training guiding thought” uses short statements meant to guide the overall direction of Air Force training.¹¹⁵⁶ Since 1958, the PLAAF has issued new training guiding thought about once every ten years. For example, the training guidance that was revised in 2001 concluded that the PLAAF’s training activities were not developing the operational capabilities required for anticipated future missions. The PLAAF apparently issued a revised version in the mid-2010s, but no specific information was found about its content.¹¹⁵⁷ Over a 60-year period, there does not

^{8u} Exact numbers for number of sorties and length of training from the previous OMTE are not available; however, these reported numbers illustrate the shift in focus and importance on training.

appear to be a direct link between when the “training guiding thought” and the OMTE have been published. Specific drivers of the 2001 training guidance revision included the perceived needs to:¹¹⁵⁸

- Adapt to the revolution in military affairs (RMA).
- Prepare for anti-“Taiwan independence” battles.
- Integrate advanced equipment into the PLAAF.
- Counter an excessive focus on safety during training.

In late 2001, the PLAAF Party Committee issued the latest version of training guiding thought, which emphasizes that confrontation training should closely approximate actual combat.¹¹⁵⁹ The four components of this version are discussed below.

Closely adhere to actual combat (贴近实战). The PLAAF describes this concept as training the way you would fight (练为战).¹¹⁶⁰ For example, a 2009 *PLA Daily* article cited “closely adhere to actual combat” as one of the keys to training in the Jinan MRAF, where the visibility was poor, the clouds were thick, and four-ship formations were conducting aerial combat in a jamming environment.¹¹⁶¹ Following changes to the OMTE in 2002 and the new training guidelines, it appears that, by the mid-2000s, the PLAAF had clearly accepted greater safety risks than before.¹¹⁶² In particular, *Science of Air Force Training* states that the previous military training guiding thought that emphasized “guaranteeing safety” is unsuited to the requirements of military training for future operational missions.¹¹⁶³ In some cases, the PLAAF has had to take greater risks to meet the higher training requirements.¹¹⁶⁴ For example, one article reported that during a 2002 exercise, weather conditions were deteriorating rapidly, but the Nanjing MRAF Party Committee agreed to continue training as if it were an actual-combat situation. The article also noted, “because operating in a complex electromagnetic environment (CEME) adversely affects flight safety, the MRAF has long had misgivings about conducting some exercises in a CEME.”¹¹⁶⁵ The implication of the article was that, in at least one MRAF, training in an actual-combat environment had taken precedence over some safety issues.

Stress confrontation training (突出对抗). The PLA defines confrontation training (对抗训练) as “training by two or more units or personnel interacting as opponents.”¹¹⁶⁶ Based on analysis of multiple PLA and PLAAF newspaper articles, PLAAF confrontation training includes similar and dissimilar aircraft training within the same unit or between different units, PLAAF aircraft versus PLAAF and Army air defense (surface-to-air missile and anti-aircraft artillery) units, and PLAAF aircraft versus Naval Aviation aircraft of Navy vessels.¹¹⁶⁷

Exercise strict discipline (从难从严). According to a 2002 *Air Force News* article, the two terms together mean to continually increase the difficulty of training under complicated conditions and to conduct strict management of personnel and equipment and to conduct training according to regulations.¹¹⁶⁸ The PLAAF often uses this concept to exhort its personnel to work hard at all times. The 2002 article noted that PLAAF HQ organized specialists to conduct quality control and evaluations of pilots training at units with new aircraft, and to report on their adherence to the new training guidelines. In addition, PLAAF units reportedly developed better methods for inspections to evaluate flight training and aircraft maintenance quality and discipline. For example, in 2005, an inspection team at a Chengdu MRAF air division placed and monitored live video cameras throughout the airfield for several days to observe how the unit was supporting flight operations. The inspection discovered chaotic and unacceptable behavior due to a lack of discipline, even though everyone understood the regulations and procedures.¹¹⁶⁹

Improve training through science and technology (科技兴训).¹¹⁷⁰ According to a 2002 *Air Force News* article, this concept has three main components:

- The first component, literally translated as “consolidate training on a base” (基地化训练), means to combine multiple types of training at a single base, to involve everyone at the base in every training event, and to treat all training as actual combat.¹¹⁷¹ For example, during the early 2000s, a Nanjing MRAF radar regiment received

new types of radar equipment. In order to successfully integrate all of the new equipment, the regiment built a training facility, collected hundreds of volumes of technical materials, invited guest speakers to provide training, and wrote new training plans. In early 2004, the regiment successfully conducted its first major actual-combat training event using the new equipment that involved all the unit's personnel.¹¹⁷²

- The second component is best translated as “simulated training” (模拟化训练). The goal of such training is to identify and solve problems before reaching the real training situation.¹¹⁷³ This includes pilot training in a simulator. A 2002 *Air Force News* article stated that the PLAAF was placing greater emphasis on training in a simulator. According to the article, all transition training into a new aircraft must include a certain number of hours in a simulator and a test of pilot qualifications before they are allowed to fly in the new aircraft. Flight simulators were to cover all variants and types of PLAAF aircraft in order for the training level to transition from technical training to tactical simulation.¹¹⁷⁴
- The third component, best translated as “employ computer networks for training” (网络化训练), refers to expanding combat command training using computer network systems.¹¹⁷⁵

PLAAF Training Basic Principles

The PLAAF's training basic principles consist of specific requirements that guide military training and give formulas for organizing and carrying out training.¹¹⁷⁶ The most recent principles available, which are from 2010, included:¹¹⁷⁷

- Establishing the principle of improving combat capabilities as the goal (以战斗力为目的原则) for anticipating operational tasks under conditions approximating “actual combat.”
- Using theory as a guide (理论先导原则) for operating and maintaining advanced weapons and equipment.
- Emphasizing confrontation training (注重对抗训练).
- Emphasizing results (注重效益原则) while minimizing the time and material resources used to achieve those results.
- Training according to regulations (依法治训原则).

Training and Education System

The PLAAF combines education and training into a single system at an academic institution. They then receive their unit training step-by-step after they are assigned to their operational unit.¹¹⁷⁸

Responsibilities for guidance and management of the training and education system start at PLAAF HQ and stop at the regiment level.¹¹⁷⁹ The PLAAF's Party Committee is responsible for providing overall training guidance in terms of goals and objectives. The former Headquarters' Department's Military Training Department and current Staff Department's Training Bureau is the highest organization responsible for organizing and managing the PLAAF's overall education and training system to meet those objectives.¹¹⁸⁰ Meanwhile, the Political / Political Work Department, Logistics Department, and Equipment Department are responsible for implementing guidance from the Training Department/Bureau for their respective areas. The PLAAF training and education system has been organized into five tiers, which have changed since the late 1990s and is discussed in more detail in Chapter 3:¹¹⁸¹

- PLAAF HQ
- MRAF / TCAF HQ
- Corps, Bases, Command Posts, and some academic institutions
- Aviation, SAM, AAA, and airborne divisions and/or brigades, training bases, and some academic institutions
- Regiments for all branches and specialty units.

Training Cycle and Progression

Key Points

- PLAAF training is shaped by a PLA-wide dynamic known as the annual training cycle, which is driven by the PLA's conscription of hundreds of thousands of enlisted troops each year.
- In order to meet the annual requirements of the OMTE, each unit includes seven levels of training for its personnel individually and for the unit as a whole. This appears to be a step-by-step process for individuals and for the unit as a whole. Most likely, newer personnel probably only have to complete their common training and theoretical training once, while the unit as a whole has a progression for its tactical, combined-arms, campaign, and strategic training as the annual training cycle progresses.

As is the case with most militaries, training in the PLAAF takes place on a continuum that starts with individual performance and progresses through complex and long unit-wide events.¹¹⁸² This progression is closely linked with the PLA's and PLAAF's annual training cycle, which is shaped by the PLA's mobilization and demobilization of hundreds of thousands of conscripts each year. This section first reviews the PLAAF's training cycle, and then discusses the typical progression of training within the PLAAF. A third section briefly reviews the types of campaigns the PLAAF is expected to conduct with respect to how they shape training priorities; the evolution of these campaigns is discussed in greater detail in Chapter 2.

Annual Training Cycle

The PLAAF's annual training cycle typically features five partially overlapping segments during the course of a year: 1) new year flight training; 2) training in "subjects" and "topics"; 3) peak drills and exercises; 4) a second round of training in "subjects" and "topics"; and 5) year-end evaluations.¹¹⁸³ Although variations exist in other services within the PLA, most follow this general pattern of training.

Several factors explain the existence of an annual training cycle for PLA aerospace forces. The first is institutional. PLAAF training, for example, must accommodate the annual enlistment/conscription cycle of PLAAF conscripts and recruits.^{gv} As noted in Chapter 4, in recent years, the PLA has been moving from an enlisted force that is primarily fed by conscription to one that is made up of both volunteers and conscripts.

New enlisted personnel serve for two years and perform many of the lower skill level tasks that are necessary to keep the military functioning. To some degree, the two-year enlisted cycle is an audition or probationary period for many of the best new enlisted soldiers, who are evaluated to determine their suitability or willingness to become an NCO. In addition, some enlisted personnel are directly recruited as a noncommissioned officer (NCO) at different levels based on their education and specialty. NCOs make up a large proportion of PLAAF Aviation Branch enlisted personnel in maintenance and other ground-support positions, while two-year enlisted personnel constitute a large proportion of enlisted personnel within the Ground Air Defense, Airborne, and Radar Branches/Arms.

In order to recruit civilian college and university students and graduates, in 2013 the PLA moved the entire recruitment/conscription process forward three months, which is now called the summer / fall conscription/recruitment cycle instead of the winter conscription/recruitment cycle. In 2015, the PLAAF increased its basic training from about seven weeks to three months. Also, prior to 2015, all new enlisted personnel either went to a training base, where they received basic training and then their specialty training, or directly to their operational base, where they were assigned to a "new soldier company" and, depending on the number of new personnel, into "new soldier battalions," each of which has at least three companies. The personnel in charge of conducting their training included some NCOs and junior officers. In late 2015, the PLAAF's Headquarters Department (now Staff

^{gv} The PLA both recruits and conscripts new two-year enlisted personnel; however, they are all officially called conscripts (义务兵).

Department) created its first new soldier training brigade that was then implemented across the PLAAF. Also in 2015, the PLAAF began consolidating the training that was conducted in individual units into numerous “new soldier brigades” each of which has about 1,000 new enlistees. Upon completion of their basic training in mid-December, they are then sent to their operational unit, where they are assigned to their permanent billet and receive on-the-job training. The PLAAF still has various new soldier training bases as well. The shift to a two cycle per year program in 2020 is discussed in Chapter 8.

Although conscripts and recruits currently account for a small and decreasing percentage of total personnel in the Aviation Branch (approximately 30 percent today), running large, integrated combined-arms exercises with other branches that have a higher percentage of conscripts may be difficult until their proficiency is raised to a certain standard. In addition to the new enlisted personnel arriving in the summer / fall, all new officers who have just graduated from pilot training or any other PLAAF academic institution around 1 July arrive just a month or two before peak exercise season at the end of summer.

Another driver is the need to accommodate different types of coordinated evaluations and major exercises conducted throughout the year to test the ability of officers and enlisted personnel to perform under standardized criteria. Due to the size and scale of these exercises and evaluations, as well as weather considerations in some areas, they can be carried out only during certain times of the year.

Although this has been the PLA’s model for several decades, as noted in Chapter 8, the PLA as a whole has begun to shift to recruiting/conscripting enlisted personnel twice a year instead of just once, but the overall training cycle will still most likely continue to have its ups and downs based on the new cycles.

Training Progression in the PLAAF

The PLAAF divides the training progression of its personnel and units into seven levels in order for units to meet their OMTE requirements, each of which is discussed below.¹¹⁸⁴

1. Common training (共同训练)
2. Theoretical training (理论训练)
3. Techniques (aka skills) training (技术训练)
4. Tactical flight training (战术训练)
5. Combined-arms tactical training (合同战术训练)
6. Campaign training (战役训练)
7. Strategic training (战略训练).

Common Training

PLAAF common training focuses on “transforming civilians into military personnel.”¹¹⁸⁵ Common training is generally carried out during the phases of enlisted basic training and officer basic-level training. The objective of PLAAF common training is to instill a sense of responsibility and discipline, inculcate common military knowledge and skills, strengthen physical stamina, and raise personnel’s “psychological quality,” thus creating a good foundation for carrying out later skills and tactical training.

Theoretical/Theory Training

The PLAAF’s education and training system focuses considerably on what it calls theoretical training or theory training, which basically means increasing one’s knowledge about the functions of technology, equipment, military skills, and tactical movements.¹¹⁸⁶ All personnel, ranging from new conscripts in units to senior officers in

the Command College, receive some type of theoretical training. For example, in the Aviation Branch, the PLAAF divides its theoretical training for aircrew members into aviation theory and combat theory. Aviation theory is the general designation for many concepts related to aviation technology and equipment and flight skills.¹¹⁸⁷ Its objectives are to give personnel an understanding of the basic theories of military technology, as well as the basic structural principles and applied knowledge of aviation technology and equipment. It also provides a theoretical foundation for accurately operating aircraft, analyzing flight skills, using tactics, and dealing with special situations while in flight. Combat theory refers to knowledge of the laws of combat and the characteristics of air battles, as well as the principles and methods for carrying them out.¹¹⁸⁸

Techniques/Skills Training

The PLA defines techniques/skills training as training to enable personnel to master professional skills such as equipment operation, management, and maintenance.¹¹⁸⁹ According to the *China Air Force Encyclopedia*, flight techniques consist of the following components: takeoff, climb, glide, descent, landing, horizontal, altitudes (extreme-low, low, high, ultra-high, and stratosphere), ceiling, transonic, supersonic, hypersonic, poor visibility, over-the-top, flying in clouds, flying below clouds, VFR, IFR, all weather, cruising, battle flights, attack flight, bombing flight, reconnaissance, training flight, instructional flight, solo flight, test flight, instrument flight, penetration along fixed direction, penetration along arbitrary direction, formation flight, aerobatic flight, steep climbing turn, zoom, turns, roll, splits, Immelmann, dive, steep glide turn, inverted flight, flip, maneuvering, post-stall maneuver, asymmetric flight, single engine, and terrain following flight.¹¹⁹⁰ More details are provided in the Aviation Branch Unit Training section below.

Tactical/Tactics Training

Tactical/tactics training involves individual, element (battalion and below), and unit (regiment and above) training.¹¹⁹¹ This type of training is based on preparing for future operational tasks and simulating what the PLAAF calls “actual combat” conditions. The objective of tactical training is to integrate the lessons of earlier common training and skills training and apply them to tactical situations.

Tactical training has two components: foundational training and applied training. Brigades and regiments organize and implement what the PLA calls “tactical foundational training” (战术基础训练). It is designed to provide knowledge and teach basic maneuvers to individual personnel under simple tactical conditions.¹¹⁹² After units complete foundational training, they transition to applied training, which encompasses comprehensive maneuvers in “actual combat” situations that simulate expected future operational tasks.¹¹⁹³ Applied training focuses on the entire unit, to include the Commander, political officer, staff officers, operators, and logistics and maintenance support personnel. Applied training is generally carried out in the following phases:

- Plan formulation: Organizers determine which units will participate, which subjects will be addressed, and which training objectives will be fulfilled.
- Combat methods research: Ad hoc groups conduct classroom study of tactical theory.
- “Separated training”: Individual training or training by a group of individuals with the same specialty.
- “Combined training”: Unit training that focuses on perfecting single-level command procedures, which include both scripted and unscripted confrontation training.
- Exercises: Confrontation training, involving multiple command echelons.
- Summary evaluation: Upon completion of a tactical exercise, the Commander and political officer carry out a summary evaluation.

Once applied training has been completed, PLAAF units transition to combined-arms training involving two or more branches, such as aviation and SAM units. This training is conducted under “actual-combat” conditions designed to improve the combined-arms capabilities of all PLAAF branches and types of weapon systems.¹¹⁹⁴

PLAAF combined-arms tactical training is organized at the MRAF / TCAF HQ or PLAAF HQ. This training can also be carried out in what the PLAAF calls “combined-arms tactical training coordination zones” (合同战术训练协作区), where aviation, SAM, AAA, and radar units can train together.¹¹⁹⁵

Combined-Arms Tactical Training

According to *Science of Air Force Training*, PLAAF combined-arms tactical training refers to training carried out by more than one PLAAF branch/arm under near-actual-combat conditions.¹¹⁹⁶ This training focuses on training for command personnel for all of the branches.

Campaign Training

The objective of campaign training is to enhance the ability of campaign Commanders and their staff in MR and MRAF headquarters to command and execute campaigns.¹¹⁹⁷ The training focuses on operational plans and emphasizes the ability to implement strategy, command, coordination, and support during joint campaign missions.

Strategic Training

Strategic training is similar to campaign training, but it occurs at the national level, including the CMC, former General Staff Department and current CMC Joint Staff Department, and service headquarters.¹¹⁹⁸ PLAAF strategic training is currently organized by the CMC’s Joint Staff Department and Training Management Department (former General Staff Department), the PLAAF HQ, and the PLAAF Command College. PLAAF strategic training focuses on implementing strategic theory, decision-making, leadership, and command. It can be conducted during a field training exercise or a command post exercise.

Aviation Branch Training for New Pilot Cadets

Key Points

- Organizational changes to PLAAF pilot training institutions since 2011 represent the most significant reforms of the PLAAF’s pilot system in decades.
- The PLAAF has been gradually adjusting its pilot training pipeline, with the ultimate goal of reducing the total time it takes for a new cadet to become a seasoned pilot from ten years to only seven years.

This section discusses the PLAAF’s education and training for cadets at the Air Force Aviation University (AUAF), their follow-up flight training as a student at one of the PLAAF’s three flight academies, and their transition training at their operational unit.¹¹⁹⁹ It first provides a brief overview of the five periods of the pilot education and training system since 1949. It then discusses the training system from 2004 to around 2012 and the changes to the flight academy organizational structure that began in 2011. The section then discusses the reforms that have occurred starting in 2011, including the ongoing shift from what the PLAAF calls the “Three Levels and Five Phases” training program to the “Four Phase” system.

Together, these organizational changes to PLAAF pilot training institutions represent the most significant reforms of the PLAAF’s pilot system in decades. As a result of these changes, the PLAAF has been gradually adjusting its pilot training pipeline, with the ultimate goal of reducing the total time it takes for a new cadet to become a

seasoned pilot from ten years to only seven years. The subsection concludes by discussing the instructor-to-student ratio and pilot cadet and student grounding rate, as well as the post-assignment promotion path and professional military education for PLAAF pilots. The PLAAF's Dual-Enrollment Program (DEP / 双学籍) and the Teenagers Aviation Schools of the Air Force (TASAF) are discussed in Chapter 5.

The Five Periods of Pilot Education and Training since 1949

The PLAAF pilot education and training system has progressed through a number of modifications since 1949. In general, the PLAAF separates its pilot education and training history into the following five periods (阶段):¹²⁰⁰

- Period 1: 1949-1958, which included the “two levels” (二级) of flight schools and aviation units.
- Period 2: 1958-1967, which included the “three levels” of flight schools, training bases, and aviation units.
- Period 3: 1967-1986, which included the “two levels” of flight schools and aviation units.
- Period 4: 1986-2004, which included “three levels and five phases” (三级, 五阶段). The “three levels” were: (1) education and training at aviation academic institutions, after which cadets received a bachelor's degree, (2) one year of transition training at a transition training base, and (3) training at an operational unit in the unit's aircraft. The “five phases” included (1) basic education, (2) 110 hours of flight training in a basic trainer, (3) advanced trainer training, (4) combat aircraft transition training, and (5) combat application training.
- Period 5: 2004-present, which has been identified as both the “three levels” system, including (1) bachelor's degree education, (2) basic professional education, and (3) continuing education, and the “four levels” (四级) system, including (1) academic education, (2) professional education, (3) combat aircraft transition training, and (4) combat application training.

Understanding the general evolution of the PLAAF's pilot and education training system, particularly its progression since the early 2000s, is important when assessing the system as it stands today.

Pilot Cadet Education and Training System, 2004-2012

When the PLAAF created the AUAF in 2004, it continued what it called the “Three Levels and Five Phases” training program, but several adjustments were made, including introducing two new training programs, known as the “2.5 + 1.5” model and the “4+1” model.

As explained above, the “Three Levels and Five Phases” training program referred to the training pipeline for high school graduate and outstanding enlisted aviation cadets.¹²⁰¹ The three levels included: (1) education and training at aviation academic institutions, after which cadets received a bachelor's degree, (2) one year of transition training at a transition training base, and (3) training at an operational unit in the unit's aircraft. The five phases included: (1) basic education, (2) 110 hours of flight training in a basic trainer, (3) advanced trainer training, (4) combat aircraft transition training, and (5) combat application training.

The “2.5+1.5” model referred to receiving 30 months (two and a half years, or the “2.5” component) of basic education and aviation theory at the AUAF.¹²⁰² Some cadets also received six months of follow-on training in a basic trainer (CJ-6) at the university's Flight Basic Training Base. During those six months—much of which occurred on sod runways—cadets conducted cockpit familiarization and simulator training as well as takeoffs, landings, navigation, aerobatics, and instrument flying before and after they flew their first solo. At the end of 30 months, pilots were assigned to one of the existing flight academies for 18 months (one and a half years, or the “1.5” component), where they spent the first half in a basic trainer regiment and then shifted to an advanced trainer regiment. Although not stated, the cadets were most likely assigned to a fighter, attack, bomber or transport flight academy based on their academic rating. The percentage of cadets assigned for each aircraft was also most likely based on the percentage of each aircraft in the overall PLAAF order of battle.

Once cadets moved to a basic trainer regiment and then to an advanced trainer regiment in one of the flight academies, fighter and attack aircraft cadets conducted the same type of skills training as in the CJ-6. After conducting their first solo, they flew two-ship formations, barrel rolls, diving, loops, Immelmans, and high- and low-altitude flights plus flying at night and in inclement weather. Of note, even after they flew their first solo, instructors continued to fly with the cadets. Fighter and attack aircraft cadets only recently began conducting any type of tactics training in the K-8 trainer, such as four-ship formations and dropping bombs and firing guns at ground targets. Bomber cadets conducted training in night optical bombing, radar bombing, and deploying to other airfields.

During the 18 months of flight training under this model, cadets flew approximately 200 to 220 hours. Cadets were allowed to fly multiple sorties per day for a maximum of five hours. Inclement weather affects how often the cadets can fly.

In 2004, the PLAAF introduced a “4+1” test program, which was officially implemented in 2009 and initially overlapped the “2.5+1.5” program. The “4+1” program refers to increasing the basic education to three and one-half years plus six months of basic trainer (CJ-6) education and training at the AUAF (a total of four years), which is followed by one year of intermediate (K-8) and advanced flight training at one of the PLAAF’s flight academies.

As discussed in Chapter 5, in 2011, the PLAAF instituted a program to provide some cadets with the first three years of education at three PLAAF National Defense Student programs in three Beijing universities. It is not clear what their requirements are after returning to the AUAF for their fourth year, but they most likely receive their basic flight training (CJ-6) along with parachute and survival training. They are most likely separated from the high school graduate cadets during this period. In addition, on completing their final year at the AUAF, they receive the rank of first lieutenant and the grade of company leader (正连职) before transitioning to one of the three flight academies.¹²⁰³

Reforms of the Pilot Cadet Education and Training System in 2012

Following the merging of the six flight academies into three in 2011, the PLAAF implemented a new “four-phase” system, which is called the “4+1+1 model” and the “4+1 model,” where each number refers to the number of years it takes to complete the program.¹²⁰⁴ The “four phases” are: academic education (学历教育), professional education (任职教育), combat aircraft transition training (作战飞机改装训练), and combat application training (作战应用训练). (Note: Even though the model has been identified as 4+1+1 and 4+1, since 2012 the second phase can last from one to two years depending on the type of unit and aircraft.)

Of particular note, historically, it has taken new pilots a total of ten years, including basic education, flight academy training, transition training, and unit training, to become an experienced pilot with the ability to independently carry out every type of combat mission. The goal of implementing the revised four-phase education and training cycle is to cut the total time down to seven years, so that new pilots are better prepared once they enter their operational aircraft.¹²⁰⁵ The four phases are discussed in more detail as follows:

Phase 1: Academic Education

Phase 1 is organized into two categories. The first category, which is organized separately into education and training, includes male and female high school graduates and outstanding male enlisted personnel. The second category includes male cadets who spend their first three years in one of the PLAAF's Dual-Enrollment Programs discussed earlier and their fourth year at the AUAF. Upon graduation from the university, the National Defense students receive two bachelor's degrees (双学位)—one from the Dual-Enrollment Program university and one from AUAF—and then begin their flight training at one of the three flight academies. There is little information concerning the Dual-Enrollment students; however, it appears that they are separated from the high school graduate cadets once they return to the AUAF for their final year and, most likely, during their flight training at one of the flight academies.

Education and training for the first category consist of academic education and basic flight training, which all male and female aviation cadets receive for four years at the AUAF. The goal is to have “high school graduates transition to military cadets, who then transition to pilot cadets.” The first three and one-half years of education and training is divided into two types. The first type includes basic training, drill training, small arms training, chemical defense training, and physical training. Cadets also receive parachute training and survival training during their first year. The second type consists of political education, cultural education, military theory, and, most important, aviation basic theory. Cultural education includes physics, English, computer programming, and cultural knowledge. Aviation theory and military theory education includes aerodynamics, aircraft flight mechanics, airborne navigation, air force-related weather issues, aircraft structure and systems, aircraft power plants, aircraft instruments, electronics, communications, and navigation instruments, flight rules, flight training psychology, flight safety, and aviation electronic countermeasures.

The last six months includes 70 flight hours in the CJ-6 basic trainer at the university's Flight Basic Training Base. It is not clear when the decision is made for certain cadets to transition from the pilot cadet track to crew member cadet track to become navigators, communicators, aircrew mechanics, or gunners on transports or bombers. Any cadets who wash out for either physical or technical reasons are offered the opportunity to transition to one of the PLAAF's other academic institutions. During this phase, cadets receive special treatment compared to other academic institution cadets, including aviation specialty billet allowance (航空飞行专业岗位津贴), aircrew meal (空勤伙食), and special equipment (特种装具).¹²⁰⁶ The graduates from category one receive a bachelor's degree in engineering.¹²⁰⁷ Upon graduation, cadets from both categories are assigned the grade of company deputy leader (副连职) with the rank of first lieutenant before transitioning to one of the three flight academies.

Phase 2: Professional Education

Since 2012, Phase 2 takes place for one to two years at one of the PLAAF's three flight academies and is organized based on the final operational aircraft the new pilots will fly—fighter, ground attack, multirole, bomber, transport, or helicopter. (Note: They are still called *xueyuan* (学员), but the translation for this phase is “student” versus “cadet.”)

After the students arrive at the flight college, they spend two to three months receiving transition aviation theory education before they begin their flight technique training in intermediate and advanced trainers. Flight technique training, which is normally the last step and the most important, is divided into the following three phases: (1) ground-based training, including sitting in a cockpit and simulator training; (2) flying with a flight instructor, and (3) solo flight training. Each phase is implemented according to the flight training subjects (飞行课目) and quality requirements within the necessary *Outline of Military Training and Evaluation* (OMTE / 军事训练与考核大纲). In order to move to the next phase, the students must pass the necessary examination(s). Flight training subjects

normally consist of the following components: takeoff and landing routes, airspace, instruments, formation flying, simple aerobatics, and navigation.

Each student averages 150 to 200 flight hours (飞行小时). The hours are organized as shown below:

- Fighter, multirole aircraft, and fighter-bomber aircraft pilots fly 150 hours in a K-8 intermediate trainer, which is broken down into 112.3 hours with a flight instructor (74.9 percent) and 37.7 solo hours (25.1 percent); and 103 hours in a JJ-7 advanced trainer. (Note: Prior to the 2011 restructuring, the K-8 was identified as an advanced trainer.) The PLAAF's goal is to incorporate the L-15 trainer into this phase. It appears that the PLAAF incorporated the Hongdu JL-10, aka L-15, advanced two-seat combat trainer into the Phase 2 program in 2018 at the Shijiazhuang Flight Academy.¹²⁰⁸ The first batch of Air Force pilot cadets flying JL-10 jet trainers graduated in July 2020.¹²⁰⁹
- Ground attack pilots fly 150 hours in a K-8 and 103 hours in a Q-5 trainer.
- Bomber and transport pilots fly 140 hours in a Y-7 trainer. In April 2015, the PLAAF assigned H-6 bombers to the Harbin Flight Academy for the first time since they were removed in 2007, which indicates that bomber pilot students will begin training in the bombers as well as in the Y-7.¹²¹⁰
- Bomber and transport navigation crew members spend one year receiving theory education and training, after which they then train with bomber and transport pilots in a Y-7 trainer.
- Helicopter pilots receive training in a Z-9 helicopter.

Upon completion of the program, each pilot receives a bachelor's degree in military science and is called a "double bachelor's" (双学位) officer, which some reports have equated to as having a master's degree. It is not clear if pilots who were part of the Dual-Enrollment Program and received a bachelor's degree after their first three years and a second bachelor's degree upon graduation from AUAF receive a third bachelor's degree after graduating from one of the flight academies.

Phase 3: Combat Aircraft Transition Training

During Phase 3 the new graduates are deployed to their operational unit, where they are assigned to a transition training flight group and receive combat aircraft transition training in an advanced trainer for six months. They are no longer called students.

During this phase, the pilots receive flight technique training, "four-weather" training (e.g., day and night under different weather conditions), instrument flight regulations (IFR) and visual flight regulations (VFR), instruction in combat basic training subjects, special situation training, and campaign and tactics flight training.

In addition, some pilots are selected for training as a rear seat weapons control officer (后舱武器控制军官), where they receive five months of theory education and training, which is followed by transitioning into the unit's aircraft.^{gw} Of note, the PLAAF did not begin specialty training for rear seat weapons control officers in two-seat multirole aircraft (JH-7) at operational units until early 2011.¹²¹¹ Training for the first group lasted for three months. Previously, and in many cases today, pilots merely switch between the front and rear seats without specialty training as a rear seat weapons control officer. It is not clear how far this program has progressed, but it appears that not all aircraft have designated rear seat weapons control officers who do not also fly the aircraft, and that some pilots who have not received dedicated rear seat weapons control officer training still shift between the front and back seats.

^{gw} Although the USAF uses the terms weapon systems officer (WSO) and combat systems officer (CSO), the PLAAF does not use either term.

Phase 4: Combat Application Training

Phase 4 occurs in the transition training flight group and consists of combat application training, which takes an additional six months. This phase includes basic tactics, tactics application, combined-arms combat, and joint combat training in the unit's operational aircraft. Upon completion of this phase, the pilots are assigned to their permanent flight squadrons, where they finally transition into their operational aircraft.

Once they complete this phase, they are then allowed to become part of the unit's combat Table of Organization (战斗序列) and begin to train for the unit's missions.

Different Programs for PLAAF Pilot Cadets

The PLAAF has different education and training programs for high school graduates, college students, and college graduates. Until 2013, new high school graduate cadets were selected from candidates whose test scores qualified them for either level 1 or level 2 schools.¹²¹² This indicates that the PLAAF was not necessarily recruiting the most highly qualified personnel to become pilot cadets. However, for the new class that began in 2013, all new cadets must meet level-1 requirements.¹²¹³

There is a lack of information regarding exactly how the PLAAF managed programs for PLA college graduates and civilian college students and graduates before those programs were abolished in 2014. However, it appears that, prior to the recent organizational reforms, they received 24 to 28 months of basic aviation theory as well as basic and advanced trainer training at one of the flight academies. Upon graduation, they received a bachelor's degree in military science followed by one year of transition training before being assigned to their permanent unit. It does not appear that cadets who already had a bachelor's degree were intermingled with the high school graduate and civilian college student aviation cadets during their training.

Female Pilot Cadets

In March 2012, the PLAAF celebrated the 60th anniversary of the first female pilots joining an operational unit, thus becoming one of 16 countries with female air force pilots at that time.¹²¹⁴ Through 2012, about 200 graduates had been assigned to the 13th Air Transport Division in the Guangzhou MRAF and 100 to the 34th Air Transport Division in Beijing. Although female aviators' numbers have been small, their role has expanded since the late 2000s. For example, female aviators have served as the Commander of the 4th Transport Air Division in the Chengdu MRAF, as an astronaut aboard the Shenzhou-9 space capsule, flying J-10 and JH-7 combat aircraft, and a member of the PLAAF's Bayi Aerobatics Team, which has now performed at the Zhuhai Air Show and in Malaysia. To date, nine groups of female aviators, including pilots, navigators, and communicators, have entered the force. The tenth group began its education and training in 2013, graduated from the AUAF in 2017, and completed flight training in 2019 before being assigned to its operational units. The eleventh group of 35 cadets began their education and training in 2017, and the twelfth group of 40 cadets began their education and training in 2019.¹²¹⁵ For the first ten groups, altogether 240 female pilots, 93 navigators, and 50 communicators graduated from AUAF. The PLAAF ceased training communicators starting with the fifth group (1981-1984) and with navigators starting with the seventh group (1997-2001). Since the PLAAF began training female pilots, their grounding rate has averaged about 50 percent.¹²¹⁶

Historically, female aviators have been separated from their male counterparts throughout their cadet education and training, as well as in their operational units. The majority have been assigned to all-female crews in a single flight group in the 13th (Transport) Air Division's 38th Regiment, where they conduct charter flights, disaster relief, and research-oriented trial flights, as well as reforestation and cloud seeding. However, this pattern began slowly

changing since 2000, including mixed IL-76 crews, one transport Division Commander, and a new group of J-10 pilots, JH-7 rear seat weapons control officers, and MI-17 helicopter pilots.^{gx}

Although female pilots are now flying J-10s and JH-7s, it is not clear if they are flying in mixed crews. Based on photos in multiple PLA publications, however, it does not appear that there are any mixed squadrons. Several photos were found of female pilots with male flight instructors. For example, a photo in November 2012 shows four male pilots and one female pilot standing in front of several two-seat J-10 trainers.¹²¹⁷ As noted earlier, no information was found to indicate the PLAAF has any female flight instructors.

The female cadets from the first group (April–November 1951) through the seventh group (1997–2001) were not integrated with male cadets at any time during their education and training. In contrast, the eighth group (2005–2009), which was designated as the first group of fighter pilots, was separated from its male counterparts during its 30 months of basic education at the AUAF, but was then integrated with male cadets during the 18 months of intermediate and advanced fighter training held in the relevant flight academies. This group of 16 graduates also flew over Tiananmen Square to celebrate the PRC’s 60th anniversary in October 2009.

Similarly, the 16 graduating members of the ninth group (2008–2013) were integrated with their male counterparts after they graduated from the AUAF and began their flight training at a flight college. In July 2015, they completed their two years of transition training at one of the three flight academies and began their transition training in JH-7s at an operational unit.¹²¹⁸ Like their male counterparts, they were part of the “4+1” program and received two bachelor’s degrees.¹²¹⁹ In addition, like their male counterparts, upon completing their final year at the AUAF, they received the rank of first lieutenant (中尉) and the grade of company deputy leader (副连职) before transitioning to one of the three flight academies.¹²²⁰

Finally, the 40 female cadets in the 10th group (2013–2018) were not only recruited along with their male counterparts, but they became the first group to be fully integrated with them at the AUAF.¹²²¹ The 11th group, which consisted of 35 cadets, began their education at AUAF in 2017, and the 12th group, which consisted of 40 cadets, began their education in 2019.

Pilot Grounding Rate at Aviation University and Flight Academies

Overall, the PLAAF has not published information about the grounding (停飞) rate for its male pilot cadets at the Aviation University and flight academies;¹²²² however, it has published a few data points that help enlighten the situation.¹²²³ One of the problems in analyzing the available data is determining the timeframe involved—specifically, whether the grounding rate covers the full time from when cadets begin their education and training at the Aviation University and training at a flight academy until they are assigned to their operational aircraft, or whether it covers only particular periods within the overall timeframe. This is even more complicated since the PLAAF began changing its education and training model with the creation of the Air Force Aviation University in 2004. Some of the key data points are discussed below.

According to a 2014 *China Military Online* article, more than 60 percent of the new cadets at the Air Force Aviation University are eliminated before they even make their first flight.¹²²⁴ From the day pilot cadets arrive, they are faced with a relentless elimination system that lasts through every phase of the university’s four-year process. For example, 80 out of 402 sophomore trainees (about 20 percent) were suspended during the screening in July 2013. Even if they successfully graduate from the university, they can be washed out in one of the three flight academies or during the final transition year at their operational unit.

According to a 2010 PLAAF book, the grounding rate for male cadets has been more than 50 percent and is growing.¹²²⁵ Although the book does not specify the timeframe, it most likely covers the entire four-year period of cadet education and training at the Aviation University and two-year training at one of the three flight academies.

gx According to one article, the women in the JH-7 were assigned as rear seat weapons control officers; however, the only photos of them standing near a JH-7 shows only women, which implies they are both pilots and weapons control officers.

In addition, according to an October 2012 article in *Air Force News*, an unidentified Lanzhou MRAF Flight Academy (e.g., the 2nd or 5th Flight Academy) had a total of 31 students graduate in 2002 out of 49 who started in 2000 (63 percent).¹²²⁶ By comparison, in 2010, a total of 70 of the initial 84 students (81 percent) graduated.

Based on available information, the flight academies do everything possible to have cadets graduate and become an officer. Those who do not graduate from the Aviation University or a flight academy are sent to another PLAAF academy to finish their education and training in a different specialty.¹²²⁷

Table 6-1 below shows the number of new male pilot cadets selected for education and training at the Aviation University for each year since 2007. It also includes the number of new female cadets in the 9th, 10th, and 11th groups, as well as the first students who completed their first three years in the dual-enrollment program in 2014 discussed at the end of Chapter 5. According to one article in late 2018, the PLAAF recruited about 38,000 new pilot cadets from 1987 to 2018.¹²²⁸

Table 6-1: New Male and Female Pilot Cadets

Year	New Male Cadets	Comments
2007	1,000 ¹²²⁹	High school graduates
2008	Unknown	33 women (9th group)
2009	1,166 ¹²³⁰	High school graduates;
2010	1,100 ¹²³¹	836 high school graduates; 200 college students/graduates; 64 outstanding enlisted personnel
2011	1,000 ¹²³²	High school graduates
2012	1,000 ¹²³³	High school graduates
2013	1,200 ¹²³⁴	High school graduates; plus 40 women (10th group)
2014	1,000 ¹²³⁵	High school graduates; in July 2014, the first “Tsinghua Class” of dual-enrollment program pilot cadets were transferred to AUAF to complete their studies in aviation theories and conduct flight training; ¹²³⁶ in June 2015, 28 Tsinghua cadets graduated from AUAF.
2015	1,300 ¹²³⁷	High school graduates and dual-enrollment students
2016	Unknown	
2017	1,075 ¹²³⁸	High school graduates; plus 35 women (11th group) ¹²³⁹ ; dual-enrollment students
2018	1,480 ¹²⁴⁰	High school graduates and dual-enrollment students
2019	1,455 ¹²⁴¹	High school graduates; plus 40 women (12th group) ¹²⁴² ; dual-enrollment students

Following the shift to air brigades for all fighter and fighter-bomber aircraft in 2017, the PLAAF has a total of around 82-92 air brigades (fighter, fighter-bomber, and transport search and rescue) and air regiments (bomber, transport, and special mission, as well as Airborne Corps helicopter regiment(s)).^{gy} It is not exactly clear how many new pilots enter service every year after they complete their training at one of the flight academies; however, a few examples indicate that at least some air regiments and brigades receive about six to seven new pilots each year. For example, in November 2017, six new pilots in a Central TCAF air brigade conducted training.¹²⁴³ In December 2017, an Eastern TCAF brigade provided training for seven new pilots.¹²⁴⁴ Of note, of those pilots, only a handful will become commanding officers. In addition, some units receive pilots who have transferred from a unit that has demobilized older aircraft. Those pilots receive some transition training at a transition training base or at their new unit. For example, in 2017, more than ten seasoned pilots were transferred to a fighter brigade in the Western TCAF.¹²⁴⁵ After arriving, they had to deal with learning everything about a new aircraft type, new terrain, new roles, and had to adhere to a new OMTE that included regulations for transition training.

Finally, given the number of new male cadets per year (about 1,000 to 1,500) and the 50 percent grounding rate before they finally enter their operational aircraft, it appears that each of the PLAAF’s air regiments and brigades

^{gy} The number of about 82-92 air brigades and regiments comes from correspondence with Henry Boyd, who is a Research Fellow for Defence and Military Analysis at London’s International Institute for Strategic Studies (IISS).

could receive about seven to eight new pilots at the same time each year to replace officers who are being promoted or retire.

Aviation Branch Unit Training

Key Points

- Over the past two decades, many PLAAF pilots have transitioned to more sophisticated aircraft, the complexity of their training at the unit level has increased, and aircraft maintenance processes and systems have become more sophisticated.
- PLAAF units have annual flying quotas, which shape training, participation in competitions, and other activities.

For PLAAF air units, the 2000s and 2010s have been an important period of transition from older-generation aircraft to new aircraft with significantly better capabilities.¹²⁴⁶ As discussed earlier, the PLAAF transitioned from the old *Outline of Military Training* (OMT), issued in 1995, to a revised *Outline of Military Training and Evaluation* (OMTE), issued in 2002. In 2009 and again in 2018, the PLAAF began implementing additional rounds of revised OMTEs. As previously noted, little information is available about the content of the 2009 and 2018 OMTEs.

Transitioning to these new generation aircraft has been one of the more daunting challenges facing PLAAF air units, and not only for pilots, but also for maintenance and logistics support personnel. For example, when the first units were formed in the early 2000s, few pilots were qualified as flight instructors.¹²⁴⁷ The pilots assigned to the new aircraft not only had to fly the aircraft, but they also had to become qualified as flight instructors and as flight Commanders in the tower. The pilots, maintenance, and logistics personnel all had to help write training manuals.¹²⁴⁸ This was complicated by the fact that the units had to meet the general requirements of the revised OMTE.

Flight Training Sequence and Terms

As PLAAF's pilots progress in their careers, they transition from foundational training (基础训练), to aviation theory (航空理论), to what is best translated as “skills” or “techniques training” (技术训练), to tactics/tactical training (战术训练), and finally to training on combat methods (战法训练).

It appears that, prior to the 2002 revised OMTE, most pilots conducted skills training and less than 50 percent of all flight training was what the PLAAF classifies as tactics training.¹²⁴⁹

According to the PLAAF, skills training subjects are single item subjects, such as taking off, rendezvousing, formation flying, landing, and instrument flying. According to the PLAAF, tactics flight subjects combine different technical subjects.

The 2002 revised OMTE introduced the concept of “composite training” (综合训练), which combines more than one flight subject in the same training event. Prior to the 2002 OMTE, pilots apparently conducted only a single training subject per sortie. The PLAAF also implemented what it calls “coordinated training” (协同训练) and “tactics cooperation training” (战术协作训练). These terms are used in conjunction with combined-arms training (合同训练) to mean cooperation between the PLAAF's different branches and dissimilar aircraft, respectively.

Flight Techniques/Skills Training

The objective of flight techniques/skills training is to perfect a pilot's ability to operate aviation technology and equipment.¹²⁵⁰ The types of flight techniques/skills training are categorized according to the following six factors: time of day, weather, flight rules, altitude, environment, and number of aircraft.¹²⁵¹ Table 6-2 lists the types of flight techniques/skills training based on these six factors.

Table 6-2: Types of Flight Techniques/Skills Training

Time of Day	Day (昼间)
	Night (夜间)
Weather	Simple Weather (简单气象)
	Complex Weather (复杂气象)
Flight Rules	Visual Flight Rules (VFR) Training (目视飞行训练)
	Instrument Flight Rules (IFR) Training (仪表飞行训练)
Altitude ¹²⁵²	Ultra-High Altitude Flight Training (超高空飞行训练)
	High Altitude Flight Training (高空飞行训练)
	Medium Altitude Flight Training (中空飞行训练)
	Low Altitude Flight Training (低空飞行训练)
	Minimum Altitude Flight Training (超低空飞行训练)
Environment	Maritime Flight Training (海上飞行训练)
	Plateau Flight Training (高原飞行训练)
	Mountain Flight Training (山地飞行训练)
	Desert Flight Training (沙漠飞行训练)
Number of Aircraft	Single Aircraft Flight Training (单机飞行训练)
	Formation Flight Training (编队飞行训练)

Flight techniques/skills training is further divided into piloting techniques/skills (驾驶技术) training and combat techniques/skills (战斗技术) training.¹²⁵³

Piloting Techniques/Skills Training

The objective of piloting skills training is to teach flight personnel to be able to operate an aircraft to its full capabilities.¹²⁵⁴ This type of training provides one of the key building blocks for tactical training. It includes:¹²⁵⁵

- Takeoff and landing
- Aerobatics
- Flying in formation
- Flying blind with instruments
- Navigation.

Combat Techniques/Skills Training

Combat techniques/skills training focuses on honing each pilot's ability to carry out aerial combat maneuvers using an aircraft's instruments and weapons.¹²⁵⁶ Combat techniques/skills are an important component of flight training and provide yet another key building block for tactical training. There are six types of combat techniques/skills training:

- Air intercept
- Aerial firing
- Aerial bombing
- Attacking ground targets
- Air reconnaissance
- Air transport.¹²⁵⁷

Additional Flight Techniques/Skills

In addition to the various types of pilot and combat techniques/skills noted above, pilots who execute “special tasks” receive additional training based upon the aircraft’s unique characteristics and requirements.¹²⁵⁸ For example, pilots for certain types of combat aircraft and tankers receive training to perform aerial refueling. Pilots of the following aircraft also receive specialty training:¹²⁵⁹

- Airborne early warning and command aircraft
- Electronic reconnaissance and jamming aircraft
- Medivac helicopters.

Air Tactics Training

The PLAAF’s *Air Force Dictionary* defines tactics as “the principles and methods an air force uses to conduct battles, to include deployment, command, coordination, battle methods, and battle support.”¹²⁶⁰ The PLAAF organizes its air tactics into the following 12 categories:

- Aerobatics
- Air intercept
- Emergency take-offs
- Flying at different altitudes¹²⁶¹
- Flying in clouds
- Flying in different weather conditions
- Flying over water
- Formation flying
- Ground attack
- Mobility
- Night flying
- Confrontation air combat.

Since the 2002 OMTE was issued, analysis of PLAAF writings indicate that the PLAAF’s air tactics training have ranged from simple formation flying to nighttime, long-range, and minimum-altitude attacks over water against maritime and ground targets. Some units have also reportedly begun focusing on flying under radio silence. Bomber and attack unit training has reportedly emphasized long-distance bombing runs followed by transiting through numerous airfields to refuel, sometimes with large numbers of aircraft and personnel. Other important training has included mobility, flying in poor weather, and training in “unfamiliar areas” under “unknown” (i.e., not scripted), “actual-combat” conditions.¹²⁶²

A major factor that facilitated this change was the development of “composite training,” noted earlier.^{gz}

Maritime Flight Training

Based on a review of PLAAF writings since 2000, and a report by Ian McCaslin and Andrew Erickson, it is clear that the PLAAF is continuing to increase its capabilities in each of the areas noted above. In particular, the PLAAF has gradually been increasing its maritime flight training over the Western Pacific and South China Sea.¹²⁶³

gz The PLAAF usually puts quotation marks around terms that imply a new concept.

As noted in Chapter 1, the PLAAF rarely flew over water anywhere along the coast from Korea to Vietnam and did not fly hardly any sorties over the Taiwan Strait until around 1996 and to the centerline until 1998.¹²⁶⁴ Since 1998, however, the PLAAF has gradually increased its ability to fly over water in a step-by-step process. For example, in 2001, two Su-27 pilots from a regiment subordinate to the 2nd Air Division in Suixi, Guangdong Province (Guangzhou MRAF), intercepted a USAF reconnaissance aircraft over the South China Sea. This was the first time for this unit to conduct such a mission, and the pilots received a third-class medal.¹²⁶⁵

The establishment of China's East China Sea Air Defense Identification Zone (ADIZ) in 2013 gave the PLAAF, "for the first time, an operational patrol space well away from China's borders."¹²⁶⁶ Since then, the service has been expanding its area of operations further beyond that zone. This effort has been marked by a number of "firsts" for the service.¹²⁶⁷ Many of those "firsts" have been high-profile and provocative. For example, since 2015, PLAAF H-6K bombers have begun making "not infrequent" flights within range of Guam in what was described by U.S. defense officials briefing reports as "practicing attacks on Guam."¹²⁶⁸ Although Naval Aviation bombers began flying into the Western Pacific in 2013, the first PLAAF bombers to fly beyond the first island chain occurred in 2015. Specifically, four drills occurred during 2015, of which the first flight took place in March through the Bashi Channel, the second in May through the Miyako Strait, the third in August through the Bashi Channel, and the fourth in November, but it is not clear which route they took.¹²⁶⁹ Similar flights continued through 2019. For example, one sortie through the Miyako Strait in September 2016 included more than 40 aircraft.¹²⁷⁰ Although the H-6 bombers were the core, other aircraft, including Su-30 and Su-35 fighters, KJ-2000 airborne early warning aircraft, and tankers, escorted them at least part of the way.¹²⁷¹ Both fighters from the Japanese Air Self Defense Force (JASDF) and Taiwan's Air Force have intercepted the aircraft.¹²⁷² To date, there are no reports that USAF aircraft have intercepted any of the aircraft; however, in its 2016 Annual Report to Congress on China's military, the U.S. Defense Department claimed that PLAAF flights into the western Pacific could place U.S. forces on the island of Guam at risk of being targeted by cruise missiles launched by Chinese long-range bombers.¹²⁷³

Although the PLAAF is increasing the number of maritime flights, it has also acknowledged various challenges concerning far-seas flight training based on an interview with personnel from a Southern TCAF air unit in 2017, as shown below:¹²⁷⁴

- Due to limited communications measures during far-seas training, comprehensive support measures, including regular radar, aerial command and communications aircraft, navy ships, and communications satellite need to be better integrated.
- Compared with flying over land, far-seas training is more prone to deviating from designed flight routes.
- The multiple highly-difficult subjects involved in far-seas training pose new challenges to many pilots' technical and tactical capabilities who participate in far-seas training. These subjects include striking maritime targets, air combat of different types of aircraft both over land and over water, aerial refueling against tactical background and confrontation air and sea combat against the Navy.
- Far-seas training also challenges the capability of responding to special flight situations over water.
- Of particular concern, in terms of physical challenges, flying time which was longer than four hours typically led to pilot fatigue.
- Weather conditions during far-seas training are unpredictable and the collection of weather-related data also remains a challenge.
- The operations of search and rescue (SAR) during far-seas training remains a challenging task for the PLAAF due to limitations of SAR equipment, low visibility at night, and complex weather conditions.

- Due to time limitation of continuous operations of certain equipment, far-seas flight training continued to challenge the PLAAF's maintenance support capabilities. Many maritime-related malfunctions could not be practiced upon during a simulated verification process on the ground.

In order to keep advancing in the maritime domain, the Air Force has overhauled training for its pilots to be better prepared for operations over water, including those farther from shore. These included the creation of new textbooks for its Aviation University, including *A Practical Handbook on Maritime Live-Fire Training with Trainer Aircraft and Safety Checklist for Maritime Live-Fire Training*.¹²⁷⁵ Classroom work has been augmented by “regular high seas training” that began in 2015.¹²⁷⁶ AUAF also performed its first live-fire training at sea in 2015.¹²⁷⁷ The PLAAF has been holding exercises practicing offensive and defensive operations at sea in “unfamiliar sea areas” more frequently.¹²⁷⁸ The increasing focus on operations in the maritime domain has been incorporated into the “four key training brands” (四大品牌) of the PLAAF, which are discussed more later in this chapter.¹²⁷⁹ For example, in 2015, the *Golden Dart* competition, which involves attack aircraft and bombers and “aims to improve troops’ offensive air war-fighting capabilities,” was held over water for the first time.¹²⁸⁰ The aforementioned change was made in response to “national security threats” and was aimed at “improving the maritime combat capability” of the Air Force. In another “maritime first,” in 2017, the PLAN’s pilots participated in the *Golden Helmet* air-to-air competition, the winning of which is considered the “highest honor” for PLAAF fighter pilots.¹²⁸¹ This inclusion was likely done, at least in part, to test and improve the maritime combat capability of the PLAAF’s Aviation Branch against a branch/arm of another service that specializes in this capability.

Perhaps the best summation of the PLAAF’s recent efforts to conduct “open/far-seas training” comes from a paraphrased statement given in December 2016 by PLAAF spokesperson Senior Colonel Shen Jinke to *Xinhua*: “in the two years since the Chinese Air Force launched open/far-seas training, interference from various obstacles have been dealt with, [the Air Force] engaged in reconnaissance and early-warning, maritime patrolling, maritime assault, and mid-air refueling training, which improved open/far-seas mobility and tested open/far-seas combat capability.”¹²⁸² The PLAAF has also held events, including ones attended by its senior officers, to review its progress in conducting over-water training and make corrections where it sees fit.¹²⁸³

PLAAF overwater activities increasingly incorporate maritime strikes as well. In 2014, then-PLAAF Commander, General Ma Xiaotian, gave a speech emphasizing the importance of air power on what happens at sea. According to General Ma, “winning the initiative in the air is important in effectively responding to all kinds of security threats at sea...[we must] fully recognize the new circumstances in the defense of maritime rights, [it] gives the Air Force new meaning to accelerate the transition from territorial air defense towards attack and defense...[we must] transform the ‘center of gravity’ of sea operations towards the employment of air power.”¹²⁸⁴ Consequently, strike missions against maritime targets, islands, and reefs have become more frequent parts of PLAAF training and exercises.¹²⁸⁵

General Ma’s successor as Commander of the PLAAF, then Lieutenant General Ding Laihang, stated in August 2017 that “exercises on the open seas will become a regular part of training.”¹²⁸⁶ He elaborated that the service was “gradually expanding its blue-water training, and its weapons and equipment, communication systems, supplies and aviation search-and-rescue skills must catch up with the mission.”¹²⁸⁷ High-level focus on the maritime training and combat capabilities have continued, with Lieutenant General Ding at a major military training conference in January 2018 emphasizing the need to further deepen research and training to resolve the important and difficult issue of maritime combat operations.¹²⁸⁸ PLAAF units have responded to the push, with at least one brigade in the Southern TC explicitly stating that it had been increasing the proportion of sea-based training tasks it does compared to land-based ones.¹²⁸⁹ This effort has been facilitated by the opening up of airstrips on Chinese-controlled artificial islands in the South China Sea, from where PLAAF aircraft can now take off and land during exercises and in a potential conflict. It appears that the airstrips are managed by Naval Aviation.

In order to further extend the operational range of its aerial assets, the PLAAF has invested in acquiring additional and updated tankers, such as the IL-78/MIDAS and the rumored development of a tanker variant of the Y-20, to augment its small and aging fleet of tankers.¹²⁹⁰ An improved tanker fleet would be a needed boost to the maritime operation capability of the service, given that it has historically had limited mid-air refueling capabilities.¹²⁹¹

A further sign of the PLAAF's focus on expanding operations in the maritime domain has been the increased emphasis on improving maritime search and rescue capabilities. With an increasing number of PLAAF pilots, both veterans and cadets, flying over water, the service needs to be able to rescue them after training accidents and, if conflict breaks out, after being shot down. In November 2014, General Ma Xiaotian traveled to see the "Air Force's first maritime unit," which was established in 2012, to hear an update on the construction of a maritime training base, visit with PLAAF ships crews, and to emphasize the importance of improving the service's maritime search and rescue capability.¹²⁹² On the new urgency of improving maritime search and rescue operations, General Ma stated that, while "in the past, maritime activities were relatively infrequent," now with "maritime military actions becoming more frequent," the service must resolve such issues "as soon as possible."¹²⁹³ In parallel, the new training focused on the fact that pilots must learn how to parachute over water and survive in the water until they can be found and rescued.¹²⁹⁴ According to an interview in 2018 with the maritime training base's Commander, the base was described as a maritime operations training support platform and a "whetstone" for far-seas flight and deep-blue combat.¹²⁹⁵ Some of its primary missions include supporting maritime penetration assault, maritime rescue for aircrew members who have parachuted out of their aircraft, and joint search and rescue. The parachute training was carried out by having personnel parachute out of small transport aircraft and helicopters. The next steps for the base, starting in 2018, included strengthening research in the three fields of maritime target research and development, maritime complex ECM environment construction, and upgrading and transforming equipment, including target vessels that have remote control, autonomous movement, and other functions. The base was also preparing to discuss military-civil fusion, including creating a joint search and rescue mechanism with local civilian maritime rescue organizations.

The push for increased jointness by the PLA also gave the PLAAF opportunities to insert itself into the maritime domain, and even amphibious operations, early on. For example, in 2013, the PLAAF was able to participate in a rare "tri-service joint beach seizing and landing [which] focused on joint intelligence gathering, maritime transport, assault landing, and joint firepower strikes."¹²⁹⁶ In fact, the *Mission Action 2013* exercise "was the first cross-MR campaign exercise to involve amphibious landing operations and maritime force projection, and it was the first time that the PLAAF took a leading role in a Mission Action exercise."¹²⁹⁷ Given the growing importance of amphibious operations, such as for a potential future conflict vis-à-vis Taiwan or in the South China Sea, this type of exercise may indicate an important role for the PLAAF in supporting relevant joint operations, such as by providing aerial cover.

PLAAF overwater operations have also signaled China's resolve over the country's disputed sovereignty claims, particularly against Taiwan. Again, following in the footsteps of the PLAN, it has begun asserting that its operations are critical to maintaining national sovereignty claims and maritime interests. For example, following the deployment of some of the PLAAF's most advanced aircraft, such as the Su-35, to an exercise in the South China Sea, a professor from the Air Force Command College stated that such actions showed the service's "resolution to implement missions in the new era and firmly maintain national sovereignty and security and maritime interests."¹²⁹⁸ The PLAAF frequently releases video of its "patrols" around Taiwan, oftentimes featuring aircraft such as the H-6K. On at least one occasion, a video posted on the PLAAF's Weibo account depicted PLAAF aircraft on "patrol" superimposed over a map of Taiwan, followed by the narrator portraying the flight as a sacred mission to ensure not an inch of Chinese territory can be separated from China and noting that the PLA has the confidence and capability to defend national sovereignty and territorial integrity.¹²⁹⁹ TPLAAF aircraft have also conducted multiple flights in a single week to deter "Taiwan independence forces."¹³⁰⁰

Unit and Pilot Flying Quotas

PLAAF HQ assigns two annual flying quotas (飞行指标) to each air division and brigade. The air division, in turn, then assigns quotas to each of its subordinate regiments. These, in turn, are divided among the unit's pilots. Each unit reviews its quotas on a quarterly basis and adjusts the training accordingly. The first quota is the number of flying hours per year (飞行时间指标).¹³⁰¹ For example, in 2000, the flying hour quota for one regiment subordinate to a Shenyang MRAF air division was 2,400 hours.¹³⁰² This number increased by several hundred hours in 2005. The monthly quota averages about 8.3 percent of the total, with most units completing their quotas in early December so that the figures can be reported during the annual All-Army Training Conference. During December, the aircraft also undergo an annual inspection, so that they are ready to begin flying again in early January.¹³⁰³ It is important to note, however, that not every pilot in each unit receives the same number of hours per year. For example, some pilots who have been selected to participate in the *Golden Helmet* competition discussed later in this chapter are given additional hours to “train for the test.”¹³⁰⁴ As a result, those extra hours must be taken away from other pilots in the unit.

The second quota refers to the amount of air tactics training that each unit must accomplish each year. Under the revised OMTE in 2002, tactics training has to be included in at least 50 percent of all flying. This was higher than the previous requirements.¹³⁰⁵ For an example of the increase in the percentage of tactics training from the previous OMTE, the percentage increased from 50 percent to 68.5 percent for one Beijing MRAF air regiment.

Linking Quotas, Sorties, and Flying Periods

Figure 6-1 shows the relationship between time per sortie (A), number of sorties per year (B), and total number of flight hours (C), where the total number of hours is a constant.

Figure 6-1: Unit Sorties and Flying Hours Ratio

$$\begin{array}{ccccccc}
 \text{A} & \times & \text{B} & = & \text{C} \\
 \text{(Time} & & \text{(Number} & & \text{(Total number} \\
 \text{per sortie)} & & \text{of sorties)} & & \text{of flight hours)}
 \end{array}$$

As noted above, each unit is given a quota with a set number of flying hours per year. The unit's quota is then divided among the unit's pilots. The changes implemented under the 2002 OMTE are shown below:¹³⁰⁶

- As the time per sortie increased and the total number of hours remained constant, the number of sorties decreased.
- The number of training subjects per sortie increased.^{ha, 1307}
- The total number of flying days per year decreased.¹³⁰⁸
- The number of flying periods per year decreased.¹³⁰⁹
- The number of maintenance days per year decreased.
- The amount of fuel used decreased.^{hb, 1310}

ha On 27 December 2002, a Jinan MRAF attack regiment completed the last day of training for the year. This regiment flew several hundred more hours during 2002 than it did during 2001. During 2002, the regiment combined more than one tactical training subjects in a single sortie. As the new pilots progressed in their training, the older pilots researched combat methods. When the regiment was training during after midnight and for airfield transits, the older pilots flew more than the new pilots. The goal was to allow the new pilots to eat enough, but for the old pilots not to eat too much. The pilots trained in all weather conditions. The regiment also conducted training over water for penetration of defenses at minimum altitude, attack formations, and [air defense] suppression formations tactical training subjects.

hb In late November 2002, the PLAAF Logistics Department put out orders to reduce fuel consumption. One Nanjing MRAF attack division [Q-5] adopted the method of reducing each sortie and taxi time by one minute, thus saving several hundred tons of fuel. One Nanjing MRAF transition training base adopted the method of only putting enough fuel in an aircraft to conduct its training subject instead of filling the aircraft to its max capacity each time. In this way, for the takeoff and landing subject the amount of fuel was reduced from 2,400 kilograms to 500 kilograms per sortie, which saved over 160 tons of fuel per year. One Nanjing MRAF bomber division adopted the method of restricting the weight of an aircraft while it is parked by not filling

The 2002 OMTE also required PLAAF aviation units to increase the amount of simulator training.¹³¹¹ Each component also most likely changed for the 2009 and 2018 OMTE.

Flying Hours during the 1960s and 1970s

The Cultural Revolution severely impacted the PLAAF's flying time. While pilot training in the flying schools, which previously took thirty months, was reduced to twelve months in 1967, the number of flying hours in the schools rose dramatically: 180,000 in 1966; 260,000 in 1968; 310,000 in 1970; and 400,000 in 1972.^{hc, 1312} However, the training was so haphazard that by 1968 the achievement levels of graduates were so low they could not be used in the units where they were assigned. Once cadets arrived at their units, their flight training was reduced significantly. Average flying hours for PLAAF fighter pilots averaged 122 hours in 1964, 24 hours in 1968, and 55 hours in 1970.¹³¹³ Naval Aviation fighter and bomber pilots averaged 26 hours from 1965-1971, with a low of 12.5 hours in 1968. In addition, maintenance was so poor that by 1969 the PLAAF's "serious accident rate" (loss of aircraft and pilot) soared to 6.0 per 100,000 hours, up from 2.49 in 1964.¹³¹⁴ From 1969-1978, Naval Aviation had over seventy aircraft accidents that resulted in total loss of the aircraft and sixty-two pilot deaths. The serious accident rate in Naval Aviation was 11.2 per 100,000 hours.¹³¹⁵ Besides a lack of pilot training, the accident rate was due to shoddy aircraft production.^{hd, 1316}

Flying Hours during the 1980s

During the 1980s, PLAAF bomber pilots consistently flew an average of 80 hours per year, fighter pilots 100-110 hours, and Q-5 ground attack pilots up to 150 hours.¹³¹⁷ Reporting during the mid-1990s indicate that the annual flying requirement was 122.25 hours per pilot, but that some elite flying regiments averaged 200 hours.¹³¹⁸

Flying Hours since 2000

Although the PLAAF has not openly identified in a single document the number of hours per year pilots for each type of airframe fly, the following two tables provide information about the lead pilots for the aircraft that flew over Tiananmen on the 60th Anniversary of the PRC in October 2009 and pilots from the Chengdu MRAF who received *Golden Helmet* awards in 2011.¹³¹⁹ In Tables 6-4 and 6-5, the aircraft noted is the one that was identified in the profile. Although the J-10 and J-11 pilots did not start flying those aircraft until they entered the inventory in the late 1990s or early 2000s, the numbers track with those for the other aircraft such as the J-7, J-8, and Q-5. The number of flying years is determined by subtracting the year the pilots joined the PLAAF from the year of the article and then subtracting two additional years, which accounts for their first two years as a cadet before they start their cadet flight training. The hours per year is then determined by dividing the number of total hours by the number of flying years. The numbers were rounded off to the nearest five. Even though the articles use a number like 3,000+ hours, this refers to a figure between 3,000 and 3,100. With the exception of Zhang Xiaodong, the figures in these tables track those for pilots whose profiles gathered from open source material since the early 2000s. Because the average number of flying hours have been steadily increasing over the years, the average hours depicted in the following table may not fully capture the average number of hours that pilots currently fly per year and the increased emphasis on pilot training.

it with fuel except for specific missions. In this way, the division could reduce its aviation fuel consumption by over 400 tons annually. The Guangzhou MRAF put forth regulations that the MRAF must report its fuel consumption twice a year; each Air Corps and base must report every season; each unit must report monthly.

hc At the PLAAF's Second Aviation School, authorities claimed that the elimination of aviation theory courses between 1967 and June 1970 resulted in an increase of aircraft accidents at the school and operational bases. There were similar results in 1970, when some technical courses resumed for periods of only three to eight months.

hd The only successful Chinese design program during the 1960s was the Q-5 ground attack aircraft, derived from the MiG-19. Initial design work on the Q-5 began in 1958, and following many setbacks, the first flight was conducted at Nanchang in 1965. In November 1975, the Central Military Commission ordered all of the Q-5s in the inventory to be returned to the factory for overhaul because of failures in manufacturing quality control.

However, based on reporting in 2018 and 2019 from the state-sponsored online news agency *Sina*, reporting stated that “with the development of China’s economy, the PLA Air Force clearly stipulates that pilots must fly 200 hours a year for training.”¹³²⁰ This is assumed to mean actual flying hours and not training performed in a simulator. Official PLA data from August 2018 stated:

“[T]he maximum annual flying time of the PLAAF is close to 230 hours, which is at the level of the world’s powerful air forces. For example, a public report on the training of an aviation regiment with a *Golden Helmet* winner in the Northern TCAF stated that pilot training for the competition includes about 2-4 sorties a week and each sortie lasts 1-2 hours. As such, during a 52-week year, excluding normal vacations and various studies, the regiment’s normal flight training time for one year is about 30-35 weeks or 150 hours. In recent years, the PLAF has seen more rotations and confrontation exercises. For example, the above-mentioned regiment participated in the *Golden Helmet* confrontation exercises. At the same time, it may also have combat duty missions. As such, flying hours of more than 200 hours are normal.”¹³²¹

Although these numbers are impressive, the implication is that the pilots who were training for the *Golden Helmet* competition may have received additional hours and spent most of their time “training for the test” and did not necessarily meet all of the standard requirements based on the OMTE. Because some pilots were given extra hours, it most likely means that some hours were taken away from other pilots so that the number of hours on the airframe and engine did not exceed the maximum.

Unfortunately, the PLAAF has not published any detailed data on flying hours for pilots in recent years. For example, although the October 2009 issue of *China Air Force* magazine provided the information in Table 6-3, the October 2019 issue had lengthy articles about the aircraft that flew over Tiananmen to commemorate the PRC’s 70th anniversary, with no single mention of pilot hours.

Table 6-3: Lead Pilots over Tiananmen in October 2009

Pilot	Aircraft in 2009	Joined PLAAF	Flying Years	Total Hours	Average Hours per Year
Li Wenjia (李文俊)	J-8F	1981	26	3,000+	115
Liu Guosheng (刘国胜)	J-11	1979	28	3,000+	110
Liu Dianjun (刘殿君)	H-6 Tanker	1977	30	4,000+	135
Gu Weifeng (顾维峰) ^{he}	KJ-2000	1976	31	6,000+	195
Qian Shiping (钱世平)	H-6	1981	26	4,250	165
Wang Jianmin (王建民)	J-10	1979	28	2,700	100
Zhang Xiaodong (张晓东) ^{hf}	KJ-200	1996	13	4,200	325
He Xiaoli (何晓莉) ^{hg}	K-8	2005	2	250	150
Li Chunhui (李春辉)	Z-8	1979	28	3,520+	125

he Wei Guofeng most likely began his career as a transport pilot and then transitioned to the KJ-2000. Transport pilots average about 200 hours per year.

hf Zhang Xiaodong was an anomaly among pilots who fly transport-type aircraft.

hg He Xiaoli was a female pilot who graduated in the 8th group of female pilots in 2009. Upon graduation, the 16 pilots immediately began training to fly over Tiananmen.

Table 6-4: Chengdu MRAF Golden Helmet Pilots Selected in 2011

Pilot	Aircraft	Joined PLAAF	Flying Years	Total Hours	Average Hours per Year
Jiang Jiayi (蒋佳翼) ^{hh}	U/I Fighter	1999	11	1,400	125
Peng Lizhong (彭礼忠) ^{hi}	U/I Fighter	1996	14	1,700	120
Liu Xiaopeng (刘晓鹏) ^{hj}	U/I Fighter	1993	17	1,900	115
Su Wan (苏宛) ^{hk}	J-10	1997	13	1,500	115
Wan Songfeng (万松峰) ^{hl}	U/I Fighter	1998	12	1,420	120

Constraints on Unit Training and Flying Quotas: Fuel Consumption

Fuel consumption and its impact on flying quotas at PLAAF airfields has been a major issue for several decades. However, the issue is not just the availability and use of fuel for aircraft, but also includes fuel used for clearing snow in the winter, fuel for stoves, fuel for engine start carts, and the lack of fuel storage at airfields and the problem of transporting fuel to the airfield during a conflict.¹³²² This section reviews widespread challenges during the 2000s and changing discussion of this issue in the 2010s. It is not clear whether fuel consumption remains a constraint on PLAAF flying hours in 2020, as few sources have discussed the issue since the mid-2010s.

Fuel Consumption during the 2000s

The PLAAF frequently discussed fuel consumption's impact on flying hours during the 2000s and continued to raise it in the 2010s. In 1998, the PLAAF initiated a program to cut down on the use of all types of fuel at airfields in all five basic areas, so that each airfield station could maintain sufficient fuel on hand before the start of a campaign and would then have enough fuel to sustain the campaign. In 1998, the PLAAF Logistics Department provided general guidance for fuel conservation. These measures apparently were not as successful as anticipated, so further guidance was given in 2002. Even so, PLAAF HQ did not standardize the solution for the entire force. Each MRAF, air army, unit, and flight college was allowed to come up with its own solutions. Even so, however, for the following three years, the PLAAF exceeded its spending allocation by several hundred million RMB for several tens of thousands of tons of fuel. In 2002, the PLAAF Logistics Department ordered all of its subordinates to reduce fuel consumption and dispatched inspection teams to see whether units were adhering to the orders.^{hm} Based on the findings, new orders were issued in 2003 to address the shortcomings.

In the early 2000s, the PLAAF stated that the cost for fuel per flying hour for its “comparatively advanced” aircraft could reach 10,000 RMB (USD 1,250).¹³²³ Assuming this refers to a J-8, the cost for a regiment of 24 aircraft with each pilot averaging 100 hours per year and 1.5 pilots per aircraft meant the regiment's aircraft would fly 3,600 hours at a cost of approximately 36 million RMB (USD 4.5 million) per year. According to PLAAF reports in the early 2000s:

“Fuel is 60 percent of the PLAAF's materiel. Based on PLAAF statistics, a small-scale local war requires [a large quantity] of aviation fuel. Given this large quantity of usage, it would be difficult for the PLAAF's water and ground transportation systems to supply the full amount today. The best way to solve this problem would be

hh At that time, Jiang was a Flight Group (battalion) Commander and a 1st grade pilot.

hi At that time, Peng was the Director of the Reconnaissance Office in a Chengdu MRAF air division and a 1st grade pilot.

hj At that time, Liu was the Chief of Staff (e.g., Director of the Headquarters Department) in a Chengdu MRAF air unit and a special grade pilot.

hk At that time, Su was the navigation Director in a Chengdu MRAF air unit and a 1st grade pilot.

hl Wan was a Deputy Commander of a Chengdu MRAF Flight Group and a 1st grade pilot.

hm The lead organization in the PLAAF on fuel usage is the Logistics Department's Materials and POL Department (空后物资油料部: 物油部).

*to build a pipeline network, which would be easy to open, could transfer large quantities of fuel, is easy to hide, and would not be destroyed by the enemy.*¹³²⁴

It is not clear if the PLAAF implemented this pipeline network or not.

It does not appear that, at least during the 2000s, that a single regulation was established at the PLAAF HQ level for the entire PLAAF concerning fuel consumption issues. Various local solutions to conserving aviation fuel included providing aircraft with only enough fuel to complete their planned sortie so they would not have to jettison fuel before landing, moving aircraft closer to the takeoff line before they start their engines, including more than one training subject per sortie, making pilots and maintenance personnel sign for their fuel, combining different maintenance phases to reduce the number of times needed to start the engine, shutting off the engine immediately after landing and gliding off the runway where the aircraft could be towed to the refueling point, conducting all engine maintenance at the same time so that the engine does not have to be started several times, increasing the use of simulators as codified in the 2002 OMTE, and providing cash awards for units who meet their quotas and punishment for units who fail to meet their quotas. One additional complication was that the PLAAF only approved the use of domestically produced fuel in 2002 for all PLAAF aircraft, following 10 years of research and development. Prior to 2002, some aircraft could use only imported fuel.

Similar to the assessment quoted earlier, the lead article on the front page of the 5 December 2002 *Air Force News*—indicating the importance of fuel issues at the time—stated that, based on current PLAAF statistics, aviation fuel would consume 60 percent of all materiel in future wars.¹³²⁵ Therefore, the article went on to say, the PLAAF must do everything it can to make the best use of its fuel during peacetime, so as to be prepared to use it wisely during wartime. According to one PLAAF Logistics Department study, the increase in flight training time is the primary reason for exceeding the fuel quota by 100,000 tons annually.¹³²⁶ One of the other contributing factors, however, included using fuel in support of clearing snow from airfields. For example, in 2001, the PLAAF used 35,000 tons of aviation fuel to clear snow. In addition, the use of aircraft start carts and engine run-ups during maintenance increased. For example, in the 1980s, the amount of fuel used during engine maintenance was about 20 percent of the fuel expended during flying. By the mid-2000s, the amount of fuel used during maintenance was a much higher percentage. Finally, a study conducted in early 2002 showed that airfield stations had more than 300 oil-burning kitchen stoves that used more than 3,000 tons of oil annually.^{hn} The following paragraph provides an example of specific measures taken by certain units to adhere to the new regulations.

In February 2003, the General Logistics Department's Fuels Department for the first time adjusted the cost of fuel upward, based on guidance from the State Planning Commission.¹³²⁷ For the PLAAF, the cost of jet fuel, which was the Air Force's most used fuel, went up 380 RMB (USD 47.50) per ton for a total cost per ton of 3020 RMB (USD 377.50), a 12 percent increase; vehicle oil and light diesel oil was adjusted up by about 200 RMB (USD 25) per ton to a total of 3,120 RMB (USD 390) per ton, a six percent increase. A series of *Air Force News* articles in 2006 continued to point out many of the same problems that existed in 2000.¹³²⁸

Fuel Consumption, 2010-Onward

During the 2010s, the PLAAF continued to experience restrictions on fuel use.¹³²⁹ Fuel availability, along with maintenance time on engines and airframes, remains one of the driving factors that determine the annual flying quota for units and individual pilots. Due in part to a shortage of parts and equipment for some aircraft, the PLAAF continues to impose restrictions on flight operations. One 2010 PLAAF article noted problems including an “acute lack of POL sources,” an “uneven layout of refineries,” and “irregular POL distribution.” It also noted that due to

hn The airfield station is the logistics organization at an airfield. It is a regiment-level organization. The Commander is not only the logistics Commander, but his responsibilities are the same as a base Commander in the USAF.

insufficient quantities of jet fuel for more advanced aircraft, stoppages in refinery production pose a substantial threat to sustainment of flight operations.¹³³⁰

Although the PLAAF continued to address the issue of fuel usage during the 2010s, the amount of information available dropped considerably, which indicates that many of the problems were at least partially resolved. However, other issues also arose. For example, once the Y-20 entered service in the 4th Air Division in the Western TCAF, the amount of fuel required increased dramatically and the unit had difficulties meeting the demand.¹³³¹ Based on the changes implemented in 2018 as a result of the new OMTE and training regulations, the number of sorties in a Northern TCAF air brigade increased, which resulted in doubling the amount of fuel used compared to previous years.¹³³² In 2015, the Harbin Flight Academy added H-6 bombers to its inventory for the first time, which increased the academy's overall fuel consumption.¹³³³ As a result, the airfield station's vehicle company's fuel truck squad had to increase the number of fuel trucks and created a "fuel consumption menu" in order to prepare for the amount of fuel for each sortie. Finally, in March 2016, an Eastern TCAF airfield station turned to civilian fuel stations for fuel.¹³³⁴ The airfield did not have a railway for oil transportation, making transportation highly costly and inefficient while also posing security risks. Also, the increased frequency of actual-combat training heightened demand for fuel. However, in May 2019, the government announced its plans to lower the wholesale cost of aviation fuel, which could save the civilian airlines alone more than USD 145 million.¹³³⁵

Constraints on Unit Training and Flying Quotas: Aircraft Maintenance

Aircraft maintenance, for not only the airframe but for the engines, has always been a key factor in assigning annual flying quotas to units. As the PLAAF's aircraft have become more technologically sophisticated and its maintenance personnel have gained better equipment to identify problems on aircraft either before or after they are flown, the number of flying hours assigned to units has apparently increased. However, there is little data available over the past few years concerning the actual number of flight hours allotted to each unit. This subsection provides some background information concerning aircraft maintenance issues in the PLAAF.

Aircraft Malfunctions

In the past two decades, the PLAAF has encountered problems with virtually every type of aircraft that led to mid-air flight emergencies, malfunctions, and/or crashes, with multiple public reports covering incidents between 2002 and 2006 in particular. However, many problems were diagnosed before the sortie occurred, so the relevant aircraft was grounded before the flight occurred.

One of the most common trends during 2002-2006 that helped define PLAAF training was a focus on flight and vehicle safety. Many of the articles dealt with mid-air flight emergencies. For example, one article noted that, from January 2003 through February 2004, the PLAAF had 76 personnel involved in 18 mid-air flight emergencies.¹³³⁶

The causes of 28 mid-air emergencies reported in *Air Force News* for the period of 2004-2006 included bird strikes, engine failures, landing gears failing to lower, power failures, and hydraulic system failures. PLAAF statistics noted that its aircraft experienced more than 60 bird strikes from 1992-2004 that led to the loss of about 100 engines.¹³³⁷ Only a few of the articles noted pilot error as the cause.¹³³⁸ These mid-air emergencies occurred within PLAAF operational, training, and test-flight units. Most incidents ended in a safe landing, with a few notable exceptions when the aircraft crashed. For example, a 2004 full page article discussed a 2003 crash of a Beijing MRAF fighter that had just completed training over the Bohai Gulf.^{ho, 1339}

Although PLAAF statistics indicated that overall safety records had improved, the PLAAF chose to make safety a main training focus every year. During 2002-2006, several high-profile conferences and meetings were held on

ho Note the PLA uses both Bohai Gulf and Bohai Sea. For purposes of this book Bohai Gulf is used.

safety. In addition, the PLAAF offered rewards to aircrews that successfully dealt with mid-air emergencies and aircraft maintenance personnel who discovered problems before the aircraft took off. For example, during 2002, the PLAAF awarded 87 pilots an average of 8,000 RMB (USD 1,000) each for successfully dealing with mid-air emergencies, while maintenance personnel received awards averaging 1,000 RMB (USD 125).¹³⁴⁰

From 2015-2019, the PLAAF continued to deal with the issue of avoiding bird strikes to include the following activities:

- Published the PLAAF's revised "Air Force Airfield Bird Strike Prevention Work Regulations" [空军机场鸟击防范工作规定] in November 2019, which went into effect on 1 January 2020.¹³⁴¹ The Regulations mandate unified terminology to ensure common standards with international and domestic civilian aviation, changing the approved term from "bird hit prevention and management" (鸟撞防治) to "bird strike prevention" (鸟击防范). It also standardized responsibilities between Commanders (指挥员) in the control tower and flight controllers (飞行管制员). It also mandates joint cooperation between air units and local civilian aviation and forestry authorities.
- Met with civil aviation authorities to coordinate activities.¹³⁴²
- Met regularly with local pigeon breeders who live near airfields.¹³⁴³
- Monitored bird migration throughout the country near airfields, leveraging detailed maps and time periods.¹³⁴⁴
- Conducted bird strike prevention specialty and technical group training and seminars for bird control squad personnel on airfields.¹³⁴⁵
- Used remote controlled model aircraft or unmanned aerial vehicles equipped with high-tech screens and movable targeted sound-wave bird repellers (i.e., loudspeaker avian repelling systems), as well as shooting guns, to scare them away.¹³⁴⁶
- Based each unit's flight activity according to a "Bird Status Bulletin" [鸟情通报] provided by the unit's airfield station on the first of each month. The bulletin predicts activities in different seasons and months and includes information about the types of birds, their altitudes, airspace characteristics, and numbers.¹³⁴⁷ For example, in October 2016, one Southern TCAF air regiment conducted flight training based on information to arrange its training subjects, flight altitudes, and which airspace to use.

It appears that only a few accidents have been reported since 2016. For example, in September 2016, two fighters from an unidentified Central TCAF airfield were conducting two-ship training near an urban area when one of them was struck by a bird and was forced to conduct a crash landing.¹³⁴⁸ In addition, in July 2017, a fighter at an unidentified Northern TCAF airfield was struck by a bird one minute after taking off, which resulted in a mid-flight left engine failure.¹³⁴⁹ The pilot conducted an emergency landing with its engine in flames, which took the airfield's service company 26 minutes to extinguish. Finally, based on training for more than 20 units in the Eastern TCAF in 2016, none of the units had any bird strikes over a 900 day period.¹³⁵⁰

The PLAAF has continued to provide episodic information on individual incidents. With the growth in social media, it has become more difficult to hide information about aircraft crashes. For example, in 2012, *Air Force News* carried a four-part series and the Internet had several articles about two pilots, Zhang Jianxing and Zhu Zhenhua, who were flying a two-seat J-11BS trainer when the rear cockpit canopy shattered at 3,000 meters during a flight in 2012.¹³⁵¹ Twenty-one minutes later, the pilots landed safely. In addition, in 2016, the PLAAF's first female pilot for the Bayi Aerobatics Team, Yu Xu, died in a failed parachute jump when her J-10 crashed near Tangshan, Hebei Province.¹³⁵²

For comparison purposes, the USAF normally reports every aircraft accident that occurs and has provided summary reports. For example, an *Air Force Magazine* article in December 2020 stated that "A lack of flying hours and overworked maintainers are contributing to high rates of crashes and other aviation mishaps, according to a new

Congressionally mandated report, which called on the services to quickly overhaul how they manage maintainers and pilot training. The National Commission on Military Aviation Safety, in a report released December 3, looked at more than 6,000 aviation mishaps, which included 198 deaths, 157 aircraft destroyed, and about \$9.41 billion in losses, from 2013 to 2018.¹³⁵³ Unfortunately, the PLAAF is not as transparent, but it most likely has similar issues.

Aircraft Maintenance Levels and Types

Historically, the PLAAF has used a three-level aircraft maintenance system—level 1 is airfield or flight line maintenance, level 2 is field maintenance, and level 3 is rear area maintenance.¹³⁵⁴

Level 1 is normally handled by the air unit's maintenance group. This level is responsible for keeping the aircraft in good condition and fixing problems in a timely manner. The primary content includes inspecting the aircraft and troubleshooting problems; refueling the aircraft (accomplished by the logistics component of the ground team) and topping off the oil and fluids; preparing the munitions and proper equipment based on the aircraft's mission for the next sortie; making adjustments and calibrations; replacing parts; washing the aircraft; conducting weekly and periodic inspections and repair; and conducting damage repair.

Normally, level 1 is divided into three types: 1) preliminary maintenance, which is accomplished following a day or night flight to prepare for the next sortie; 2) preflight maintenance, which is post preliminary maintenance that prepares the flight for the next sortie based on the combat or training mission and is also conducted shortly before an aircraft takes off on the sortie; and 3) turnaround maintenance, which occurs shortly after an aircraft lands and is preparing for an take off within a short period of time. Turnaround maintenance can be conducted using the three-line, two-line, or one-line preparation model. The three-line preparation refers to the landing line, refueling line, and takeoff line. The two-line preparation model refers to the landing line and takeoff line, and the one-line preparation model refers to consolidating everything at the takeoff line. During combat missions, preliminary and preflight maintenance can be conducted at the same time.

Level 2 includes repair of aviation technical equipment and associated spare parts, repair of damaged aircraft, replacing components with updated components, and production of simple parts. This level is normally handled by the unit's repair shops.

Level 3 includes overhaul of aviation technical equipment, major repair of severely damaged aircraft, complicated replacement of components, and production of spare parts and repair instruments. This is normally handled by an aviation repair factory.

The PLAAF also divides its aircraft repair work into three types—periodic maintenance, on-condition maintenance, and maintenance after failure.¹³⁵⁵ Periodic maintenance is based on set periods for conducting maintenance on each piece of equipment on the aircraft. Although the time and procedures are easy to manage, problems can cause a greater amount of time and a high cost and use of spare parts. On-condition maintenance is based on an analysis of the reliability and technical parameters of specific equipment and spare parts. Also, if an inspection discovers a problem, then it is dealt with at that time. The first two types of maintenance are preventive in nature, whereas maintenance after failure is conducted after a malfunction is detected and is considered non-preventative in nature. Periodic maintenance is classified as a primary type of maintenance while the other two are considered auxiliary.

As the PLAAF has upgraded the instruments on its aircraft, it has also upgraded its maintenance test equipment and procedures in an effort to have a more standardized and rapid diagnostic system throughout the force rather than unit by unit, where each unit relies only on its internal database.

Aircraft Maintenance Schedule

A review of relevant material from the past two decades found that the PLAAF has the following basic aircraft maintenance schedule:¹³⁵⁶

- A pre-flight maintenance check that takes about five minutes.¹³⁵⁷
- Maintenance days, which involves one maintenance day after each three or four flying days.¹³⁵⁸
- Quarterly (noted in July, September, and December).
- Seasonal maintenance for five days, which is done twice a year—before the summer training cycle that begins in mid-May and the winter cycle that begins in mid-November—to ensure that equipment is ready as a result of seasonal changes.¹³⁵⁹
- Between Christmas and the first week of January.
- After major holidays, including Spring Festival at the end of January.
- Three days of inspections before major training events.
- Set inspections after X flying hours per aircraft.

Although this is a typical schedule, it is impacted by the different weather conditions throughout the country.

Every aviation unit has an annual flying quota, which is directly related to the number of maintenance hours. For example, in 2000, the flying hour quota for an air regiment in an unidentified Shenyang MRAF air division was 2,400 hours.¹³⁶⁰ However, the average number of aircraft available for sorties per flying day was not high, and the regiment flew on only 110

days during the year. As a result, the effectiveness for each flying day's flying period was extremely limited. The total number of maintenance days for the year reached 114, which included quarterly maintenance days at the changes of seasons and after holidays. During the entire year, maintenance personnel were required to be at the airfield for 224 days, which included work other than maintenance and took away from the primary mission of having aircraft ready for flying. In 2002, the PLAAF instituted a new flying reform, which increased the number of flying subjects per sortie and the length of each sortie, such that the total number of hours remained the same, but the number of sorties was reduced accordingly. After five years of adjusting the flight and maintenance schedule, the number of flying hours in the regiment's quota for 2005 was several hundred more hours than for 2000, but it took only 70 flying days to meet the quota. Furthermore, maintenance personnel were at the airfield for 144 days during the year. The number of maintenance days that were influenced by weather conditions was 80 days less than 2000.

The following examples depict the standard schedule and attempts at adapting to new more high-tech aircraft systems.

Examples, 2000-2010

In the 2000 timeframe, the maintenance personnel at a Chengdu MRAF Y-7 air regiment averaged three days of inspections before each major flight. In 2000, the regiment conducted a transport flight where the pilot flew on a single engine. This was the first time the PLAAF allowed any such flight in an operational unit.¹³⁶¹

In February 2004, *Air Force News* had two articles that compared two Jinan MRAF air regiments that were equipped with different types of aircraft.¹³⁶² The information is as follows: A Jinan MRAF air regiment equipped with a new type of aircraft conducted training that moved from day into night. During a pre-flight inspection, the maintenance flight/element chief and the flight crew used test equipment and discovered the on-board electronic control system on tail number 09 had a malfunction. Since January 2003, the maintenance group/dadui found and fixed 857 malfunctions for the regiment. Of these, 60 percent were discovered using the test equipment available.

In early January 2005, a Jinan MRAF air division conducted its first flight activity of the year from an airfield in southwestern Shandong Province.¹³⁶³ Prior to the activity, the maintenance personnel conducted three days of aircraft inspections. For three days following Spring Festival in 2006, a Jinan MRAF air division's Equipment Department organized aircraft maintenance inspections found 32 serious malfunctions, including cracked engine blades in two aircraft. After the inspection, the division's aircraft exceeded a 93 percent readiness rate.¹³⁶⁴

In July 2006, a Nanjing MRAF air regiment's maintenance group/dadui conducted major maintenance inspections on the regiment's aircraft.¹³⁶⁵ This regiment is equipped with a new type of aircraft. Through July 2006, the aircraft average malfunction rate was only 15 percent, which is 23 percent less than the previous year. One aircraft had a crack in the turbine cooling mechanism oil pan.

In September 2006, the maintenance group/dadui for the 2nd Regiment at a Jinan MRAF transition training base conducted a major maintenance inspection for its aircraft.¹³⁶⁶

In February 2006, a Beijing MRAF air regiment conducted its aircraft maintenance preparations.¹³⁶⁷ An article on this regiment discussed improvements to their maintenance processes. Previously, most of the maintenance preparation occurred according to "maintenance regulations" on a set schedule by malfunction detection personnel from the repair shop, who took their equipment out to the airfield. After they detected a malfunction, the decision to fix the aircraft there or send it to the repair shop was not made by a team of maintenance personnel associated with the aircraft. Instead, it was made by a group of specialists who did a comprehensive exhaustive analysis. The flight crew also discussed the situation with the maintenance personnel. This regiment was equipped with old aircraft, the reliability for spare parts was not stable, and the malfunction rate was high. The regiment also had to deal with many aircraft engines approaching the end of their service life and aging spare parts. For each maintenance day and each time the regiment conducted maintenance preparation, the malfunction detection personnel inspected the landing gear and other parts of the aircraft that could easily have a malfunction. As a result, the unit established "malfunction analysis" and "malfunction type research" systems, such that each time a malfunction was discovered, all of the relevant personnel met to discuss the situation and conduct a comprehensive analysis. The decision at that time could be made about checking all of the other aircraft for the same problem or conducting preventive maintenance. The close liaison between the flight and ground crews was deemed essential. Now (in 2006), by regulation, the flight crew needed to meet with the maintenance personnel at the flight line every two maintenance days to discuss the aircraft situation. As part of the education process, the regiment had a weekly "outstanding maintenance team" and has a monthly "maintenance star" competition. Since this new method was introduced, 59 types of old spare parts were replaced on 10 aircraft and 28 hidden malfunctions were discovered and fixed, with zero flights canceled for maintenance problems.

Aircraft Maintenance Changes in the 2010s

During the 2010s, the PLAAF undertook extensive reforms of its aircraft maintenance system as part of a broader transformation into a "strategic air force."¹³⁶⁸ Building on long-standing modernization efforts, the reforms have aimed to create a maintenance system capable of rapidly supporting a diverse array of sustained offensive operations from anywhere in the country.

As the PLAAF has upgraded the instruments on its aircraft, it has also upgraded its maintenance test equipment and procedures. The following paragraphs provide information from 2010 onward concerning some of these changes.

In 2010, a Nanjing MRAF air division received a new 3rd-generation fighter and implemented a new maintenance support model that had just undergone a six month trial period.¹³⁶⁹ The experts indicated that the new model achieved many "first time" breakthroughs in the history of support for fighter planes, including moving from the control of a group of planes to a single plane, moving from scheduled repairs to repairs based on conditions, and moving from

combining maintenance and supervision to separating them. To adapt to the increasingly complicated technological troubleshooting needed for 3rd-generation fighter planes, the division separated the flight clearance task from the tech troubleshooting task and reduced the number of support personnel on the flight clearance line. The first batch of specialized supervisors in the PLAAF's history, wearing yellow jackets, performed two duties in the division airfield and hangars—safety and quality control. The division abolished the unified machinery maintenance day and change-of-season maintenance, which were based on time frames versus actual flying hours, and replaced them with maintenance based on the flight time of individual planes.

An unidentified air division of the PLAAF established an informatized armament support command platform and claimed to have realized the automation of commanding related to the maintenance and repair of, as well as provision of support to, a new type of fighter aircraft.¹³⁷⁰ During the day-into-night flight training of this division, an aircraft had just finished a tactical confrontation drill and touched down when the flight parameters were transmitted to the comprehensive information office of the aircraft maintenance support flight line command center via the informatized support command platform. After some analysis, the maintenance crew quickly fixed an anomaly with the aircraft's hydraulic pressure indicator. The aircraft then took off again. According to a squadron Commander of a regiment's aircraft maintenance group, the new aircraft carried a large quantity of avionics and the configuration of systems was complex, posing a challenge to maintenance work. Only with the ability to capture information in real time, the media report indicated, could the PLA seize the initiative on the future battlefield where the volume of information is larger than ever before. The newly built informatized support platform covered maintenance and repair entities at all levels, by connecting air material, four-station, ordnance, and ammunition units, with over 500 data points. When a fault develops, the information obtained can be checked against the database and analyzed to improve the efficiency of aircraft maintenance. To detect faults earlier, an integrated engine monitoring and management system would perform smart monitoring of hundreds of performance parameters of the engines of eight aircraft models. The report on this unit asserted that this integrated system was being extended to the entire force, and made it possible to detect and fix hidden problems with aircraft engines while the aircraft were still on the ground.

A 2010 PLAAF work conference on the reform of the aviation maintenance support model focused on transforming the support model from resource efficiency to prioritizing quality.¹³⁷¹ The reforms were slated to include informatization and apply a network platform and software and information equipment to every link of aviation maintenance support. The new maintenance support model featuring “generalized flight support, professionalized technical support and detailed maintenance management” was to embrace advances in the following aspects:

- 1) Optimize contents of maintenance for each type of aircraft: Relevant specialists were to analyze characteristics of the tasks for various troops and support needs of different types of aircraft to make customized maintenance plans for individual aircraft.
- 2) Reform the maintenance system from a calendar-based to a flight hours-based approach: Change the current (in 2010) practice that involved concentrated maintenance upon groups of aircraft according to the calendar, to implementing maintenance on batches of aircraft with roughly the same flight hours. This would lead to a reduction on the constraints placed on combat training by aviation maintenance.
- 3) Adjust the division of work between field squadrons and workshop personnel: The field squadron was to be responsible for clearance support and test on aircraft's functional properties while the more technically challenging task of aircraft performance inspection was to be handed over to the workshop personnel.
- 4) “Intensify” maintenance management: The specialists were to conduct quality inspection upon major maintenance operations to transition from a general management to a specific system management approach to aviation maintenance.

According to the head of the Airfield [Maintenance] Department (外场部) under the PLAAF's Equipment Department, the Air Force was targeting to complete the test reforms on the maintenance support model for all types of in-service main battle aircraft by the end of 2011.

In 2010, a PLAAF Sukhoi fighter unit in southern China adopted a new model for maintenance and flight clearance aligned with at least some of the 2010 conference principles. Their model separated flight clearance support from the more complex troubleshooting tasks.¹³⁷² In the new model according to an armament officer from the division, a general flight clearance officer could do the work of what used to be done by five officers: mechanics, ordnance, special equipment, fire control, and electronics. The new model shortened the flight preparation time by a third, according to a flight clearance officer.

The report about the Sukhoi unit stated that preparation time for a large-scale and high-intensity exercise was shortened by about one third compared to before.¹³⁷³ While it would take more or less the same time to prepare a second deployment, the number of support personnel required was halved. In the 1990s, this division was the first in the entire PLA to be equipped with the 3rd-generation fighters. Because of various constraints, the aircraft maintenance model was the same as that for the 2nd-generation aircraft for a long time. To change this situation, the unit began by reducing the number of people needed to prepare for each flight. They reconsolidated and optimized the allocation of human and material resources. The technically less sophisticated flight clearance support process was separated from the technically more sophisticated troubleshooting process. With flight clearance support separated from troubleshooting, the flight clearance support personnel could provide generic, not specialized support. A generic flight clearance support officer could therefore accomplish what used to take machinery, ordnance, ad hoc, fire control, and avionics support officers to accomplish. The core personnel released from the flight clearance support function were transferred to the technical support squadron to study the new armament, fix its faults and breakdowns, and perform scheduled maintenance and repairs. This new aircraft maintenance model was described as balancing the intensity of work across different posts and making the work more efficient. As a result, this division scored well in "Red Force" versus "Blue Force" confrontational training, long-distance maneuver, and live-ammunition target practice.

Around 2011, all PLAAF aviation units adopted a new model of equipment support, cutting the time needed for aircraft preparation for subsequent sorties by one-third.¹³⁷⁴ An evaluative exercise to test flight support models in a realistic context was held. As soon as the aircraft that just finished a confrontation mission returned to the airfield, they received an order to take off again on a support mission. In the newly structured support team, one person was responsible for inspection and maintenance work that spans several specialties. The headcount was one-fifth less, and they only had to follow one optimized inspection route instead of five. While the workload was equal, the redeployment preparation time under the new model was reduced by nearly one-third. After this new support model was introduced at an air division, the report noted that the average aircraft failure rate and air-ground failure ratio decreased by 17.56 and 2.47 percentage points, respectively. The incidence of hidden faults, such as tear and wear and breakage, dropped from 18 cases each year on average down to eight cases a year. The rate of actually being able to identify all issues before a problem occurred increased from 90.32 percent to 93.76 percent.

The first flight after the Spring Festival in 2011 was made at the airport of a certain Beijing MRAF aviation division.¹³⁷⁵ Previously, maintenance personnel had to fill out a paper card for maintenance, and it was very difficult to master the status of aircraft. Now, if they wanted to learn about the status of aircraft, they could do it by logging into a network that has specific information each aircraft and component. At the maintenance support flight line command center, Director Li from the Armaments Department of this division told reporters that maintenance operations had certain randomness and the phenomena of making mistakes, forgetting something, and missing something that appeared from time to time since nose-to-tail extensive management was conducted in the past. For this reason, they focused on specific support during flight training. They then specified and regulated contents according to duties of positions. They also developed detailed and specific methods and standards of work.

More recent articles indicate the PLAAF has institutionalized at least some of the new procedures throughout multiple units. During five days of maintenance in early May 2013 leading up to the summer training cycle, a Jinan MRAF maintenance group discovered 39 malfunctions, which it repaired prior to the first day of flight.¹³⁷⁶

According to analyst Jack Bianchi, however, despite some progress in the development of what China calls a “new type” support system, the system remains at an early stage of development. For example, aircraft O&M costs are a major constraint on the PLA, and non-fuel maintenance costs could constrain PLA flying hours as much as fuel.¹³⁷⁷ For example, due to quality issues, Chinese aircraft engines need to be replaced more frequently than Western ones, which could ultimately be very expensive in the long term (even if the cost of one engine is lower than an equivalent Western engine). Additionally, as aircraft become more technologically advanced, the replacement of spare parts and other upkeep also become more expensive. For example, maintaining a stealth aircraft is very costly because normal wear and tear can significantly reduce the stealthy characteristics of an aircraft. These O&M costs in general, rather than just fuel, may push the PLA to limit flight hours in certain cases.

Maintenance Procedure Reforms

The establishment of information networks has facilitated reform of maintenance procedures. Maintenance units have developed their own networks that reportedly display “in real time” data on work regarding an aircraft’s flight parameters and the condition of air frames, engines, and other components. Chinese media also highlight the use of handheld diagnostic equipment to “quickly download flight parameters.” The technician then sends the data to the diagnostic center to conduct system analysis. The handheld device is also loaded with “supplementary decision-making system software” and data on spare parts and troubleshooting.¹³⁷⁸

In recent years, these networks have facilitated major reforms within the PLAAF to the processes and procedures by which it carries out maintenance, especially for the more capable, technologically advanced aircraft. The PLAAF tested some reforms from 2010 to 2011, with an unidentified Nanjing MR air unit serving as the test bed unit. The reforms consisted of four main elements: customized aircraft maintenance plans, maintenance based on flight hours of aircraft, adjustments to the division of labor, and revamped quality control.¹³⁷⁹ These elements are summarized below.¹³⁸⁰

Customized aircraft maintenance plans: Featuring a high degree of input from technicians, this line of effort aimed to develop customized maintenance plans for individual aircraft. POL and logistics support shifted to a greater focus on tailored support as well. Media reporting indicated that support teams were organized around types of aircraft and feature “modular” teams that worked in shifts and rotations before undergoing final inspection by an expert supervisor. Also characteristic of the changes was a focus on practices that could be sustained when deployed, such as “forward planning” of general support, and the articulation of support procedures, rules and regulations, training requirements and evaluation standards.¹³⁸¹

Customized maintenance: The second major reform concerns the scheduling of maintenance. Traditionally driven by the calendar, the PLAAF in previous years carried out “seasonal maintenance days” twice a year. Occurring once in spring and once in fall, these maintenance down-days forced operations to grind to a halt throughout the air force. The reform seeks instead to group aircraft by flight hours to allow a more flexible approach to maintenance. In 2011, the test bed Nanjing MR air division halted “seasonal maintenance days” and instead modified maintenance to accommodate individual planes. The division brought together logistics and armaments teams with scientific research institutes to carry out tailored, comprehensive support.¹³⁸²

Adjustments to the division of labor: This line of effort reorganized maintenance teams into two broad groups. A “field support” team consisted of personnel dedicated to carrying out basic tasks to clear and test an aircraft for operations. A “workshop” team, comprising the most skilled personnel, specialized in the inspection and other more technically challenging maintenance tasks. According to reports from the test bed unit, the former consisted of a contingent of flight clearance technicians and personnel. Such a team enabled a single person to complete “power-on

checks,” preparations, flight clearance tasks, and other work of a more routine nature. This development contrasts with common practices in the past, which reportedly took “five specialized technicians to accomplish.” The report claimed that during routine training, takeoff preparations required less than half the personnel common in traditional practice.¹³⁸³ Three specialties—ordnance, special installations, and wireless facilities—were consolidated into a single specialty for “equipment onboard aircraft.” These individuals were also responsible for flight preparations and checks of the relevant equipment.¹³⁸⁴ The latter team consisted of more senior, experienced expert technicians with access to more sophisticated diagnostic equipment. These individuals worked in a “backstage” environment to carry out research, troubleshooting, and other technical work to maintain the equipment.¹³⁸⁵

Although the PLAAF has continued to write new regulations over the past few decades, it still continues to encounter some of the same problems. Following the PLA-wide reorganization that occurred in 2016, the PLAAF made some major changes to its aircraft maintenance system yet again. For example, in 2017, an Eastern TCAF air brigade adjusted its maintenance practices.¹³⁸⁶ In the past, aircraft maintenance was carried out without differentiating between complex technical maintenance and relatively simple flight dispatch support, such that this bundled approach cost a lot of time and money and was inefficient and lacked quality. Therefore, this brigade reformed its support model so that a number of backbone maintenance personnel were transferred to work solely with the technical maintenance squadron, where they focused on the weekly inspections and troubleshooting and they no longer needed to participate in routine dispatch support work. Using the inspection of the engine after 100 flight hours as an example, under the new support model, the support and maintenance time for each engine had been reduced by 130 minutes. As a result, the saved engine life would be used toward training and combat, which was a significant amount of military economic return. Yet another major change that was tested in December 2017 was to allow NCOs at a test and training base to play a larger role in aircraft maintenance.¹³⁸⁷ Specifically, the unit allowed an NCO technical mechanic to become the leader of a maintenance crew. This allowed flight line maintenance to be carried out mainly carried out by NCOs while technical maintenance would be conducted by officers. Of note, as a result of the 10th force reduction in 2004 when the PLA began turning over dozens of junior officer billets to NCOs, the PLAAF began to allow some NCOs to become “acting” maintenance crew chiefs on the flight line and leaders in maintenance squadrons (company level) and maintenance groups (battalions). In addition, around August 2017, a Western TCAF air transport unit organized a dissimilar aircraft maintenance support live-troops drill to evaluate the maintenance skills of more than 10 aircraft maintenance elements.¹³⁸⁸ The unit had recently implemented a new maintenance support model based on the idea of “lifetime maintenance” and “precision maintenance,” which emphasizes efficient and precise inspections and maintenance practices throughout the lifetime of the aircraft, versus the former model of “preventative maintenance” based on replacing parts on a schedule instead of when the parts actually needed to be replaced. As a result of the changes, the number of errors logged by the maintenance personnel had dropped by 80 percent since adopting this new practice. In addition, in 2018, a Western TCAF aviation unit revised its maintenance schedule by merging its flight preparation days and flying days, so that both take place on the same day.¹³⁸⁹ As a result, because there was no longer a dedicated mechanical day, maintenance personnel in the unit normalized the rate of combat aircraft being in good condition and able to deploy at any time.

One additional issue for the PLAAF is whether it can conduct sustained aircraft operations for multiple days from an aircraft maintenance perspective. For example, a 2014 issue of *China Air Force* magazine had a lengthy article about aircraft maintenance which noted that every airframe has a dedicated maintenance and logistics crew composed of officers and enlisted personnel.¹³⁹⁰ According to the article, a Nanjing MRAF air unit conducted day-into-night flight training in 2014. The day for the maintenance crew, all of whom lived in the barracks, began at 0630 when the wake-up alert sounded and they reported for duty. Upon arriving at their duty station, the crew began preparing a total of 11 aircraft, including one back-up that eventually replaced another aircraft due to a malfunction, for two day-time sorties and one night-time sortie, which began at 1330. At 2200, the sorties concluded and the

maintenance crew had to finish their work and then head back to the barracks. Of note, the article's depiction of the training indicates that the PLAAF is still working on regularizing sustained aircraft operations.

Pilot Ratings

In 1986, the PLAAF began awarding one of four aeronautical ratings to all aircraft crew members, including pilots, navigators, communications personnel, gunnery personnel, and instructor pilots.¹³⁹¹ The PLAAF has not published figures on the number of pilots in each grade. The four grades are as follows, listed from highest to lowest:

- Special grade (特级)
- First grade (一级)
- Second grade (二级)
- Third grade (三级).

The criteria for acquiring these grades include time on station, flying hours, special missions, ability to fly in daytime and nighttime, and ability to fly under instrument flight rules (IFR) and visual flight rules (VFR) conditions.¹³⁹² Pilots who do not meet the standards at each level are given supplemental training or are grounded.

After graduating from a flight academy, pilots can be awarded a third-grade rating if they have achieved the required technical level. Two to three years after being assigned to an operational unit, they can be awarded a second-grade rating by flying under day and night IFR conditions, maintaining flight safety standards, and reaching a certain proficiency level. Next, they can become first-grade pilots if they have: conducted combat and training missions under day and night IFR conditions; flown a certain number of hours; reached the levels of instructor pilot, flight leader, and flight commander in the tower; and maintained flight safety standards. Finally, they can become special-grade pilots if they have: already been approved as first-grade pilots; made special achievements in combat, training, and test flights; and maintained flight safety standards. As a general rule, based on analysis of multiple profiles, it appears that pilots do not become a special grade pilot until they reach the regiment-grade level, which includes some pilots who are in special mission aircraft at the flight group level. The reason for this is that special mission flight groups are organized and treated like a regiment-grade organization.

Pilot Age Limits¹³⁹³

In 1986, the PLAAF also established age limits for its pilots.¹³⁹⁴ When a pilot is no longer allowed to fly, due to age, incompetency, or ill health, he or she is grounded (停飞). The age limits for each type of pilot are as follows:

- 43 to 45 for fighter and fighter-bomber pilots
- 48 to 50 for bomber pilots
- 55 for transport pilots
- 47 to 50 for helicopter pilots
- 48 for female pilots.

In 2017, unmanned aerial vehicles (UAV) controllers were added to the list, such that they could remain in their pilot billets until they are 55.¹³⁹⁵ In addition, the PLAAF announced that grounded pilots who are deemed fit to continue working in units could take on billets in these areas: UAV control (无人机操控), air traffic control, operation and training staff officers, political work, teaching, and research. In addition, those who have reached their age limit will be recommended to civil aviation companies based on their qualifications.¹³⁹⁶

Information Technology Upgrades

During the 2000s, the PLAAF developed and fielded several information technology and computer-based systems that allow pilots and flight commanders in the tower, as well as unit leaders, to improve their job performance. Some aircraft have been equipped with the Flight Parameter Recording System (*feican* / 飞参), which was noted elsewhere in this chapter and is used as the basis for unit debriefs at the end of each flying period. When combined with other systems at the ground processing station, it acts as an integrated monitoring system that measures, records, and processes the working status and parameters of the aircraft and its systems.¹³⁹⁷

The Flight Parameter Recording System can reportedly collect and preserve more than 70 sets of key parameters during a flight, such as flight control, engine status, flight status, and instrument indicators. In addition, the Real-Time Flight Monitor System (飞行实时监控系统), which works in conjunction with the Flight Parameter Recording System, can accurately transmit flight parameter information and satellite navigation positioning information for a single or multiple aircraft beyond-visual-range to the control tower on a real-time basis, where the information is displayed on the Expert Evaluation System terminal.¹³⁹⁸

The Flight Parameter Recording System can perform diagnosis and prediction of aircraft failures and assess the quality of the flight. The Real-Time Flight Monitor System takes the signals recorded by the flight parameter recording system and the GPS positioning signals, and, through data transmission radio transmitters and antenna, transmits them in real time to the tower's command system terminals. Flight commanders in the tower can then look at the display monitor to gain real-time access to the attitudes, positions, and courses of the aircraft in the air. They can also see some instruments in the cockpit. As a result, they can better command the aircraft and determine aircraft malfunctions during flight.¹³⁹⁹ The system can also help identify aircraft malfunctions. For example, by 2005, a total of 116 malfunctions were identified and then fixed.¹⁴⁰⁰ In 2015, ten personnel were given awards for fixing major malfunctions based on over 50 data points that was gathered from a new Engine Monitoring System that is linked to the Flight Parameter Recording System.¹⁴⁰¹

When a pilot does not perform correctly, personnel can immediately use the Flight Parameter Recording System to analyze the situation. A 2002 *Air Force News* article provided a good example of how the program was employed.¹⁴⁰² The article discussed the unsatisfactory situation at an air unit where the pilots were not up to par. The unit made the decision to conduct a three-part critique at the end of each flying day: (1) the first part would be the leading cadre reviewing the situation; (2) the second part would be the flight commander speaking; and (3) the third part would be the pilot critiquing the flight. The article noted that, prior to this, the pilots did not conduct detailed reviews of their sorties because there was no data to observe. As such, everyone had to take their word for what they said they did.

In 2016, a Northern TCAF air brigade conducted maritime low-altitude flight training.¹⁴⁰³ After the training, while checking flight parameters, Commanders noticed that one of the pilots had been flying four meters below the required altitude and deemed the pilot unqualified. Due to pilot complaints in an Eastern TCAF air brigade in 2017 concerning the data system and the increased amount of flight training, the brigade improved its data processing methods to provide better support for the Flight Parameter Recording System.¹⁴⁰⁴ After multiple months of work and hundreds of tests, a new data management platform was put in use.

On 5 December 2017, at a Central TCAF air brigade flight quality review meeting, a few pilots were criticized because of the poor quality of the sorties they had just completed.¹⁴⁰⁵ As the year end approached, there was a small amount of the required quota for flying time left, and a minority of pilots began to relax their efforts. According to the brigade Commander, using the training “big data” system and Flight Parameter Recording System, combined with the evaluations of the instructors, his brigade carried out quality control over each sortie to ensure pilots who were “in the red” (i.e., had not met their requirements) would be penalized and re-trained before proceeding to regular training.

In the early 2000s, the PLAAF also fielded another key system identified as the MRAF Flight Training

Organization and Command Network Management System (军区空军飞行训练组织指挥网络化管理系统), which allows unit leaders to track annual training plans, monthly training plans, and flight time per week.¹⁴⁰⁶ The system is reportedly fully networked, allowing for communication among divisions, regiments, and all flight groups.

Aircraft Support

During aircraft deployments prior to 2002, the PLAAF moved almost all of its aviation unit support personnel, ground equipment, and supplies by rail and road. Under the 2002 revised OMTE, however, the PLAAF gradually increased its use of transport aircraft to support aircraft deployments to other airfields.

Since the late 2000s, the PLAAF has increased the amount of training it has done to provide support for unit exercises and training within China. For example, a November 2018 profile of the 4th Air Division in Sichuan noted that it was established in 2004.¹⁴⁰⁷ At that time, it only had a few aged light transports, but it has since transitioned to the Y-8 and Y-20 and taken on a wider variety of missions, including relief missions for the 2008 Wenchuan Earthquake. Concerning actual-combat training, its progress was depicted as transforming from a transport force to a combat force. The transformation is also described as going from battle transport (战役运输) to strategic projection (战略投送), and from battlefield S&R to strategic S&R. In 2015, the unit took off from an airfield high above sea level and landed in a mountain valley. It carried out a simulated aerial minelaying mission in an unfamiliar environment. In an unidentified year, the PLAAF constructed its first double runway airfield and used advanced informatized command methods to improve support. The aircraft also provide support for the PLAAF's Airborne Force by dropping troops and supplies. In summer 2018, the division participated in both the *Aviadarts* international military competition and the *Peace Mission-2018* exercise in Russia.

The PLAAF's transport force has also expanded its activities abroad since 2002 in support of HA/DR operations and to support PLAAF combat aircraft deployments abroad for combined exercises.¹⁴⁰⁸ For overseas operations, it has primarily used its IL-76 transports from the 13th Air Division, but as noted later, it began to use the Y-20 from the 4th Air Division to deliver COVID-19 supplies abroad.¹⁴⁰⁹

PLAAF Training Activities in Tibet and Western Xinjiang

In recent years, the PLAAF has also increased operations and training in Tibet and western Xinjiang, including with greater types of aircraft operating in the region for longer periods. During the 1980s through 2000s, the PLAAF occasionally deployed a few aircraft to Tibet for a short period of time. They primarily stayed at Lhasa Gonggar airfield, which is about one hour from Lhasa. During the 1980s to late 2000s, it only had a few aircraft (J-7s) stationed there at any given time, and they rarely flew. Starting in 2011, the PLAAF began deploying J-10s, J-11s, JH-7s, KJ-500 AEW, and BZK-05 UAVs to various airfields, including Lhasa Gonggar and Shigatse Peace Airport, which is about 250 miles west of Lhasa, for a short-term rotational basis, usually from July to September, but some might be there all year.¹⁴¹⁰ Most of the aircraft are assigned to the Western TCAF. Both airfields are dual-use, so civil

aircraft fly in all year long and the runway is built for civil aircraft. The PLAAF also has airfields in Hotan (Hetian) and Kashgar in western Xinjiang, where the PLAAF deployed two J-20s in August 2020.¹⁴¹¹

In April 2018, the Western TCAF conducted a live-fire exercise in Tibet. According to a *Global Times* article:

“A brigade from the People’s Liberation Army (PLA) air force successfully hit all targets with four rocket-propelled grenades after it conducted its first live-fire drill on a plateau, a move hailed by experts as a significant progress on the military’s capability in cross-regional missions. In order to make the exercise more challenging, the unnamed brigade chose a target that was only one-tenth the size of a simulated target, instead of targets that

are large and easily seen. Ballistic trajectories are different on high plateaus as the air is thinner at altitude, which demands greater ability from pilots to project and adjust the firing. The oxygen deficit on plateaus is also physically challenging for pilots. The exercise encountered turbulence as the jets flew over the mountain valleys, as well as a sudden sandstorm which blurred the pilots' vision. The 100 percent hit rate shows that the PLA air force is able to accomplish attacking missions in regions they are not stationed in and also in extreme environments and geographic regions."¹⁴¹²

In addition, as noted in the radar section of Chapter 3, the PLAAF has had a well-known radar station located in Ganbala, Tibet, for decades, which is five hours from Lhasa.¹⁴¹³ The station is over 4,500 meters above sea level, the average temperature is 10 degrees Celsius, and windspeeds are severe.

Over the years, as discussed in the Airborne Corps Training section, the PLAAF's Airborne Force has also trained in the Qinghai-Tibetan Plateau's portion in Qinghai.¹⁴¹⁴

The Role of Political Officers in Aviation Unit Training

Historically, most political officers in PLAAF units began their career as an operations officer, transferred to their Political Director billet at the company level, and then moved up to PC at the regiment level.¹⁴¹⁵ They did not begin their career as a cadet in the political track and then become a staff officer in a Political Department. The primary reason for this is that the PLA does not want to have political officers making poor decisions that could impact the unit's operational capabilities. After becoming a Political Director in an element, they then remain in the same unit hierarchy most of their career. The political officers often serve as the duty officer in the command post or as the officer in charge for a shift. For example, in some PLAAF radar sites that are located on the top of a mountain and the barracks is at the bottom of the mountain, the political officer, because he or she is the same grade as the Commander, serves as the shift Commander when the Commander is in the barracks. That said, however, no examples were found of a pilot moving over to a political officer billet in the PLAAF and working his or her way up the political career ladder. As such, it appears that most, if not all, political officers in aviation units have no aviation operational experience. It is not clear, however, where most of them began as an officer.

This explains why the PLAAF has been trying to get them involved in observing as much training activities for pilots as possible. Numerous articles from *Air Force News* 2016-2018 documented the intensified effort pushing the PLAAF political officers to perfect the so-called "political work under the aircraft wings (机翼下政治工作)" through "speaking the same language" as pilots, and acquiring advanced technical skills under the ongoing military reform.¹⁴¹⁶ In a 2016 *Air Force News* article, it was reported that a Northern TCAF air regiment's flight group political officers not only diligently monitored the mental status of the pilots but also are 100 percent capable of reading flight parameter data.¹⁴¹⁷ In yet another 2016 reporting, it was noted that an Eastern TCAF air regiment's Party Committee realized that its Political Instructors were the best partners of the flight group Commanders and "when the flight group Commanders were deployed elsewhere, the Political Instructors would take on the role in group training along with the flight group Deputy Commanders."¹⁴¹⁸ In 2017 alone, "Over 50 brigade HQ political officers participated in flight training, entering the first line (一线) to better understand training. Political work night schools (政工夜校)" were also organized to teach political officers "technical knowledge such as aerial command, maneuvers, weather patterns, data reading, and aircraft maintenance."¹⁴¹⁹

Shifting Commanders from the Tower to the Command Post

Based on information from various PLAAF sources, one of the most significant reforms has been to begin providing pilots in all air units (divisions, brigades, regiments, and flight groups and squadrons) with the "autonomy"

to create their own flight plans, taxi out and take off without strict guidance, to conduct “free air combat” while implementing the flight plan, and then land without strict guidance from a senior officer in the tower. The PLAAF has identified this overall control as the “nanny model.”¹⁴²⁰

In order for pilots to implement their new autonomy, the PLAAF began planning for reforms in 2008 to move the flight commanders (飞行指挥员) from the control tower down to the command post in the bottom of the tower and replace them with ground officers identified as flight adjusters (飞行调配员). Although the program was implemented for fighter and fighter attack units, it did not appear to have been implemented for bomber and transport units.

The term flight commander refers to the three senior officers in the control tower who serve as air traffic controllers (ATC) and aircraft command and guidance (指挥引导) controllers for air engagements.^{hp} The senior flight commander in the control tower is normally the Regiment Commander, one of the two to three Deputy Commanders, or the Chief of Staff (e.g., the director of the Headquarters Department). Other key personnel in the tower include navigation and communications directors. Depending on the situation, the regiment’s political commissar can also be in the tower, shown below.

The first group of flight adjusters was selected from grounded pilots and navigators, but the PLAAF is now training cadets to assume these positions. Each control tower also has a flight support room manned by logistics and maintenance personnel.

In addition to selecting officers who are already at an airfield, the PLAAF began a new program to educate and train cadets to eventually become flight adjusters. The April 2012 issue of *China Air Force* magazine has a three-page article on a new program to train cadets to become flight adjusters.¹⁴²¹ According to the article, the first class of 30 flight adjusters in the Air Force Engineering University’s (AFEU) Air Force Air Traffic Control Department (空军航管系) began on 15 February 2012.

Under the new reforms, which were implemented in 2012, the number of officers in the top of the control tower has been reduced from about 13 to five, and the number of officers in the command post has been increased accordingly. The new flight adjusters serve as air traffic controllers for skills training (e.g., takeoffs, navigation, and landings) out to between 30 and 50 kilometers from the airfield, and the flight commanders, who now reside in the command post, command and control tactics training in the unit’s training and operational airspace. When the air unit conducts “Red” and “Blue” opposition-force training, each group has its own flight commander in the command post. Unlike previous training, where the two groups coordinated their tactics prior to taking off, the two groups do not exchange information ahead of time so as to train in a more realistic operational environment. The flight commanders apparently coordinate with the pilots once they are airborne through the use of data links, but little information is available about how this is accomplished. In some cases, pilots have also conducted training under complete radio silence.

It appears that at least some of the officers who had been moved to the bottom of the control tower were moved back to the top of the control tower starting in 2017.¹⁴²²

Airborne Corps Training

Key Finding

- The PLAAF uses several terms for its airborne component: Airborne Force, Airborne Troops, Airborne Branch/Arm, (空降兵/空降兵部队) and Airborne Corps (空降兵军).¹⁴²³ Depending on the context, this book uses Airborne Force, Airborne Troops, or Airborne Corps.

^{hp} Note: The PLAAF and Naval Aviation do not have a term for ground controlled intercept (GCI). Although the PLA has a term for command and control (指挥控制), it is primarily focused on higher level commanders providing command and control to units. Command and guidance is more directed at commanders giving guidance to specific components of their unit, such as a commander in a tower providing guidance to a pilot in the air.

- The PLA has emphasized use of the Airborne Branch to deploy troops behind enemy lines to seize airfields and to conduct sabotage operations alongside PLA Special Operations Forces units.

The PLAAF's Airborne Force was created in 1950 as a branch/arm and was known as the 15th Airborne Corps (空降兵军).¹⁴²⁴ Doctrinally, China has emphasized use of the Airborne Branch to deploy troops behind enemy lines to seize airfields and to conduct sabotage operations alongside PLA Special Operations Forces units.¹⁴²⁵ In April 2017, the 15th Airborne Corps was re-named the Airborne Corps—dropping the “15th” appellation. 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 units.¹⁴²⁶ As discussed in Chapter 5, however, the PLAAF abolished the Airborne Troop College in 2017 and replaced it with a training base.

The Airborne Force remains directly subordinate to PLAAF HQ. As part of the latest reforms, the three former airborne division headquarters were abolished whilst their six subordinate regiments were upgraded to brigades. The revised Airborne Corps has, at a minimum, the following units: six Airborne Brigades, a Transport Air Brigade, a Special Operations Brigade, a Combat Support Brigade, and a Training Base. Prior to the reorganization, the 15th Airborne Corps had a single helicopter regiment that still apparently exists, but it is now directly subordinated to the Transport Air Brigade.¹⁴²⁷ As noted in DOD's 2019 *Annual Report to Congress*, although the Airborne Branch has increased in size, the PLAAF does not have enough aircraft to provide airlift support for all of its forces.¹⁴²⁸

Training Locations¹⁴²⁹

Most of the Airborne Force's training occurs in the Dabie Mountains (located along the border between Hubei, Henan, and Anhui provinces) and the Central Plains (located along the middle and lower reaches of the Yellow River in Shanxi, Henan, and Shandong provinces). However, to adapt to various adverse operational conditions, airborne units have also conducted exercises in the snowfields of the Greater Khingan (*Da Xingan*) Mountains in northeast China; the jungles of the Shiwang Mountains in Guangxi; the Kunlun Plateau; and the Qinghai-Tibetan Plateau, which is 4,600 meters above sea level, where the air is thin.¹⁴³⁰ During *North Sword 2005* in the Beijing MR, several thousand airborne troops were transported over 2,000 kilometers from the Central Plains to a “battlefield” north of the Great Wall. This was reportedly the largest-scale long-range deployment in the history of China's Airborne Force.¹⁴³¹

As noted later in this chapter, the Airborne Force has also conducted training in several foreign countries.

Training Content¹⁴³²

The Airborne Force is increasing the size of its large-scale training events and exercises. During the 2010s, these training events and exercises have focused on long-distance training events by air and on the ground to areas other than the Dabie Mountains and Central Plains, training in adverse weather conditions, confrontation training, air-dropping of heavy equipment, and combined-arms training with the Aviation Branch.

Training Schedule¹⁴³³

Pre-2013 Schedule

In 2002, the Airborne Force implemented a new three-stage training program consisting of individual-troop foundational training, tactical training, and composite training.¹⁴³⁴ “Composite training” means that each sortie from base includes more than one training subject.

Prior to the reforms in 2013 that moved the training cycle forward by three months, the annual training cycle for airborne units began in late November when second-year enlisted personnel and NCOs who are not promoted to the next grade were demobilized. Any new squad leaders replacing those who were going to be demobilized must receive some type of leadership training. For example, in October 2005, an airborne division began 90 days of

military theory and leadership training for 168 enlisted personnel selected to become squad leaders.¹⁴³⁵

Prior to 2013, in early December, new conscripts arrived at the three airborne divisions. They were assigned to new-soldier battalions and companies, where they received their basic training.¹⁴³⁶ New personnel usually completed their basic training in late January or early February. They were then assigned to their permanent billets and began the foundational phase of training. One of the first steps was to conduct their first live jump from a Y-5 transport sometime in March or early April.¹⁴³⁷

Once the new enlisted personnel completed their first jump, they were gradually integrated into their operational units during the tactical phase of training. This phase began in April as the units began the progression of training events involving first platoons, then companies, battalions, and regiments, and finally divisions. In late June, the new conscripts conducted their first jump from a larger transport and maneuvers on the ground after landing.¹⁴³⁸

Even though the new personnel were not fully integrated until the summer, larger units still conducted training events as early as April. For example, in April 2005, the PLAAF Commander at that time, General Qiao Qingchen, observed an airborne division training event directed by the General Logistics Department that involved providing logistics and equipment support to units at the front line.¹⁴³⁹ However, these training events and exercises may have been on a smaller scale than those held in the late summer after the new conscripts were fully integrated into their units.

During the late 2000s, the PLAAF began making efforts to accelerate the training cycle. For example, since the 2002 OMTE was published, the timeframe within which new conscripts completed their parachute training was gradually shortened. Prior to 2004, parachute training required 40 training days. After 2004, the figure was reduced to 27 training days.¹⁴⁴⁰ To accomplish this reduction in training time, the Airborne Force adopted a single technique that could be used for all aircraft instead of using a different type of parachuting technique for each aircraft model.

Training reached a peak in the fall before the second-year enlisted member and NCO demobilization process began in November. For example, a September 2005 training event covered five provinces and involved more than 30 training subjects, including reconnaissance, communications, command, and cooking meals in various environments.¹⁴⁴¹ The event focused on the following areas: moving troops and equipment by rail, road, and air; fighting while on the move; feeding and housing the troops; hiding; repairing equipment; and conducting communications.

Post-2013 Schedule

For all practical purposes, the full schedule noted above was moved forward by three months in 2013, whereby the new enlisted personnel arrived at the airborne units in September to begin their basic training; however, basic training for all PLAAF enlisted personnel was increased to three months, such that they did not complete their basic training until mid-December. All new soldiers were assigned to their brigade, where they received their basic training in a training company. This training included learning how to parachute from a scaffold. After they finished their training, they were assigned to their permanent billet within the same brigade.

In January 2018, soldiers in the PLAAF's Airborne Corps who enlisted in 2017 performed their first large-aircraft parachute training,¹⁴⁴² and soldiers who enlisted in 2016 performed their final parachute training.¹⁴⁴³ One airborne brigade trained these soldiers in three types of aircraft and multiple day- and night-time drops, transitioning the 2016 enlistees from new soldiers into combat personnel. New Airborne Corps soldiers continue to receive training through the spring, with one airborne mechanized regiment conducting automatic rifle live-ammunition evaluations in March.¹⁴⁴⁴ Basic military training continues even at these training bases, which consists of basic boxing moves and shouting out military slogans.¹⁴⁴⁵

Surface-to-Air Missile Unit Training

Key Finding

- PLAAF SAM units are working to increase training complexity, particularly units' mobility during training, but significant challenges appear to remain in certain areas, including logistics and nighttime training.

This section discusses the SAM component of the PLAAF, which was created in 1958. As noted in Chapter 3, the PLAAF's AAA and SAM Branches/Arms were merged into a single Ground-to-Air Missile / Ground Air Defense Branch/Arm in 2007. Only one recent detailed assessment of PLAAF SAM training activities was available to the authors: In 2016, Bonny Lin and Cristina Garafola compared SAM unit training in the mid-2010s to information on training in the mid-2000s collected by Ken Allen.¹⁴⁴⁶ This section provides highlights from their 2016 RAND Corporation study.^{hq, 1447}

Historical Evolution and Training Guidance

According to the authoritative *China Air Force Encyclopedia* (2005), PLAAF SAM units have strengthened their ability to counter threats during at least three different phases since the 1950s, though they have not tested the latest changes in combat. Specifically, PLAAF SAM units have not engaged in combat since 1987.^{hr, 1448}

During the first phase (1950s to 1970s), China was mainly concerned with countering the threat of high altitude air assaults (高空空袭威胁). The first two PLAAF SAM units were established in 1958 in the Beijing and Nanjing regions, two regions that continue to be of highest priority to China. Within a year of formation, they struck down a Chinese Nationalist RB-57D aircraft over the Beijing area.¹⁴⁴⁹ From the start of the Korean War in 1950 to conducting air defense in Laos in 1973, PLAAF air defense forces, primarily AAA and some SAM units, reportedly shot down over 1,000 enemy aircraft and damaged another 2,200 aircraft.¹⁴⁵⁰

During the second phase (early 1970s to the mid-1980s), the increasing threat of low altitude surprise air attacks (低空突防威胁) became apparent, and SAM tactics evolved to counter electromagnetic resistance and target enemy forces flying at low altitude based on lessons learned from the 1973 Arab-Israeli War and the 1982 Falklands/Malvinas War. SAM troops became the primary air defense force units, and AAA units played a secondary role in support of SAM activities. Both international conflicts underscored for China the importance of improving coordination between SAM and aviation units to maintain command of the air. SAM units needed to strengthen their ability to strike targets at low altitude (低空) and extreme low altitude (超低空), while increased mobility and maneuverability were additionally viewed as essential to their survival. During this period, China wrote and established its campaign guidance and combat regulations (战斗条令) and command instructions (指挥教令) for its PLAAF SAM forces.¹⁴⁵¹

From the mid-1980s onwards, the most recent phase described in the encyclopedia, there was growing awareness that China's air defense forces could encounter sophisticated adversaries in the future. The PLAAF-published book *Air Force Operations Research* (空军作战研究) from 1990 stated that "air defense will become an increasingly difficult challenge as China's potential enemies acquire more advanced aircraft that can attack from many directions at low altitudes under cover of electronic jamming."¹⁴⁵² The PLA also observed that modern SAM systems employed in conflict by other militaries were capable of complex operations, including (as the 2016 RAND study notes) "dealing with electromagnetic jamming, precision strike attacks, and saturation attacks... [with] some success in intercepting ballistic missiles and striking stealth aircraft."¹⁴⁵³ As a result, PLAAF SAMs shifted their focus to "counter[ing] medium- and small-scale precision air assaults (中小规模精确空袭)." The same study explains that as the range and

hq Bonny Lin and Cristina L. Garafola, *Training the People's Liberation Army Air Force Surface-to-Air Missile (SAM) Forces*, Santa Monica, CA.: RAND Corporation, RR-1414-AF, 2016, used with permission.

hr In 1987, a Vietnamese MiG-21 that crossed the border into China's Gansu Province was shot down by a PLAAF SAM unit.

altitude capabilities of PLAAF SAMs increased, “SAM units transitioned from key point air defense (要地防空) to area air defense (区域防空) by expanding their protection of China’s key political and economic centers to defending larger regions,” and the PLAAF also began layering multiple types and ranges of SAM systems to protect targets.¹⁴⁵⁴

As mentioned in Chapter 2, the PLA also derived lessons learned from the Kosovo War in 1999 with regards to training its ground-based air defense forces via the updated “three attacks and three defenses” (三打三防) concept¹⁴⁵⁵ of attacking incoming cruise missiles, stealth aircraft, and helicopters, while defending against precision strikes, electronic interference, and reconnaissance and surveillance.¹⁴⁵⁶ Lessons learned from overseas conflicts into the 2000s emphasized rapid mobility, deception, dispersal, and nighttime operations.¹⁴⁵⁷ The implications for the direction of future SAM training, as articulated in the *China Air Force Encyclopedia*, included the need for more networked training, training focusing on countering specific targets, and training under conditions of electromagnetic interference.¹⁴⁵⁸

Aligned with the encyclopedia, the 2009 *Outline of Military Training and Evaluation* discussed earlier in this chapter, and more recent annual training guidance, focused on informatized operations, complex electromagnetic conditions, conducting combined-arms and joint operations, nighttime, and confrontation training.¹⁴⁵⁹

Perhaps reflecting the relatively late development of ground-based air defense force theory as described in Chapter 2, Lin and Garafola found that few Chinese texts provided detailed information on SAM tactics and combat methods.¹⁴⁶⁰ The 2005 *China Air Force Encyclopedia* notes three key combat methods for SAMs:

- “Maneuvering ambush (机动设伏): SAM units engage in concealed maneuver to lay traps along potential enemy aircraft flight paths or near key targets in order to strike down enemy air targets without being detected.”
- “Close and quick combat methods (近快战法): As an enemy aircraft nears or enters within range, the SAM unit turns on its target engagement radar and quickly locks onto the target. This decreases the amount of radiation emitted by the SAM unit’s guidance radar and limits the ability of enemy aircraft to detect the unit’s location.”
- “Combat methods of anti-jamming (反干扰战法): SAM units employ a variety of measures to eliminate or decrease electronic jamming and counter enemy air targets,” which include leveraging radar networks, limiting electronic radiation, conducting denial and deception activities, and coordinating operations together with other types of units, among others.¹⁴⁶¹

PLAAF SAM Training Activities

As previously mentioned, Lin and Garafola analyzed SAM training for one year (November 2013 to October 2014) and compared it with summaries of articles on SAM training from 2004 through 2006 collected by Ken Allen.¹⁴⁶² This section briefly summarizes their findings with regard to training activity during the year and training content and trends over time.

SAM Training Cycle

A 2013 *Xinhua* article explains that the PLA-wide recruiting and conscription cycle for enlisted troops shifted three months earlier in the year for a number of reasons, primarily to attract more “high quality” recent graduates to the military, particularly college graduates.¹⁴⁶³ Prior to the broad PLA-wide reforms in 2016, the PLAAF training cycle was heavily based around the training cycle of two-year enlisted personnel, who are a large proportion of PLAAF service members in some of the PLAAF’s five branches. However, as noted in Chapter 8, the PLA as a whole has begun to shift to recruiting/conscribing enlisted personnel that occurs twice a year instead of just once. However, it is likely that the overall training cycle will continue to have ups and downs based on the new cycles.

Based on Lin and Garafola’s analysis, the SAM training cycle aligns with the PLAAF’s and PLA’s broader training

cycle, as the training activity in their data set reflected higher activity during the summer.

Training Content and Trends

Lin and Garafola assessed key dimensions of training content discussed in *Air Force News*. In their 2013-2014 data, they found that mobility was most frequently discussed in articles about SAM training—most often referring to maneuver, though some articles discussed long distance mobility. Confrontation (often simulated but sometimes with real aviation opponents), electromagnetic jamming or interference, live fire, nighttime training, and training in complex environments were also relatively frequently discussed. Unscripted, combined-arms, and joint training were mentioned less frequently.

Analysis of the *Air Force News* dataset highlighted four key training themes, each of which is summarized below.

Realism and Sophistication of Combat Training

Lin and Garafola's analysis found more frequent discussions of sophisticated training in the 2013-2014 dataset compared to the mid-2000s data, including more confrontation training against aviation units (with discussion of SAM units serving on Red as well as Blue teams), more unscripted training and training under unknown conditions, and increased training duration and intensity. The articles highlighted both mistakes—sometimes fairly basic mistakes—and shortcomings in SAM unit performance in multiple training tasks, indicating that units were being asked to perform at higher levels than in the past. For example, some articles noted that most SAM troops lack the training to perform even the most basic repairs and maintenance on their equipment, making them dependent on specialists to perform these tasks. Some units are now beginning to train troops and personnel to be able to perform basic tasks to lessen their reliance on specialized personnel who may be difficult to locate in the event of military operations. Specialized technical support personnel are also training to provide support at longer distances.

For some of the SAM units, "*Air Force News* articles indicate[d] that training with neighboring aviation units has become more common." Lin and Garafola also note that longer duration training appears to be a relatively new training focus. One article mentioned that a Chengdu MRAF brigade "did not began 24-hour continuous training until 2014."¹⁴⁶⁴

Maneuver, Mobility, and Nighttime Operations

The activities covered in the 2013-2014 dataset indicated a clear training focus on rapid and long distance mobility, as well as improving logistics capabilities to facilitate that mobility. However, PLAAF SAM units were still addressing basic challenges for mobility and nighttime operations. Some of these challenges included quickly packing and unpacking supplies, rapidly preparing in response to unannounced operations or surprise attacks, concealing their movements when exiting the "resting state" (静态), or moving between locations.¹⁴⁶⁵ As Lin and Garafola found, however, some articles mentioned certain units had improved their concealment capabilities by "requir[ing] troops to separate into smaller echelons and take different routes to reach the same destination."¹⁴⁶⁶ For nighttime operations, multiple articles cited examples of safety concerns overriding focus on increasing training realism and sophistication, with few explicit nighttime confrontation training activities mentioned regardless of how basic or sophisticated the training activity.¹⁴⁶⁷

Data Sharing and Target Coordination

Though Lin and Garafola did not find frequent discussion of SAM units participating in joint or combined-arms training in their data, PLAAF articles noted that SAM units are improving their ability to communicate with PLAAF and non-PLAAF units beyond altitude deconfliction with aircraft. As one example, reporting on the *Joint Action 2014E* exercise contrasted SAM performance in the exercise with an earlier "air-land exercise" in 2012. In 2012, the

“Red Force” ground-based air defense forces were not able to communicate with the aircraft on their side, leading to heavy attrition on the ground.¹⁴⁶⁸ In the 2014 exercise, however, the ground-based air defense forces—which may have included PLAAF SAMs as well as PLAA SAMs—harnessed a “new coordination station” and a “data receiving vehicle” for communications with PLAAF aircraft, and the resulting coordination enabled the SAMs to bring down four “Blue Force” aircraft.¹⁴⁶⁹

Denial and Deception Tactics

SAM training activities during the past decade have included focus on denial and deception capabilities, such as maneuvering ambush (including moving locations more than once), close and quick tactics, and anti-jamming combat methods. *Air Force News* articles surveyed by Lin and Garafola “explicitly describe SAM forces turning on and off their radars to avoid detection and using multiple radars to relay detected targets.”¹⁴⁷⁰ PLAAF SAMs are also training to target adversaries flying at low and extreme low altitudes. Lin and Garafola found some of these targets were described as “small, slow, low altitude moving¹⁴⁷¹ or “gliding, low altitude, and slow moving objects, fast-moving objects with low radar cross-section” (RCS),¹⁴⁷² “U.S. designated 4th-generation combat aircraft^{hs}, missiles, and unmanned surveillance aircraft.”¹⁴⁷³ Finally, SAM units practice against at least three types of low-altitude assaults—near continuous assaults, saturation attacks “involving multiple waves of aircraft”,¹⁴⁷⁴ and multidirectional attacks from an opponent’s special forces.

Training in Other Branches/Arms and Specialty Units

Key Finding

- Limited information is available on how other types of units train, but training content includes long-distance mobility, confrontation, poor weather, and nighttime conditions.

Antiaircraft Artillery Unit Training

As noted in Chapter 3, the PLAAF’s antiaircraft artillery units have virtually disappeared, and only a few units still exist. As such, this book provides basic information about how AAA units trained by drawing from sources from the 2000s.

One of the key themes for AAA unit training during the 2000s was mobility during both day and night.¹⁴⁷⁵ During that period, AAA units increased their travel farther away from their home areas over longer periods of time to conduct operations. These operations were often conducted in unfamiliar geographic areas in harsh weather to acclimate AAA personnel to “actual-combat” conditions. Various Lanzhou MRAF AAA units exemplified this trend. For example, in October 2004, a Lanzhou MRAF AAA regiment traveled to the Gobi Desert to conduct survival activities in the harsh weather there.¹⁴⁷⁶ In early 2005, a AAA regiment deployed outside its home area for nearly six months, crossing six provinces while conducting live-fire activities against drones.¹⁴⁷⁷ In addition, in summer 2005, a Guangzhou MRAF AAA regiment deployed more than 100 km away from its home area to conduct combat method training, and a Nanjing MRAF AAA brigade conducted air defense examinations on the coast, which was the sixth such long-distance training event it had ever conducted in its history.¹⁴⁷⁸ Moreover, another Nanjing MRAF AAA brigade deployed more than 1,000 km away to Hebei Province for training in June 2005.¹⁴⁷⁹

A second theme that emerged during the 2000s was confrontation training between PLAAF AAA units and simulated enemies and, in rare cases, against actual PLAAF air units. For example, in October 2004, a Guangzhou MRAF AAA regiment conducted confrontation training against incoming enemy aircraft.¹⁴⁸⁰ Ironically, during the training, the “Red Force” was invading with aircraft, while the “Blue Force” was defending with AAA guns. During

hs U.S. designated 4th-generation aircraft are referred to as 3rd-generation aircraft in Chinese.

the training, the “Blue Force’s” radar staff and AAA staff worked hand-in-hand to successfully target and shoot down incoming aircraft. On 5 November 2004, a Guangzhou MRAF AAA regiment held an emergency response combat training event against incoming enemy aircraft.¹⁴⁸¹ The event took place in an area unfamiliar to the unit and included different event modules for evacuation, movement, advance, and assault.

A third theme was an increase in night training and training in poor weather conditions. For example, in May 2005, a Guangzhou MRAF AAA regiment deployed to an airfield to conduct night confrontation training against an air division in rainy weather.¹⁴⁸²

Finally, a common theme was the AAA force’s training for the “three attacks” against stealth aircraft, cruise missiles, and armed helicopters, and “three defenses” against precision strikes, electronic jamming, and electronic reconnaissance and surveillance. For example, during 2000, one Beijing MRAF AAA regiment shot down a cruise missile target and the entire unit got a medal.¹⁴⁸³ It is not clear exactly what type of target the PLAAF used to simulate a cruise missile for its aviation forces at the Dingxin Test and Training Base and at the Gobi range for the SAM and AAA forces. Normally, the SAM and AAA troops fired at small aircraft models.

Training in Other Branches/Arms and Specialty Units

As noted in Chapter 3, according to the *2019 Defense White Paper*, besides the aviation, airborne, and Ground-to-Air Missile / Air Defense Branches/Arms, the PLAAF also has a Radar Branch and Electronic Countermeasures (ECM) Branch, which were upgraded from specialty units to branches, as well as communications forces, which are considered specialty units.¹⁴⁸⁴ In addition, according to the *2002 Defense White Paper*, the PLAAF at that time had chemical defense (防化) and technical reconnaissance (技术侦察) specialty units. Little information was found concerning training for these branches and specialty units. However, the following paragraph provides some general information.¹⁴⁸⁵

Chemical defense troops additionally perform nuclear, biological, and radiological defense to decontaminate PLAAF locations or assets.¹⁴⁸⁶ Chemical defense units are fielded

in battalion-, company-, and platoon-sized units.¹⁴⁸⁷ Technical reconnaissance troops conduct work similar to electronic countermeasures troops in that they are responsible for intercepting, decoding, processing, and analyzing different varieties of signals intelligence including both communications intelligence and ELINT.¹⁴⁸⁸ They also conduct measures and signature intelligence (MASINT).¹⁴⁸⁹ Technical reconnaissance troops support PLAAF units at the regiment level and below and are distributed throughout other types of units, including aviation, airborne, and radar units.¹⁴⁹⁰

The PLAAF's Five Key Training Brands

Key Points

- The PLAAF's key training brands are a platform to test and further develop the PLAAF's operational capabilities, particularly its ability to operate under actual combat conditions in a complex electromagnetic environment.
- The PLAAF has gradually increased the complexity of the key training brands since their inception, and will likely continue to include more complex components in the future.

In April 2014, General Secretary Xi Jinping urged the PLAAF to speed up its transformation into a strong air power with an integrated air and space capability, emphasizing that the PLAAF must focus on training that boosts combat capability.¹⁴⁹¹ Xi's remarks allude to the difficulty of developing a truly combat-capable "strategic air force," a longstanding challenge for the PLAAF. Indeed, historically PLAAF training was characterized by highly scripted scenarios that did not reflect the realities of modern combat. The PLAAF's desire to advance its strategic transformation through qualitative changes is evidenced by its development of what it called the "four key training brands" (四大品牌).^{ht, 1492} These include the *Golden Helmet* (金头盔) competition; the *Golden Dart* (金飞镖) competition; the *Blue Shield* (蓝盾) exercise, which includes the *Golden Shield* (金盾) competition; and the *Red Sword* (红剑) exercise.¹⁴⁹³ In 2019, the PLAAF announced the addition of a fifth key training brand likely focused on electronic warfare (电子战) that was identified in Chinese as "Qingdian" (擎电); although no official English name has been found or the content of the exercise, a good translation is "electron surge."¹⁴⁹⁴ According to the PLAAF's spokesperson, Senior Colonel Shen Jinke, stated that "whoever seizes the electromagnetic domain will master the war process, and the new training brand will 'greatly improve the electronic warfare capability of the Air Force.'"¹⁴⁹⁵

This section provides background on the PLAAF's key training brands,¹⁴⁹⁶ which the PLAAF has described as its "four main actual-combat oriented training series,"¹⁴⁹⁷ and an overview of recent annual training brand events. Given the lack of details on the emerging fifth key training brand, the analysis below focuses on the four more established key training brands, drawing from public reporting primarily between 2016 and 2018.

The key training brands increasingly serve as an important platform to test and further develop the PLAAF's operational capabilities, and also present an opportunity to assess the PLAAF's progress toward becoming a modern "strategic air force." Although they cannot be considered impartial sources, the frequent reports in Chinese media and commentary by key personnel and military experts about these annual training events provide some insight into PLAAF developments.

ht This can sometimes be translated as "trademark" or "brand name." The exact translation may not matter much, but seems to signify the unique nature of these events, compared with typical training.

Table 6-5 below provides a brief overview of the key training brands, including their name, type, when they began (based on public reporting), where they occur, and the types of units that participate. The four established training brands are discussed separately in the subsections that follow.

Table 6-5: The PLAAF's Key Training Brands

Event	Type	First Time	Location	Participants
<i>Golden Helmet</i>	Competition	2011	Dingxin Test & Training Base	PLAAF and Naval Aviation fighters and attack aircraft
<i>Golden Dart</i>	Competition	2014	Different locations: Dingxin Test & Training Base, East China, and over water	PLAAF attack aircraft and bombers
<i>Blue Shield</i> ; includes <i>Golden Shield</i>	Exercise plus competition	2002	Bohai Gulf and Dingxin Test & Training Base	PLAAF fighter and attack aircraft, and SAMs
<i>Red Sword</i>	Exercise	2009	Dingxin Test & Training Base	PLAAF fighters, attack aircraft, airborne early warning (AEW), and reconnaissance aircraft, radars, ECM units, and SAMs
Qingdian	Exercise	Unknown; announced 2019	Unknown	Probable PLAAF electronic warfare aircraft based on announcement; other units not known

Golden Helmet Competition

Established in 2011, the *Golden Helmet* competition is held annually. It is an air-to-air combat competition designed to “improve and assess pilots’ skills and capabilities in combat conditions,” and it features “one-on-one” and “two-on-two” engagements between similar and dissimilar aircraft as well as three-aircraft close-quarters combat (三机近战).¹⁴⁹⁸ The *Golden Helmet* competition is normally held for about ten days during November and/or December in the Gobi Desert at the PLAAF’s Dingxin Test and Training Base in Gansu Province. The one exception was in 2014, when the *Golden Helmet* competition was held in September and was immediately followed by the inaugural *Golden Dart* competition. The competition results in a few outstanding individual pilots winning the *Golden Helmet* award and the top unit receiving the *Skyhawk Cup* (天鹰杯) award. According to Chinese media reports, this competition represents the highest standards of the Chinese Air Force’s air battle training, and winning the competition is considered the highest honor for PLAAF fighter and attack pilots.¹⁴⁹⁹ At least one *Golden Helmet* winner has been chosen to represent the PLAAF in the Aviadarts international competition, which is part of Russia’s International Army Games (IAG / 国际军事比赛).¹⁵⁰⁰ This competition was held in Russia from 2014 to 2019 and in China (in Changchun, Jilin Province) in 2017.

Pilot Selection and Participation

From 2011 to 2016, participation in the *Golden Helmet* competition ranged from 108 to 170 pilots selected from approximately 15 to 20 air regiments and brigades per year.^{hu} The criteria and timeline for selecting individual and unit participants is unclear, though one source from 2014 indicated that for the first time the pilots were selected at random by PLAAF HQ, rather than by individual units, which ensured that half of the selectees were first-time participants.¹⁵⁰¹ One Northern TCAF air brigade, commanded by Xu Liqiang (许立强), participated in seven competitions.¹⁵⁰² Another air brigade from the Eastern TCAF has had six pilots win the *Golden Helmet* award and four win the *Golden Dart* award, which indicates this particular unit has both air-to-air and air-to-ground capabilities.¹⁵⁰³ In the 2017 *Golden Helmet* competition, a total of only 100 pilots from 16 air brigades competed. The lack of

hu The number of participants identified to date include: 2011 (Unknown), 2012 (108), 2013 (123), 2014 (170), 2015 (160), 2016 (150), and 2017 (100).

participation by any air regiments in 2017 is likely explained by the PLAAF’s shift to a brigade structure, which began in 2012. By mid-2017, all PLAAF fighter and fighter-bomber air divisions had been abolished and all subordinate regiments were either upgraded to brigades, merged into brigades, or abolished. Of the 100 participants, six pilots received *Golden Helmet* awards and one unidentified Northern TCAF air brigade received the *Skyhawk Cup* award.¹⁵⁰⁴

Three Naval Aviation pilots from an SSF air brigade participated in the *Golden Helmet* competition for the first time in 2017, though Naval Aviation pilots had apparently observed earlier iterations.¹⁵⁰⁵ Additionally, prior to 2017, Naval Aviation pilots had engaged *Golden Helmet* winners in at least one other training event. In August 2014, two pilots from the East Sea Fleet’s (ESF) “Blue Force” unit equipped with Su-30MK2s conducted the first-ever joint free-air combat confrontation training over water with the Air Force.¹⁵⁰⁶ The PLAAF pilots were *Golden Helmet* winners flying J-11s. Chinese media reported that after training for five months, the Naval Aviation pilots won the two-minute competitions, which involved “one-on-one” and “two-on-two” engagements. This could indicate that the Naval Aviation pilots “trained for the test” during the five months leading up to this event, a problem that has also characterized PLAAF training, rather than focusing on actual training requirements under the revised *Outline for Military Training and Evaluation* (OMTE).

Table 6-6 provides information about each of the *Golden Helmet* competitions. According to one unconfirmed report, as of 2017 a total of 63 awards had been presented, including three pilots who won the award more than once.^{hv, 1507} If correct, then at least 69 pilots had won the award through 2018. Although the competition was held in November 2019, no information was found concerning the number of winners, which most likely was six.¹⁵⁰⁸ The competition involved J-10Cs, J-20s, J-16s, and Su-35Ss.

Table 6-6: Golden Helmet Competition

Year/ Month	Competition	Number of Participants	Number of Units	Number of Winners
2011/Nov	1st	Unknown	Unknown	10
2012/Nov	2nd	108	10+ brigades & regiments	11
2013/Nov	3rd	123	Unknown	9
2014/Sep	4th	170	20 brigades & regiments	6
2015/Nov-Dec	5th	160	Unknown	12
2016/Dec	6th	150	Unknown	6
2017/Nov	7th	100	16 brigades	6
2018/Nov	8th	100	15 brigades	6
2019/Nov	9th	Unknown	Unknown	Unknown
TOTAL				66+

hv Unfortunately, no single, authoritative list was found for the 63 awards. Three personnel who have won more than one award: Jiang Jiaji (蒋佳冀) has won the award three times, while Xu Liqiang (许利强) and Yan Feng (颜峰) have won the award twice.

Trends in Exercise Design and Sophistication

The *Golden Helmet* competition has evolved in a few key respects since its first iteration in 2011. Reflecting the PLAAF's aim to make training more reflective of actual-combat air battles, the rules of the *Golden Helmet* competition have expanded to include not only air battles between aircraft of the same model but also those between different models; "one-on-one" aircraft confrontation as well as formation-to-formation confrontation; and scorekeeping competition as well as "hit-to-bring-down fight."¹⁵⁰⁹ Since 2011, the competition has gradually eliminated restrictions that were discordant with conditions expected during actual combat and increased autonomy so that pilots could focus on sharpening their skills and end "nanny-style" preparations ("保姆式"准备).¹⁵¹⁰ In 2011, the first competition incorporated "free-air combat" and eliminated the difference in altitude for horizontal maneuvers in aerial combat, which is considered an advanced training level by the United States Air Force.

In 2015, the competition incorporated dissimilar aircraft confrontations, breaking with the practice of organizing similar aircraft confrontations for small team competitions.¹⁵¹¹ This represented a significant step toward more realistic air combat training. In 2016, for the first time, the "Red Force" was officially designated as the offensive side and the "Blue Force" as the defensive side, whereas previously the colors were only used to differentiate between the two sides. This change led the participants to shift their mission objective from "shooting down the opponent" (击落对手) to "completing the mission" (完成任务).¹⁵¹² Finally, in 2017 the competition included an evaluation of four-aircraft close-quarters air combat, a reduction in unencrypted commands, an emphasis on the role of the lead aircraft, an elimination of restrictions on what some aircraft can carry externally, as well as limitations on jamming by those aircraft.¹⁵¹³ Chinese media reported that these changes greatly reduced the gap between the competition and actual combat. According to Sun Mingxing, Director of the PLAAF Staff Department's Training Bureau, the *Golden Helmet* competition has "become a model for combat-realistic Air Force military training, as well as an important guide for improving the capabilities needed for victory in the new era."¹⁵¹⁴

Regarding the training value of the competition, *Golden Helmet* provides a platform for assessing existing tactics and combat methods and for making recommendations for adjustments or creating new ones. China's development and employment of an air combat maneuvering instrumentation (ACMI) system has propelled the PLAAF's tactical training forward over the past decade. The PLAAF has utilized monitoring systems, such as the Flight Parameter Recording System, on aircraft and in control towers to measure and record information about the aircraft since the early 2000s.¹⁵¹⁵ These systems enable more realistic air combat training by providing a safer training environment for pilots and accurately documenting a training event in its entirety. Such a detailed account of who did what and when enables a factual, constructive assessment of pilot performance and leads to improved capabilities. This technology is particularly useful for evaluating training events like *Golden Helmet*. According to one media report, the *Golden Helmet* evaluation process resulted in a series of shifts in thinking on aerial combat, and repeated aerial confrontations taught numerous tactics and combat methods, which assisted the PLAAF in its move toward becoming "an all-area operation modernized strategic service."¹⁵¹⁶

The PLAAF's implementation of free-air combat has been a gradual process and has apparently not yet reached the point where pilots are allowed to maneuver at will. However, the PLAAF appears to be moving toward more pilot autonomy. For example, Chinese media reported that after a major loss in air-to-air combat, Ji Chao, a Southern TCAF air brigade Deputy Chief of Staff, concluded that without proficient flying capability and the most effective tactics and combat methods, the advanced capabilities of the aircraft do not guarantee success.¹⁵¹⁷ According to Ji, it was like "driving a race car on a road with a speed limit."¹⁵¹⁸ In 2016, Ji completed his flight transition for a new domestically manufactured aircraft and was selected to participate in the *Golden Helmet* competition. To prepare for the competition, Ji created a few sets of new tactics and combat methods, and despite incomplete radar intelligence, used his deductions to identify the targets and switched his tactics while engaged with his rival. He won with a score of 22:0 and 32:0 and was awarded a *Golden Helmet*.¹⁵¹⁹

Analysis indicates that, in some cases, pilots are being given more latitude to make adjustments to set tactics and combat methods. Historically, when pilots received a new tactic or combat method that were incorporated in a set of regulations, they were not allowed to make any changes without prior approval. Although Ji “created” a new set of tactics and combat methods that he used during the competition, it does not necessarily mean they were officially sanctioned for use throughout the force. Typically, if a new maneuver is successful, it is then assigned to either an operational unit or one of the Test and Training Bases for further review and approval before it is written into a regulation and distributed to all units for implementation. As noted earlier in Chapter 6, as a general rule based on analysis of the different combat methods tests, it used to take about two years to complete the seven-step process, but this appears to have changed in the late 2010s by shortening the timeline for each step.

In addition to assessing and developing tactics and combat methods, the competition helped the PLAAF identify shortcomings in equipment and pilot capabilities. One article reported that during *Golden Helmet 2016*, gaps were identified in the performance of the aircraft radar, electronic warfare, missile, and intelligence systems, which directly affected the formulation and implementation of tactics and combat methods. When discussing these problems, Wang Wei (王玮), the assistant to the Chief of Staff of an aviation division in the Eastern TCAF, asserted that combat methods should not be developed merely by studying an opponent and idealizing capabilities, without taking into account each aircraft’s strong points and weaknesses, as this does not assure success in actual battle.¹⁵²⁰ The same article indicated the following pilot shortcomings were observed during the competition: the inability to devise stratagems and a lack of innovation or initiative; the inability to study and grasp the performance features of the weaponry and equipment, which caused some individuals to implement tactics in a haphazard manner without sufficient flexibility and adaptability; and weakness in psychological qualities, which negatively affected some pilots’ performance during the contest, although they can keep their performance stable under “normal conditions.”¹⁵²¹

Golden Helmet 2017 took place in November 2017. Sixteen Air Force air brigades and nearly 100 pilots from the five TCAFs competed in air combat confrontations for six *Golden Helmet* awards and one Skyhawk Cup. One article indicated that participating units sent new and younger pilots to participate, focusing on the training value of the competition rather than the final results.¹⁵²² Chinese media reported that several types of Chinese designated “3rd-generation”¹⁵²³ fighter jets, including J-10s, J-11s, and JH-7s, participated in the competition.¹⁵²⁴ Although 2nd-generation fighters, including J-7s and J-8s, participated in earlier competitions, they apparently no longer participate. According to one source, the J-20 fighters will join the competition in the future when their numbers in service increase.^{hw, 1525} According to Sun Mingxing, Director of the PLAAF Staff Department’s Training Bureau, *Golden Helmet-2017* was the first test of PLAAF aviation units since the organizational reforms, and for some aviation brigades, it was their first important mission since the reorganization.¹⁵²⁶ The competition examined coordinated combat actions among teams as well as weapons and equipment performance during unknown situations and under unknown electromagnetic conditions.

One Chinese media report advised that *Golden Helmet 2017* aimed to evaluate the following skills, which are viewed as necessary combat capabilities: a pilot’s ability to conduct dissimilar-aircraft confrontations; win a war under unknown situations and unknown electromagnetic conditions; take coordinated combat actions between a formation, AEW aircraft, and a command post in the control tower; and carry out information-firepower integrated operations.¹⁵²⁷ Another commentary on the competition discussed how future aerial combat is likely to take place over a maritime battlefield or in a CEME, which could result in battles being fought with no or interrupted information from the aircraft’s data link. Therefore, it is necessary to study and solve “difficult questions,” including

hw Based on a survey of articles in *PLA Air Force News*, and *People’s Navy*, the PLA usually introduces new aircraft by creating a unit from “seasoned pilots” (i.e. with 1,000 flight hours or more). The unit then has to create, from scratch, its *Outline of Military Training and Evaluation* (OMTE) and all relevant regulations. That process takes about a year, and sometimes more, to accomplish. It typically takes a unit with new aircraft an additional year to reach IOC, meaning that it can sit strip alert and scramble for an operational mission against an adversary, not just a training event. It typically takes one to two years to achieve initial operational capability (IOC) after the very first aircraft of a new type of airframe are assigned to an operational unit.

how to self-reliantly search targets, close in on enemy aircraft, engage in a dogfight, and dodge attacks without timely and adequate data support.¹⁵²⁸

One article noted that the competition had shifted its training mentality, emphasizing that “winning against the enemy is more important than winning against teammates” and shifting away from “observing teammates practice” to “observing the enemy’s practice.”¹⁵²⁹ In addition, Xu Liqiang, Commander of a Northern TCAF air brigade that has participated in at least seven *Golden Helmet* competitions, stated that, “If one wishes to avoid defeat, one must constantly research the battlefield environment, operational opponents, and equipment performance.”¹⁵³⁰ These reports did not specifically refer to potential foreign “enemies” or “opponents”; however, another commentator noted that dissimilar-aircraft confrontations in the *Golden Helmet* competition were designed to train Chinese fighter pilots to gain experience against aircraft such as Su-30 and U.S. F-15 fighters.¹⁵³¹ This indicates the PLAAF is studying potential foreign competitor aircraft, but it is unclear if foreign tactics are being incorporated into dissimilar aircraft training.

To increase the intensity and difficulty of the competition in 2017, close-air battle confrontation was added, in addition to medium-range air combat confrontation.¹⁵³² In addition, the pilots reportedly received fewer orders from the ground-based command posts, enabling them to make more independent decisions during the competition.¹⁵³³ The role of AEW “airborne command posts” during the competition, however, is unclear. Restrictions on some fighter jets’ external payload and their jamming capabilities were lifted, enabling units to freely determine the amount of payload based on their tactical needs.¹⁵³⁴ Chinese media reported that the focus of the exercise had shifted from determining success or failure in the air to emphasizing victory through system-of-systems operations. Additionally, the combat teams participating in the 2017 competition reportedly received “strong rear support” from an improved operational command information system, an air combat post-assessment system, and a “highly effective” equipment support mechanism.¹⁵³⁵

The winners of *Golden Helmet 2017* were selected from the three units that made it to the final round and were determined by the overall scores of the formation and the completion of tasks.¹⁵³⁶ This featured “two-on-two” engagements between fighters of the same type or different types, which reportedly required “teamwork” to win.¹⁵³⁷ In the end, a total of six pilots each from the Southern, Northern, and Western TCAFs, respectively, won *Golden Helmet* awards and a Northern TCAF air brigade won the Skyhawk Cup for the top performing brigade.¹⁵³⁸ *Golden Helmet* award winners included Liu Zhankun (刘占坤), a Deputy Chief of Staff of a Western TCAF aviation brigade.¹⁵³⁹

In 2018, a total of 15 units were involved. The focus was on 3.5th-generation aircraft, including the J-16 and J-10C, as well as the J-11B. Apparently, no Su-35s or J-20s have yet to participate. Since 2014, no 2nd-generation aircraft have participated. Individual winners of the annual competition are identified as the PLAAF’s “elite pilots” and have the right to wear a gold-colored helmet at their fighter unit. Altogether, as shown in Table 6-6, a total of more than 66 different pilots have won *Golden Helmets* through 2018, including three pilots who have won the award twice and one pilot who has won three awards. No information was found concerning the 2019 competition. Although the highest number of pilots to win was 12 in 2015, as shown in Table 6-6, the PLAAF apparently began limiting the total number of winners to six in 2016.

Golden Dart Competition

Both the *Golden Dart* and *Golden Helmet* competitions are described as “one-on-one” competitive tactical and technical exams.¹⁵⁴⁰ However, unlike the *Golden Helmet* competition, which focuses on air-to-air engagement, the *Golden Dart* competition, which was first held in 2014, focuses on air-to-ground attack by attack and bomber aircraft.¹⁵⁴¹ According to the PLAAF HQ’s Staff Department’s Training Bureau, the *Golden Dart* competition aims to improve troops’ offensive air war-fighting capabilities.¹⁵⁴² The competition integrates information on attack

and defense, system confrontation, electromagnetic environment and other elements.¹⁵⁴³ The PLAAF awards the highest honor of the competition, the *Golden Dart* award, to the top aircrews who excel in “defense-line penetrating and shock attack operations.”¹⁵⁴⁴ One Chinese media report defines the assessment criteria for the *Golden Dart* competition as “aiming only once, firing only once, and zero marks if the first attack misses the target.”¹⁵⁴⁵

Although often compared to the *Golden Helmet* competition in terms of status and prestige, the *Golden Dart* competition has not received as much coverage by Chinese media. Based on the limited information available, it appears that the timing of the competition varies each year. Whereas the first competition was held around September 2014, immediately following the *Golden Helmet* competition, in 2016 the competition was held in July, prior to the *Golden Helmet* competition, which was held in December. The most recent iteration was held in April 2018. It also appears that the competition changes location each year. Thus far it has been held in the Western, Eastern, and Northern TCs. According to one report, the *Golden Dart* competition “takes place on a ‘battlefield’ that ranges from desert to the hills and sea.”¹⁵⁴⁶ In 2014, it was held at the Dingxin Test and Training Base. In 2015, it was held for the first time over water off the east coast of China. In 2016, it was held somewhere in east China, likely in Zhejiang.¹⁵⁴⁷ In 2018, it was held in Changchun in Jilin Province.¹⁵⁴⁸ Finally, it is not clear how many aircrews have won the *Golden Dart* award. Conflicting information indicates a total of between 17 to 25 crews won during 2014 and 2015;¹⁵⁴⁹ and some pilots, such as Chen Quanlong (陈权龙) and Wang Li (王立) from an unidentified Eastern TC (formerly Nanjing MRAF) air regiment, have won both the *Golden Dart* and *Golden Helmet* award.¹⁵⁵⁰ Information concerning *Golden Dart 2016* and *Golden Dart 2018* is detailed below. No further information was found for the 2014, 2015, 2017, or 2019 competitions.

The *Golden Dart 2016* competition kicked off in July 2016 in east China.¹⁵⁵¹ Chinese media reported that “this defense and assault military competition featured hundreds of pilots from dozens of air brigades and regiments from all five TCAFs.”¹⁵⁵² The *Golden Dart* competition likely serves similar purposes as the *Golden Helmet* competition, namely serving as a training platform to assess and refine tactics and combat methods for bomber and assault aircraft, as well as an opportunity to evaluate equipment and personnel capabilities in an environment that more closely resembles what is expected during combat operations. It was reported that *Golden Dart 2016* incorporated live ammunition and the application of new weapons, as well as surveillance and strike drones, early warning aircraft, jammers, and other air support troops, including security police, ground navigation, electronic warfare, radar, meteorology, air traffic control, and battlefield engineering units.¹⁵⁵³ This likely reflects the PLAAF’s desire to utilize training events to develop integrated system-of-systems capabilities that focus on operating in informatized conditions, not just on honing individual aircrew skills.

Over 200 fighter pilots from “dozens” of combat units participated in *Golden Dart 2018*, which began in April 2018 in the Northern TC in Changchun, Jilin Province. According to Chinese media reports, PLAAF attack aircraft and bombers participated in the competition, including J-7, J-8DF, J-10A, Su-30, J-10C, and J-20 fighters and H-6H bombers.¹⁵⁵⁴ The competition aimed to test the pilots’ defense penetration and assault tactics while flying at low altitudes as well as their abilities to quickly locate targets in complex environments and conduct continuous attacks with different weapons.¹⁵⁵⁵ An officer with the PLAAF training bureau advised that during the competition, participating pilots first broke through enemy air defense systems (penetration) and then launched attacks with live ammunitions against enemy land or sea targets (assault).¹⁵⁵⁶ To simulate a more realistic wartime environment, *Golden Dart 2018* was held both during the day and at night and featured information defense and offense and confrontations between systems in an electromagnetic environment. According to one report, the competition tested the functions of fighter aircraft under extreme conditions and improved pilots’ abilities to control their weapons.¹⁵⁵⁷

Blue Shield Exercise and Golden Shield Competition

The *Blue Shield* exercise is designed to test the capabilities of the PLAAF's ground-based air defense forces, specifically SAMs and supporting radar and information systems. First held in 2002, the exercise has evolved over the years from the training of firepower elements via target shooting, to the training of tactical units via base-focused exercises, to the present training of a combat operations system via live-forces, live-fire confrontations at deployed locations.¹⁵⁵⁸ According to Senior Colonel Shen Jinke, the PLAAF's news spokesman, the *Blue Shield* exercise is "an actual-combat air defense antimissile training formulated for the ground-based air defense force to adapt to new threats in the air and space and to changes in the modes of operation."¹⁵⁵⁹ Based on the requirements for a combined air defense antimissile campaign that focuses on reconnaissance, strikes against incoming threats, protection, and other complex integrated training topics, the *Blue Shield* exercise is an important platform to test and enhance the PLAAF's air defense and anti-missile operational capabilities.¹⁵⁶⁰

Blue Shield Exercise

While it appears that in previous years *Blue Shield*, which is a combination of an exercise and competition, was held only once per year, there were two iterations in 2017—"Blue Shield-2017" and "Blue Shield-2017S."¹⁵⁶¹ The first iteration occurred between April and May 2017 in the Gobi Desert and had six ground air-defense brigades/regiments from three TCAFs. It lasted more than 10 days covering 12 competition subjects. The core combat capabilities all SAM troops must have are broken down to form the 12 specific topics for the competition, all of which have a clear actual combat aspect to them. A command staff basic skills exam tested the ability of staff personnel to plan mobile combat operations under urgent conditions; air defense missile load and withdraw, simulated rapid loading and unloading of ordnance, and readiness to fight again after the end of an air defense battle. Special vehicle driving involved advancing on a figure-8 road, an S-curved road, an undulating road, reversing the vehicle into dual depots [possibly a garage and a tunnel], displacing rapidly, and covering a multitude of complicated battlefield environments a driver might experience in an urgent road movement.

Chinese media reported that *Blue Shield-2017* had clearly increased in difficulty from previous exercises. Specific aspects of increased difficulty included changing how the SAM units moved from one location to another, which required setting up the SAMs in a timely manner before the air attack began. In addition, flight paths, directions, and time of attacks, as well as the total number of attacking aircraft organized into flight formations and their altitudes, were all unknown, which increased the difficulty of counterstrikes. Finally, the exercise was held in an area unfamiliar to the participants and was conducted "fully back-to-back," which typically means both the "Red Force" and the "Blue Force" were operating independently with no knowledge of what the other side had been told.¹⁵⁶²

According to the Chinese media, the "Blue Force" formation comprised multiple types of Chinese designated 3rd-generation combat aircraft equipped with jamming equipment, which carried out a low-altitude assault on the "Red Force" missile position. Furthermore, in order to practice penetration and assault, each formation of attack aircraft independently planned their approach and conducted attacks against each SAM site, applying the appropriate tactics for each attack. Operational tasks for the ground-based air defense forces centered on maneuvering to lay ambushes and organizing counterstrikes. As such, various "Red Force" SAM units closely cooperated to quickly acquire targets and implement simulated attacks.¹⁵⁶³ Given that at least some of the SAM units had just moved to a new location and both sides were maneuvering at the same time without knowledge of the other side in advance (i.e., unscripted), exercise participants had to make rapid decisions in order to complete their tasks.¹⁵⁶⁴

According to one military news program, the training objectives of *Blue Shield-2017* were to standardize and unify operational procedures, train and improve the Commanders' command and strategizing skills, and enhance the entire SAM units' overall cooperation and coordination capabilities of the "whole battalion acting

as one rifle.”¹⁵⁶⁵ The exercise emphasized honing ground-based air defense units’ overall capabilities for “system-of-systems” confrontation. According to spokesman Yang Xuefeng, when preparing for the exercise, prominence was given to capabilities, system-of-systems drills, verification of equipment capabilities and innovation, as well as requirements for the opponents and targets in the exercise. Tactical drills, drills covering high-, medium-, and low-altitude airspaces, and all-aspect assaults from various directions were conducted to hone the ground-based air defense units’ overall capabilities for ‘system-of-systems’ confrontations.¹⁵⁶⁶

The second iteration, *Blue Shield-2017S*, was held in the late fall of 2017 at the PLAAF’s Dingxin Test and Training Base and lasted 20 days. Six missile units from the Eastern, Northern, and Central TCAFs competed in *Blue Shield-2017S* for the *Golden Shield* Award. As in the first iteration, the competition featured 12 events, including air-ground confrontations, nighttime maneuvers and operations, and live-fire counter strikes. Participating units utilized railway transportation and motorized maneuvers to travel 1,000 kilometers to an unfamiliar environment in Gansu,ⁱ where they carried out live-fire strikes soon after arriving at the exercise field.¹⁵⁶⁷ Chinese media reported that this part of the competition, referred to as “striking upon deployment,” was designed to test the forces’ capabilities for long-range maneuvers and operations and handling contingencies.¹⁵⁶⁸

i PLAAF units normally train at the same training area near their home unit. When a unit deploys to a different location to conduct training, even if they have been there before, then the term “unfamiliar” is typically used in Chinese media reports. In most cases, even if some personnel in the unit have been to the location before, it is still “unfamiliar” to most new personnel.

Chinese media reported that during the competition, the six missile battalions were divided into three groups of two that competed to strike the same airborne target. The objective was to live-fire FN-6 shoulder-fired missiles (MANPADs)¹⁵⁶⁹ against drones simulating armed helicopters launching surprise attacks.¹⁵⁷⁰ This event was meant to assess the SAM battalions’ key abilities to use FN-6 missiles for air defense in times of war. The “Blue Force” consisted of aviation units with multiple aircraft that conducted attacks at low altitudes from multiple directions and in several waves of flight formations both during the day and at night. Intervals between waves of targets were very short, reportedly less than one minute. During the training, the “Red Force” had to prioritize and engage targets, which tested the SAM battalions’ ability to counter saturation attacks from multiple targets and in multiple directions.¹⁵⁷¹

The final round of the *Blue Shield-2017S* competition featured one SAM unit from the Northern TCAF and one from the Central TCAF, which faced target drones simulating cruise missiles, stealth aircraft, and Chinese designate 3rd-generation combat aircraft conducting a saturation attack from multiple directions and in multiple waves in a CEME. At the conclusion of the competition, the SAM battalion from the Central TCAF was awarded the *Golden Shield*.¹⁵⁷²

The *Blue Shield-2018* joint ground air defense exercise was held in the Bohai Gulf for two and one-half months starting in May 2018.¹⁵⁷³ The exercise, which was managed by PLAAF HQ Staff Department’s Ground Air Defense Directorate, involved air defense units from the PLA Army, Navy, Air Force, and Rocket Force. Overall, the *Blue Shield* exercise highlights realistic combat training with coordination of air defense troops of multiple military services, aiming to enhance the inter-service coordinated combat capability and the commanding capability of air defense base. The exercise consisted of drills of 10 subjects such as force projection, combat planning, and air-ground confrontations. Future goals include efforts to promote the normalization, standardization and institutionalization of the joint air defense training exercise, so as to boost the IT-based joint air defense capabilities of the PLA.

No information was found for a *Blue Shield-2019* Exercise, but the *Blue Shield-2020* Exercise was held in the Bohai Gulf, which began in May.¹⁵⁷⁴

Golden Shield Competition

As with the *Golden Helmet* award for fighter and attack pilots, the *Golden Shield* award is described as the “top honor” for PLAAF SAM units. The inaugural *Golden Shield* competition in 2017, which occurred during the *Blue Shield* exercise, was based on the international *Keys to the Sky* competition model, which China had participated in as part of Russia’s 2016 International Army Games. Held in summer 2016, the games featured 23 field, air, and sea training competitions at 20 training grounds across Russia.¹⁵⁷⁵ China was one of 19 countries to participate, and Chinese media reported that this was the first time PLAAF SAM crews went abroad to participate in the “military Olympics.”¹⁵⁷⁶ Such international military competitions provide the PLAAF with an opportunity to learn from other militaries, and insights gained from these events shape the PLAAF’s combat training reforms. Chinese news media reported that during the *Keys to the Sky* competition, one member of the Chinese delegation, Zhan Shaojie, who was the Commander of a Northern TCAF SAM battalion, was specifically tasked to “watch and learn,” and he “shuttled back and forth carefully observing every little detail of the competition.”¹⁵⁷⁷

According to Yang Xuefeng (杨学锋), Director of the PLAAF HQ’s Staff Department’s Ground Air Defense Bureau, the PLAAF, with the approval of the Air Force Party Committee and senior officers, developed the *Golden Shield* competition by taking five events from the *Keys to the Sky* competition, increasing their difficulty and expanding them to include 12 actual-combat type events focused on improving the modern air raid operations capabilities of SAM units.¹⁵⁷⁸ The 12 events included nighttime maneuvers and operations and live-fire counter strikes, which were described as “closely linked to core capabilities and areas of weakness in [the PLAAF’s] air and missile defense.”¹⁵⁷⁹ The *Golden Shield* competition emphasized operations in a CEME, reflecting the difficulty of confrontations in unknown conditions. According to Yang, the competition “uses training with live munitions to develop first-class equipment, cultivate first-class personnel, and temper a first-class military.”¹⁵⁸⁰ Unlike the *Golden Dart* competition, the aviation units that participate in the *Golden Shield* competition serve only as the “Blue Force” opposition force and as targets. They do not compete for any awards.

Interestingly, Chinese media reported that early in the planning of the *Golden Shield* competition, the Air Force staff decided to solicit bids to supply equipment for the event on the open market rather than via internal military channels. As a result, several civilian high-tech enterprises won bids to supply equipment, including infrared night vision equipment, equipment to ensure “communication while on the move” for battlefield command, and advanced drones simulating various kinds of targets executing air raids.¹⁵⁸¹ After the exercise, one Regiment Commander commented that “military use of civilian equipment played a crucial, materially supportive role in units breaking the bottleneck of night training and night combat operations.”¹⁵⁸²

While it appears that in previous years the *Blue Shield* exercise was held only once per year, in 2017 there were two iterations, the first of which was held in April at the PLAAF’s training base near the Bohai Gulf. Six SAM units and several aviation units from three TCAFs participated in the exercise, which focused on carrying out air-ground confrontation drills and lasted over ten days.¹⁵⁸³ Participating units competed in 12 events designed to “test the units’ actual combat-oriented training results and enhance their capabilities for “system-vs-systems” operations.”¹⁵⁸⁴ These included operational command, air-ground confrontation, nighttime maneuver, live-ammunition counterstrike, driving special vehicles (e.g. transporter erector launchers / TELs), firing of small arms and light weapons, military physical fitness, and others. The top missile battalion received the *Golden Shield* award. In addition, seven combat logistics groups and four individuals received the PLAAF’s *Blue Shield Elite Troop* award. This was the first time the PLAAF gave these awards. The winner of the first *Golden Shield* award was a battalion from the Central TCAF commanded by Qiu Lianlong (邱连龙).¹⁵⁸⁵

Red Sword Exercise

Since at least 2009, the PLAAF has conducted the *Red Sword* exercise annually in November at the Dingxin Test and Training Base in the Gobi Desert; as of yet, it has not overlapped with the *Golden Helmet* competition. Unlike the three other brands, which are based on competitions and awards, it does not appear that any units participating in *Red Sword*, which is solely an exercise, receive any comparable awards. *Red Sword* is a campaign-level^{hx} system-of-systems confrontation exercise conducted in a complex, multidimensional battle space that involves PLAAF fighters, attack aircraft, AEW, reconnaissance aircraft, radars, and SAMs.

Moving training events beyond heavily scripted scenarios is a key driver behind the PLAAF's efforts to increase the level of realism in *Red Sword*, which is aimed at "solving key and difficult problems of actual combat."¹⁵⁸⁶ Chinese media reported that *Red Sword* exercises have continually advanced in their level of realism, accomplishing a transformation from tactics to campaigns, from a single branch/arm or aircraft type to multiple branches and multiple types of aircraft, and from traditional training to informatized training.¹⁵⁸⁷ One article reported that, over time, the exercise has evolved from a pattern of "confrontation drills with one type of aircraft under simple conditions" to that of "confrontation drills with multiple types of aircraft and multiple arms in a CEME" to the current pattern of "system-of-systems confrontation drills involving all elements under unknown conditions."¹⁵⁸⁸ *Red Sword* has become the PLAAF's "signature actual-combat training that contains the most elements of war,"¹⁵⁸⁹ combining confrontation air combat (as in the *Golden Helmet*), assault and penetration (as in the *Golden Dart*), and air defense and anti-missile (as in the *Blue Shield*) operations.¹⁵⁹⁰

As of 2016, the *Red Sword* exercise has followed the new base-brigade structure instituted for organizing and commanding operations, which allows for the implementation and exploration of regional air defense organizations.¹⁵⁹¹ During the reorganization, the PLAAF's shift to an air brigade structure for fighter and fighter-bomber aircraft required significant shifts of personnel, which impacted the PLAAF's command, control, and coordination structure. The *Red Sword* exercise allows the PLAAF to build trust within and between unit components and test the effectiveness of the new structure across multiple branches.

Red Sword 2016 was held in November in the Gobi Desert, where dozens of PLAAF units and nearly 100 combat aircraft from two TCAFs engaged with each other in a live-fire system-of-systems confrontation drill.¹⁵⁹² During the exercise, combat aircraft of various types, land-based radar, and SAM units worked together in a coordinated manner to test combat patterns, which included joint reconnaissance, fire strikes, and joint air defense operations.¹⁵⁹³ Chinese media reported that J-10 fighters, JH-7 fighter-bomber aircraft, KJ-200, KJ-500, and KJ-2000 AEW aircraft participated in the exercise. *Red Sword 2016* was described as a "joint exercise of the largest scale ever conducted by the PLAAF, representing its highest simulated actual-combat standard,"¹⁵⁹⁴ and "the first campaign-level, all key elements system-of-systems confrontation under unknown conditions that PLAAF units have organized since the new leadership and command structure went into operation in early 2016."¹⁵⁹⁵ Notably, no reference to participation by any AAA units was found.

According to Chinese media reports, *Red Sword 2016* provided the opportunity to test several new training and combat methods suited for informatized conditions in an environment that closely resembled actual combat. These included joint reconnaissance, defense penetration and shock attack, and air defense and anti-missile operations.¹⁵⁹⁶ During the exercise, different types of combat elements, such as aviation forces, SAM troops, and radar troops, were assigned to the Red and Blue Forces in balanced proportions.¹⁵⁹⁷ One example of increased realism in *Red Sword 2016* was that units were no longer provided intelligence information that would not be provided in wartime, meaning that when a unit entered an "enemy occupied area," it had to fight in an environment with no ground

^{hx} It is assessed that *Red Sword* is most likely a Theater Command level exercise but it is not managed by the TCs. It is most likely managed by PLAAF HQ because it crosses boundaries and involves multiple units from different TCAFs.

intelligence support.¹⁵⁹⁸ According to Jing Jianfeng (景建峰),^{hy, 1599} who was the overall Director (总导演) for the exercise, the exercise emphasized “mission, system-of-systems, electromagnetic conditions, unknown scenarios, confrontation, and assessment. There was no play script, no rehearsal, and no provision to the troops of intelligence and information, because that will never be available in wartime. The drill was conducted “back-to-back,” based on actual-combat conditions, to comprehensively test and verify the troops’ operational command capability and training standards.”¹⁶⁰⁰

Yu Yunfei, who was the Director of Combat Operations in the exercise, advised that *Red Sword-2016* was organized based on actual-combat training, with an exercise flow of “explanation, research, action, and practice,” described as follows:¹⁶⁰¹

- Explanation of theory: relevant experts from academic institutions went to the TCAFs where the Red and Blue Forces were stationed and presented tailored lectures on theory.
- Tactical research: the two sides used group training to conduct tactical research, focusing on training to proficiency.
- Setting up situations: participants utilized simulation training resources of academic institutions and various training bases and deployed forces online to conduct simulations and wargaming confrontations.
- Training exercises by echelon and category: participants conducted focused training, such as exams in mobility and setting up in the field, and finally, they conducted exercises with live, opposition forces.

Chinese media reported that when planning for *Red Sword-2016*, the Exercise Directorate analyzed over 20 “local wars”^{hz, 1602} fought by foreign armed forces and researched topics on actual-combat training to identify the mechanisms by which to win informatized warfare. Furthermore, the exercise incorporated the testing and measurement of weapons and equipment, to evaluate their performance in an environment similar to actual combat. *Red Sword 2016* represented a joint effort by PLAAF HQ, academic institutions, units, bases, and manufacturers, which reportedly formed a cycle in campaign training that integrated operations, testing, and training, and drove an overall improvement in generation of PLAAF combat power.¹⁶⁰³

According to one media report, unlike a “one-on-one” competitive tactical and technical exam, such as the ones for *Golden Helmet* (pilot skills) and *Golden Dart* (penetration of defenses to attack a target), the *Red Sword* exercise is organized to evaluate more than just “winning and losing” and “point scores.”¹⁶⁰⁴ Based on the idea that actual combat training should be used to identify problems and develop capabilities, scoring rules were reportedly established to ensure that accomplishing a combat task weighed more heavily than shooting down one or two “enemy” aircraft. For example, during *Red Sword 2016*, one air brigade, which was widely known for its strong abilities in air combat, did not receive a high point score after shooting down “enemy aircraft” during a multi-wave saturation attack by the “Red Force,” because a key location had been attacked and the brigade had failed in its mission. The grading system demonstrated that in system-of-systems confrontations, rather than focusing on shooting down individual “enemy aircraft,” it is important to select high-value targets, such as successfully attacking the opponent’s combat support aircraft or knocking out a surface-to-air missile site.¹⁶⁰⁵

Chinese media also reported that during the exercise there were specific time periods set aside for the process of self-evaluation and peer evaluation. According to Gu Shengdong (顾盛冬) from the PLAAF HQ’s Staff Department’s Training Bureau, for the first three days of the exercise, at the conclusion of each day, both the Red and Blue sides organized “self-critical discussion and reflection” sessions.¹⁶⁰⁶ This review process reportedly enabled participating

hy It is not clear what Jing Jianfeng’s permanent billet was at the time of the exercise; he was, however, the Commander of the 29th Fighter Division in Quzhou, Zhejiang Province, in 2015. He received a rank promotion from senior colonel to major general in January 2017.

hz In the PLA lexicon, “local war” (局部战争) refers to a limited war in which the purpose, means, and scale take place in a local area, as opposed to “world war” (世界大战) or “total war” (全面战争).

units to fully digest problems encountered and further revise and improve their combat plans for the next part of the exercise. It was further reported that midway through the exercise, both sides withdrew from the battlefield to their respective camps where they conducted additional self-critique and received feedback from the evaluation team. This indicates the PLAAF is making some progress toward providing personnel with honest and impartial feedback, a necessary step to improve combat effectiveness and an area where the PLAAF has struggled in the past. The second half of the exercise featured more live-forces confrontations, where a combat task was assigned and then the exercise proceeded for two days and nights per the course of combat operations. It was reported that through the evaluation process “participants advanced a step with every battle fought,” which “gradually led to the generation of capabilities.”¹⁶⁰⁷

The *Red Sword 2017* confrontation exercise was held in the Gobi Desert beginning in November 2017.¹⁶⁰⁸ It involved nearly 100 combat aircraft of various types, including KJ-2000, KJ-500 and KJ-200 AEW and reconnaissance systems, J-11 fighter jets, H-6K bombers, as well as various branches, including radar units, SAM units, and electronic countermeasure units, which carried out combat-realistic “system-of-systems” confrontations between Red and Blue forces.¹⁶⁰⁹ One pilot commented, “it is not a battle of individual soldiers but rather of system-of-systems operations. We are integrated into a system and we use the system to strike enemy targets.”¹⁶¹⁰ Chinese media reported that during the exercise, forces carried out operations in real time to explore new models for confrontations between regional air defense bases under the new organizational structure.¹⁶¹¹

Leading up to the exercise, one air brigade specifically prepared to operate in a complex electromagnetic environment and in complex weather operations, while focusing on the importance of information in system-of-systems combat and integrating different systems.¹⁶¹² Additionally, Hou Chao, a staff officer from a Southern TCAF regiment that participated in the exercise, described combat data as “the ‘blood’ to keep the system operating smoothly” and “the key to success.”¹⁶¹³ Hou further noted that the selection of tactics, combat methods, targets for strikes, evaluations for battlefield situations or logistics support, the use of weapons and ammunition, and the evaluations of combat performance were all based on combat data.¹⁶¹⁴

One report indicated that *Red Sword 2017* saw early warning and command “move from the ground to the sky,” which resolved issues pertaining to intelligence acquisition and command and control, as well as reinforcement and support in long-range operations.¹⁶¹⁵ This likely referred to a shift away from ground-based radar and control platforms to AEW&C. According to Liu Jie, a JH-7 pilot and Commander of a “Blue Force” detachment, the command and control system was equipped with new early warning and command platforms, which played a crucial role in the exercise, enabling pilots tasked with protecting strategic places to use data links established by the early warning systems to be aware of battlefield situations in real time.¹⁶¹⁶ Meanwhile, under the command and guidance of airborne early warning systems, the “Red Force’s” assault group coordinated efforts with jamming aircraft and ground-based air defense forces to breach the Blue Force’s air-ground defense net.¹⁶¹⁷

The use of AEW&C systems in *Red Sword 2017* represents an important advancement in PLAAF training. Historically, PLAAF air combat training was limited to highly scripted scenarios that were directed by the unit Commander from the control tower. Personnel in AEW&C aircraft were not allowed to communicate directly with a pilot. This began to change around 2011 when the PLAAF began using the term “free-air combat.” Although pilots were still required to follow the training guidance set forth in their various regulations, they engaged in aerial intercepts that were not completely pre-scripted.¹⁶¹⁸ Another key change occurred in late 2012 when the PLAAF began allowing controllers on the KJ-200 and KJ-2000 AEW&C aircraft to interact directly with combat pilots in the air.¹⁶¹⁹ Furthermore, once an engagement began, pilots no longer received step-by-step instructions from a flight controller in the control tower, command post, or AEW&C aircraft; although flight controllers could provide pilots initial guidance and vectoring into the engagement zone.¹⁶²⁰

Chinese media reported that electromagnetic jamming was integral to the exercise and reconnaissance, counter-reconnaissance, jamming and counter-jamming occurred throughout.¹⁶²¹ Furthermore, Commanders of both the “Red Force” and “Blue Force” used their command information systems to give commands and guidance to various armed branches and multiple types of aircraft. Depending on developments of the confrontations, combat elements launched feigned attacks against airborne targets or carried out attacks against ground targets. According to Wang Zhuoping, “Blue Force” Commander, during the exercise Commanders and participating forces “improved a great deal in terms of combat planning, operational control, consolidating elements, coordinating different teams, as well as handling situations.”¹⁶²² Of note, Chinese media also reported in 2017 for the first time that the *Red Sword* exercise had introduced a “third party”, which was also identified as the “Orange Force” (橙军), to simulate the enemy.¹⁶²³ A review of the information indicated that “Blue Force,” which consisted of air and ground air defense forces who were prepared to resist air strikes by the “Red Force”, most likely referred to Taiwan, and the “Orange Force,” which consisted of a J-20 stealth aircraft, most likely referred to the United States. The *Red Sword 2018* and *Red Sword 2019* exercises also used the term “Orange Force.” While the 2018 exercise’s “Orange Force” consisted of J-20s, the 2019 exercise included J-20s and J-16s.¹⁶²⁴

According to Li Yan, head of the evaluation team for attack impacts, during *Red Sword 2017* evaluators “paid more attention to the percentage of accomplished missions, the effective rates of fired weapons, the forces’ casualties and damages in battle, and the efficiency of weapons carriage.”¹⁶²⁵ Furthermore, evaluators utilized “big data processing” to identify points affirming combat capabilities and used objective data to provide feedback in real time.¹⁶²⁶ Finally, rather than focusing on which side won, the evaluation process guided the forces to shift from studying their opponents in confrontations to studying “real enemies” and focusing on areas of weakness rather than on outcomes and scores.¹⁶²⁷ This is further evidence of the PLAAF’s efforts to improve constructive feedback during training events.

Conclusion

The key training brands increasingly serve as an important platform to test and further develop the PLAAF’s operational capabilities, and also present an opportunity to assess the PLAAF’s progress toward becoming a modern “strategic air force.” Observations on events affiliated with the key training brands follow below.

Unit Participation

Overall, the PLAAF is increasingly including key components of the ground-to-air missile and radar branches, and communications specialty units, as well as each component of the aviation branch/arm, including fighter, attack, bomber, intelligence surveillance and reconnaissance (ISR), refueling, and airborne early warning (AEW) aircraft, in these competition and exercise events. Of note, however, no references have been found to the Airborne Branch.

Although the overall number of individual components in each event is growing, there were no reports found in Chinese media of multiple aircraft, SAMs, and radar units training together in a joint engagement zone (JEZ). For example, although fighter and SAM units train separately on a regular basis against “enemy” aircraft, no information was found concerning any training that involves a PLAAF aircraft taking off, being vectored to an air engagement by a controller in the control tower or an airborne early warning and command (AEW&C) aircraft, engaging an “enemy” aircraft, and then having a SAM fire at the “enemy” aircraft at the same time that the PLAAF aircraft is in the air. Furthermore, although the PLAAF has official definitions for a missile engagement zone (MEZ) and a fighter engagement zone (FEZ), it does not appear to define a JEZ, where aircraft and SAMs engage the enemy in the same airspace.

The key training brands are developed by and for the PLAAF. As such, they focus on honing PLAAF core competencies rather than joint interoperability. The one exception was in 2017, when three Naval Aviation pilots from a South Sea Fleet (SSF) air brigade participated in the *Golden Helmet* competition for the first time.¹⁶²⁸ They did not win any awards; however, their inclusion provided an opportunity for valuable individual and joint training, and may be an indication of more to come.

Personnel

The emphasis on younger participants in the competition, many in their late 20s or early 30s, reflects a desire on the part of the PLAAF to develop fighter pilots who are less hidebound and more willing to implement a “free air combat” approach. It also probably is geared to help the PLAAF avoid a shortage of experienced pilots as older pilots reach their stop flying age.

For example, one Eastern TCAF air brigade noted in 2016 that it had an issue of being short-sighted and using experienced and veteran pilots for major missions and important drills while neglecting the cultivation and development of young pilots.¹⁶²⁹ In order to solve this problem, the brigade pursued what it called all-personnel general training in a major combat training mission and required new personnel to participate in the full process. As such, in July 2016, when the brigade participated in a penetration assault competitive assessment organized by upper echelons, it focused on having young pilots participate.

In order to avoid issues related to “training for the test,” PLAAF HQ began randomly selecting the competitors from each unit in 2014 for *Golden Helmet*—and likely for the other three training brands in existence at that time as well—however, it is not clear how early the participants were actually selected. Selection of some participants at random also allows PLAAF leaders a means to assess the quality of average pilots relative to their elite counterparts. Additionally, to more closely approximate realistic combat conditions, the PLAAF is relaxing safety restrictions, such as closing the gap between aircraft in formation to 50 meters and adjusting the altitude for engagement, even though these changes entail higher risk of an accident.¹⁶³⁰ The PLAAF has also rewarded personnel who excelled during the four established key training brands by giving them opportunities to participate in international military competitions, such as *Aviadarts*.¹⁶³¹

Complexity

The primary focus of the key training brands is on preparing for actual combat under unknown (unscripted) conditions in a complex electromagnetic environment (CEME). The PLAAF has gradually increased the complexity of each key training brand since their inception and will likely continue to include more complex components in the future, as it moves incrementally toward completely unscripted training.

The competitions and exercises conducted under the key training brands provide a platform for the PLAAF to assess existing tactics and combat methods and to make recommendations for adjustments or creating new ones. They are also used to help the PLAAF identify shortcomings in equipment and pilot capabilities. The PLAAF is taking concrete steps, albeit incremental, to raise training to the next level. This has likely led to a corresponding increase in capabilities, such as improved pilot autonomy.

Evaluation criteria for the key training brands were developed to emphasize the actual effects of each engagement rather than simply focusing on scores and who wins. Furthermore, evaluation criteria are intended to guide the forces toward studying “real enemies” and identifying areas of weakness. This indicates the PLAAF is making some progress toward providing personnel with accurate and impartial feedback, which it has been hesitant to do in the past. As a Deputy Chief of Staff of an Eastern TCAF air regiment noted in 2016, “The real point of *Golden Helmet* is not to rack up glories for the unit, but to uncover and fix mistakes.”¹⁶³²

Other Recent Trends in PLAAF Training and Operational Proficiency

Key Points

- Over the past two decades, the PLAAF has increased its use of confrontation training and increased the sophistication of training standards and content.
- PLAAF training with foreign militaries began in the mid-2000s and has expanded to exercises, including regular exercise series, with a half-dozen partners, as well as other episodic activities.

The PLA has rapidly upgraded its weapons and equipment as well as revised its “doctrine” and strategy over the past two decades in an effort to develop a modern fighting force.¹⁶³³ As noted in Chapter 1, the PLA has not experienced large-scale combat since 1979, when China’s ground forces fought a brief border conflict with Vietnam. The last time the PLAAF fought an air battle was during the second Taiwan Strait crisis in 1958. The largest air battle the PLAAF has fought was during the Korean War, nearly seventy years ago. This lack of recent wartime experience magnifies the importance of constructing a training regime grounded in scenarios that approximate, to the greatest extent possible, technologically sophisticated battlefield conditions.

The PLAAF, along with the other PLA services and forces, have embarked on a set of major institutional reforms aimed at creating a modern, professional fighting force. At the heart of these reforms is an effort to train officers and enlisted personnel under what the PLA refers to as “actual combat conditions.”¹⁶³⁴ The emphasis on “actual combat conditions” is manifested in training scenarios meant to mimic or simulate real-world battle conditions by adopting within daily training routines elements of nighttime battle training, complex electromagnetic environment (CEME), special geographical environments, and extreme weather conditions, as well as multi-day 24-hour training. 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. This section details recent trends, including growing focus on “pilot autonomy,” increased confrontation training, an increasing use of “Red,” “Blue,” and “Orange” forces, and increasing training with foreign militaries.

“Pilot Autonomy” and “Free Air Combat”

Based on open source PLAAF reporting, most combined-arms drills and exercises take the form of either “confrontational air battle assessments” (对抗空战考核) or “system-of-systems (SoS) confrontational drills” (体系对抗演练). For the former, only fighter aircraft and pilots participate in the test, but for the latter, multiple branches are involved, including ground air defense and radar. Both evaluate pilots’ ability to perform “free air combat” and are meant to test pilot combat skills and tactics.

Around 2011, the PLAAF began using the terms “pilot autonomy” and “free air combat,” which basically means that pilots create their own flight plans and engage in aerial intercepts (1v1, 2v2, 1v2, etc.) that are not completely pre-scripted, but they must still follow the training guidance that is set forth in their various regulations. Furthermore, it means that a flight controller in the control tower, command post, or AEW&C aircraft is not telling them what to do step-by-step once the engagement begins; however, the flight controllers, who are normally the unit Commander, a Deputy Commander, or the Chief of Staff, can provide initial guidance and vectoring in order to get the pilots into the engagement zone. If pilots step away from what they have already learned and want to try a new engagement tactic or combat method during free air combat, then the PLAAF must go through a multi-step process to validate it, write regulations, and then have all units implement them accordingly. Whereas this used to be a two-year process, the PLAAF has now appeared to have reduced the timeline considerably in some cases.

Reflecting this trend, in recent years, flight training for PLAAF combat aircrews has become less scripted and more realistic. For example, mandatory altitude gaps between aircraft, which had been in place as a safety measure and were guided by regulations, have been reduced. Although the PLAAF created a “Blue Force” unit, who theoretically uses foreign tactics, it often merely identifies a unit as a “Blue Force” for purposes of the training event or exercise.^{ia, 1635} However, information about engagement patterns, airspace, and altitude is prearranged and communicated to pilots ahead of time.

“SoS confrontational drills,” by contrast, involve a higher degree of uncertainty and complexity. They feature two confrontational parties that do not know about each other’s conditions, and both parties have to rely on integrated information support, real-time communication, and their own judgment to achieve success. A typical summer combined-arms training “season” for a PLAAF combat pilot may feature between six and twelve drills and exercises involving both “confrontational air battle assessments” and “SoS confrontational drills.”

Confrontation / Force-on-Force Training

Over the past two decades, the PLAAF has increased its use of confrontation training (对抗训练), which it also translates as force-on-force training and is described as “training by two or more units or personnel interacting as opponents.”¹⁶³⁶ For purposes of this book, the term confrontation is used.

Each component of the PLAAF has been involved in confrontation training; however, the Aviation Branch receives the most media coverage. Most instances of confrontation training involve “Red Force” units and nominal “Blue Force” units, and has slowly moved from pure scripted training in the early 2000s to less scripted “actual combat” (实战) and “free air combat” (自由空战) training in the 2010s. “Red Force” units and either nominal or actual “Blue Force” units, which are discussed later in this chapter, are also used in each of the PLAAF’s key training brands competitions and exercises. The rest of this section provides recent examples of improvements in confrontation training.

Concerning the Aviation Branch, historically, the PLAAF’s air-to-air confrontation training did not involve much use of dissimilar aircraft. Under the 2002 OMTE, however, aviation units increased their dissimilar aircraft training.^{ib, 1637} This type of training gradually increased under the revised 2009 and 2018 OMTE. As one example, PLAAF media stated that one Central TCAF air unit understood the importance of keeping to an actual-combat (实战化) standard for all training.¹⁶³⁸ The unit noted that, although beyond visual range (超视距) combat has become the main form of aerial combat, military observers believe that, under a complex electromagnetic environment (复杂电磁环境), it will be increasingly difficult to achieve attack conditions (攻击条件) at medium and long range (中远距), meaning close range air combat (近距空战) is still important. This assessment was based on training in 2015, when the same unit visited another unit for confrontation training with dissimilar aircraft. Together, the two units organized 12 specific problems into three categories: stove-piped command and guidance methods, weak coordination, and insufficient weapons and equipment performance development. The two units worked to tackle the problem from the perspective of combat method choices and air-ground cooperation, working on theory, simulation and verification, and real drills. They conducted hundreds of sorties and confrontation air combat flights, collected basic operational data, and pilots chose which combat methods and tactics to use for each sortie. They also studied combat methods, and, in this way, improved their free air combat skills. By targeting the characteristics of confrontation using dissimilar aircraft, the unit regularly studied problems associated with dissimilar aircraft,

ia The Cangzhou (沧州) Flight Test and Training Base (FTTB/飞行试验训练基地), which is also called a Flight Test and Training Center (飞行试验训练中心), is located in Hebei Province. It was officially established in 1987 replacing the 11th Aviation College. It is the home to the PLAAF’s first “Blue Force” unit, which is equipped with J-10 fighters and plays the role of the enemy air force in PLAAF training.

ib A Beijing MRAF air aviation division organized confrontation training using dissimilar aircraft (不同机型不同机种). At the end of 2005, a Beijing MRAF air division conducted a live munitions opposition-force training event using two subordinate regiments equipped with different types of aircraft. Both units deployed to different airfields to conduct the training to make the event more difficult.

and invited research experts to conduct classes surrounding the theory of different aircrafts' weapons and common tactics. As such, confrontation air combat drills currently make up 70 percent of the unit's flight plans, including short-range fighting, nighttime, beyond-visual-range confrontation, single aircraft tactical confrontation, and multiple aircraft combined confrontation training.

The PLAAF's SAM and aviation units have also increased their combined-arms confrontation training. For example, in the spring of 2017, the Western TCAF organized a live-troops confrontation exercise on a battlefield stretching hundreds of square kilometers.¹⁶³⁹ The exercise mobilized aircraft of nine different variants and equipment of 20 types from more than 10 units at the division, brigade and regiment level, including one SAM brigade that was permanently transferred from the plains to the desert. In 2018, a Northern TCAF air brigade held tactical penetration assault confrontation training that involved penetrating the missile defenses of another nearby unit and striking a target.¹⁶⁴⁰ The brigade routinely engages in both competitive confrontation training and cooperative training with these other units and services. Brigade pilots are expected to autonomously establish flight routes and change tactics in accordance with the changing battlefield situation to stealthily penetrate the enemy radar. This brigade has a pilot success rate of over 85 percent for this type of penetration attack. The brigade has also engaged in mountain valley flight and far-seas mobile attacks. The brigade takes advantage of the long flight times and advanced electronic equipment of the unidentified type of combat aircraft that it flies.

The Radar Branch also holds frequent confrontation training. For example, in August 2108, a Western TCAF radar brigade's mobile battalion, which was established in 2015 in Xinjiang, participated in an confrontation training assessment.¹⁶⁴¹ There were five training assessment training subjects in this assessment, including day and night actual-personnel mobilization, position camouflage, and low-altitude target detection. Since it was established, the battalion has participated in mobile missions to remedy blind spots, aerial security, plateau deployed training, rapid assembly, long-distance mobility and other actual-combat topics. During this period, the battalion discovered that low-altitude targets and camouflage and protection were weak spots for personnel.

In addition, the Airborne Branch often holds confrontation training.¹⁶⁴² For example, in June 2018, an airborne brigade air defense element held an actual-combat confrontation assessment drill in the Qilian Mountains in Gansu Province. The stated purpose was to test the element in a harsh environment for a full month. The training involved over 20 training subjects, including parachuting into the area, circling and striking targets during the day and at night. The element struck its targets and moved frequently throughout the training.

Finally, the PLAAF also conducts joint confrontation training with the Navy. For example, around December 2017, the Southern TCAF and PLAN carried out a "Red Force"- "Blue Force" confrontation training event involving multiple aviation units with dissimilar aircraft, as well as SAM units, radar units, and vessels. "During the training event, a Southern TCAF base played the "Red Force", and Navy commanding personnel flew on and observed a PLAAF airborne early warning and command aircraft (i.e., an aerial command post), while PLAAF commanding personnel boarded Navy early warning aircraft and destroyers to observe them firsthand. Descriptions of the exercise stated that the PLAAF aviation units and Navy operational forces formed a three-dimensional attack and defense system-of-systems."¹⁶⁴³ Although the article did not mention Naval Aviation, it most likely participated as the aviation component of the "Blue Force."

Blue, Red, and Orange Forces

In 1987, the PLAAF created the Cangzhou (沧州) Flight Test and Training Base (FTTB / 飞行试验训练基地) in Hebei Province. At some point after that, the PLAAF created a "Blue Force" unit within the base, who reportedly plays the role of a realistic simulated opponent in "free air combat training," thus helping address the problem of PLAAF units "training against an invisible opponent, and fighting in an unrealistic environment."¹⁶⁴⁴ Reportedly,

PLAAF “Blue Force” training simulated Soviet Union air force units at first, and the confrontation elements later switched to playing the role of Taiwan and the United States as the simulated adversaries.¹⁶⁴⁵ This unit sometimes deploys elsewhere to simulate foreign air units, such as for the *Golden Shield* competition, discussed later in this chapter. In the beginning, most training was pre-scripted and the “Red Force” always won; however, by the early 2000s, the “Blue Force” was allowed to win.¹⁶⁴⁶

In addition, some air units have tried to teach a few pilots in a flight squadron how to use actual “enemy” tactics and employ them within their own unit against the “Red Force” during training events. For example, Lieutenant General Ma Zhenjun, who was one of the PLAAF’s Deputy Commanders in 2019 and previously served as the Chief of Staff, was the Commander of the 2nd Air Division in Suixi, Guangdong Province, in the Guangzhou MRAF in the mid-2000s.¹⁶⁴⁷ While serving as the Commander, he created a “Blue Force” flight squadron of 4-5 aircraft that was responsible for simulating how an opponent operates. Another example involved a one air regiment in the 29th Air Division in Quzhou, Zhejiang Province, Nanjing MRAF, whose Commander was Yang Yongfei, had three flight groups that had their responsibilities divided as follows: the 1st Flight Group was designated the “Red Force,” the 3rd Flight Group was designated the “Blue Force,” and the 2nd Flight Group was given the responsibility for training new pilots. After completing their training in the 2nd Flight Group, the pilots transitioned to the 1st Flight Group to study the “Red Force” and then to the 3rd Flight Group to study the “Blue Force.”

One complicating factor in analyzing the significance of PLAAF “Red Force” and “Blue Force” for unit training is that the PLAAF often assigns the name “Blue Force” to one unit and “Red Force” to another unit during a training event or exercise involving one or more air brigades, but the “Blue Force” units continue to use “Red Force” tactics and combat methods.^{ic, 1648} The PLAAF’s “Blue Force” also often times includes non-aviation branches and units, such as during the *Red Sword* exercises that include aviation forces, SAM troops, and radar troops.¹⁶⁴⁹ Similarly, however, it is not clear if those units are actually using foreign tactics or are merely playing a role but using PLAAF tactics and combat methods.

As discussed elsewhere in this chapter, the PLAAF began using the term “Orange Force” during the 2017 *Red Sword* exercise to represent a “third party.” It continued to use the term for the same exercise in 2018 and 2019.¹⁶⁵⁰ If this “third party” enemy force employed foreign tactics, as opposed to simply using PLAAF tactics, it would be a notable evolution in PLAAF training.

Training with Foreign Militaries

This section briefly summarizes the PLAAF’s training with foreign militaries, including competitions.¹⁶⁵¹ (Chapter 7 covers other interactions with foreign militaries.) In 2002, the PLA began conducting combined exercises with foreign militaries, which the PLA sometimes refers to as “joint exercises.”¹⁶⁵² From 2012 through 2018, the PLA had participated in more than 100 such exercises and drills with militaries from over 30 countries.¹⁶⁵³

As part of this effort, the PLAAF has increasingly become involved in exercises with foreign air forces. Units involved have included those with multirole combat aircraft, bombers, transports, and airborne troops. These exercises have allowed the PLAAF to demonstrate its improving capabilities to the international community. They also provide opportunities to observe and learn from foreign militaries in an operational environment, and serve as a vehicle for building trust and cooperation with select countries.

PLAAF exercises to date have included participation with Russia, Kazakhstan, Turkey, Pakistan, Venezuela, Belarus, Malaysia, Thailand, and Indonesia. PLAAF IL-76 transport aircraft have supported PLAAF deployments abroad for exercises, and some of the combat aircraft have either been refueled in the air or stopped at various

^{ic} The Cangzhou (沧州) Flight Test and Training Base (FTTB/飞行试验训练基地), which is also called a Flight Test and Training Center (飞行试验训练中心), is located in Hebei Province. It was officially established in 1987 replacing the 11th Aviation College. It is the home to the PLAAF’s first “Blue Force” unit, which is equipped with J-10 fighters and plays the role of the enemy air force in PLAAF training.

airfields while en route. Through these exercises, the PLAAF has learned to navigate outside the country, work with foreign partners, and carry out limited operations on an expeditionary footing. It should be noted that all of these exercises are highly scripted and the PLAAF trains for the individual components of each exercise for months in advance. The following subsections provide information about the PLAAF's involvement in the combined exercises.

Aviation Training with Foreign Militaries

PLAAF aviation units participate in both multilateral and bilateral exercises, with the former via the Shanghai Cooperation Organization (SCO), and the latter with Russia, Pakistan, and Thailand. This section summarizes both types of exercises.

Peace Mission Exercise Series

The PLAAF has participated in multilateral exercises with Russia and other neighbors via the SCO. The *2019 Defense White Paper* reviews the history of the SCO, which was co-founded in 2001 by China, Kazakhstan, Kyrgyzstan, Russia, Tajikistan and Uzbekistan.¹⁶⁵⁴

In 2017, the SCO expanded for the first time and admitted India and Pakistan as member states. In 2018, China hosted the first SCO Defense Ministers' Meeting since the organization expanded its membership. According to the *2012 Defense White Paper*, "since 2005, the members have participated in several *Peace Mission* bilateral and multilateral combined exercises in order to further promote good-neighborliness and strategic mutual trust, increase military cultural exchanges, and enhance unity and friendship. The exercises are held at the campaign level with strategic impact."¹⁶⁵⁵ The exercises normally include the PLA Army, Navy, and/or Air Force. No Second Artillery / Rocket Force units have ever participated. Although no information was found concerning participation by the PLA Strategic Support Force, it has most likely not participated. A brief overview of each exercise from 2005 to 2018 is provided below. It does not appear that an exercise was held in 2019.

Peace Mission 2005 was held in August and was the first China-Russia combined exercise but included observers from Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Iran, India, and Pakistan.¹⁶⁵⁶ The highly scripted exercise, which involved only three months of planning, consisted of about 8,000 PLA and 2,000 Russian personnel. The exercise, which involved the PLA's ground, naval, and air forces, started in Vladivostok and then moved to the Shandong Peninsula.

Peace Mission 2007 was held in August and was the first exercise to involve all six SCO members.¹⁶⁵⁷ The exercise was held in Russia's Chelyabinsk and involved a total of 4,000 personnel and 1,600 PLA ground forces and air force personnel, who deployed by rail and air.

Peace Mission 2009 was held in July between China and Russia with strategic talks in Russia's Khabarovsk and training at the PLA's Taonan Tactical Training Base in Jilin Province.¹⁶⁵⁸ Military observers from four other SCO member states (Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan) were present. The exercise involved only 1,300 troops from each side, but the weapon systems involved were portrayed as more sophisticated than in past exercises, including surface-to-air missiles. Although the PLA units involved were not identified, they included 18 aircraft. The Russian forces consisted of T-80 tanks, BMP-1 and BTR-70 armored vehicles, 22 aircraft, including two IL-76 cargo planes, five Su-24, five Su-25, five Su-27 fighters and five Mi-8 helicopters.¹⁶⁵⁹ However, according to a *Moscow Times* report, inaccurate maps led to approximately 15 Russian and 60 Chinese deaths during the exercise.¹⁶⁶⁰ The preparation time for the combined exercise was shortened from ten months in the previous exercises to four months.

Peace Mission 2010 was held in September in Kazakhstan and involved more than 5,000 troops from Kazakhstan (1,700), China (1,000), Russia (1,000), Kyrgyzstan (100), and Tajikistan (100).¹⁶⁶¹ PLA participants

came from an unidentified group army, as well as PLAAF J-10 multirole aircraft and H-6 bombers that conducted air-to-ground attacks.

Peace Mission 2012 was held in June in Tajikistan with participants from Russia, China, Kazakhstan, Kyrgyzstan, and Tajikistan.¹⁶⁶² Reporting described the exercise are focused on implementing combined counterterrorism operations in mountainous terrain. The 2012 exercise was smaller than previous exercises and involved only 2,000 personnel, including 369 from the PLA and 350 Russian servicemen. As such, the PLA's participants included one motorized-infantry company and an artillery squad, as well as unidentified PLAAF aircraft.

Peace Mission 2013 was held in July and August. Russia hosted the bilateral, combined exercise at the Chebarkul base in the Chelyabinsk Region.¹⁶⁶³ PLA participants included 646 personnel, as well as tanks, armored personnel carriers, light reconnaissance vehicles, 120-mm self-propelled howitzers, 152-mm self-propelled guns, five JH-7A fighter-bombers, and helicopters. The primary ground forces organization was the Shenyang MR's 39th Group Army from Liaoning Province, which included the 190th Mechanized Brigade, a Special Operations Forces (SOF / 陆军突击分队) brigade, and an Army Aviation regiment. The JH-7s came from the Shenyang MRAF's 11th Air Division stationed in Jilin Province. A total of 600 Russian military personnel participated in the three-phase exercise, including force projection and deployment, campaign planning, and campaign implementation.

Peace Mission 2014 was held in August, and again oriented toward counterterrorism operations. China hosted the multilateral combined exercise at the Zhurihe Training Base in Inner Mongolia with all members of the SCO except Uzbekistan.¹⁶⁶⁴ The scenario involved an extremist or separatist group from abroad that has incited people to join a terrorist insurgency in a SCO nation. After China requested SCO assistance, combined forces were sent to suppress the insurgency. The exercise involved 7,000 troops, including 2,200 foreign personnel. Units included infantry, aviation, airborne troops, and special forces, and weapons included fighters, transports, helicopters, and tanks from each of the participating countries. This was the largest *Peace Mission* exercises to date and the first time that the PLA served as the chief director of a combined military exercise. The primary PLA ground forces came from elements of the Beijing MR's 38th Group Army, which included the first use of Z-19 and Z-10 helicopters in a *Peace Mission* exercise. The PLAAF assigned a total of 23 aircraft of seven types, including J-10, J-11 and JH-7 fighters and attack aircraft, as well as KJ-200 early warning aircraft and several airborne troop combat vehicles. Some types of aircraft also reportedly made their debut in the exercise. In addition, reporting portrayed the exercise as exceeding previous ones in the application of information technology and the level of information-based warfare. It was also described as the first time that the Chinese military assigned reconnaissance-strike integrated unmanned aerial vehicles (UAVs) and female special operations members to participate in a combined exercise.

Peace Mission 2016 was held in September at a military training area in Balykchy in the Issyk-Kul Region of Kyrgyzstan, which was the first time for an exercise to be held in Kyrgyzstan.¹⁶⁶⁵ A total of 1,100 troops from five countries (China, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan) participated, including 270 from China. It involved more than 200 pieces of weaponry, including fighter jets, helicopters, tankers, infantry fighting vehicles and self-propelled artillery. The scenario of the exercise was a regional crisis triggered by an international terrorism incident. The drill, divided into three stages included security consultation, battle preparation and combat implementation, which were aimed at testing the preparation and implementation of joint action against terrorism in mountain areas. The live-fire exercise mainly included such subjects as sharpening the joint forces' skills to block, strike, and wipe out illegal armed invasion troops and remnants of the enemy and to help local residents to evacuate war zones. Although the PLAAF was apparently involved, no information was provided about which types of units or weapons; however, the Russians did use two Su-24 fighters to conduct aerial reconnaissance during the last stage. Troops from the Western TCAF and PLA Xinjiang Military District hosted a mobilization ceremony in September at a training base in Xinjiang's Kizilsu Kirghiz Autonomous Prefecture.

Peace Mission 2018 was held in August in the training range in Chebarkul, Russia, which is part of the Ural Mountains.¹⁶⁶⁶ It was the first joint military exercise organized by all member states of the SCO. According to the exercise plan, the participating troops were organized into combat clusters for joint operations. Based on the characteristics of joint counterterrorism operations, the operations would be implemented in six steps, namely, reconnaissance, blockade and control, air landing, resistance, suppression, and pursuit and attack, so as to fully test the participating troops' joint planning, command, combat and supply capabilities. Media reports described the scope of the exercise as over 3,000 troops from all of the countries' army, air force, navy, and new types of combat forces participating and operating more than 500 weapons and pieces of equipment, including fighters, helicopters, tanks, infantry fighting vehicles, self-propelled weapons systems, and others.

Exercises with Russia

In recent years, the PLAAF has also participated in bilateral exercises with Russia. From 2012 through 2019, the PLA Navy and Russian Navy have held annual “*Joint Sea*” aka “*Maritime Cooperation*” (海上联合) combined exercises.¹⁶⁶⁷ The exercises have taken place off the coast of Russia and China and in the Mediterranean Sea. The only one to involve the PLAAF was *Joint Sea 2015(II)*, which lasted for nine days in August in the Peter the Great Gulf and was China's largest naval exercise with Russia since they began in 2012.¹⁶⁶⁸ Besides Naval Aviation involvement, the PLAAF sent two J-10s and two JH-7s from the Shenyang MRAF and one KJ-200 early warning aircraft to participate in two parts: “joint air-defense,” and “joint [amphibious] landing.”¹⁶⁶⁹ The air-defense part included the KJ-200 providing “command and guidance” to the landing forces while the J-10s and JH-7s intercepted and drove away the opposition blue forces, a Russian Navy Pacific Fleet IL-38 and TU-142M aircraft.¹⁶⁷⁰ The amphibious part was centered on “counter-shore air-to-ground support training,” with the J-10s providing surveillance patrols and [strike] cover to the landing troops while the JH-7s bombed the landing approaches, supported by strikes from four Russian Su-25s.¹⁶⁷¹ According to one Chinese military expert, this was the first time the PLAAF and Naval Aviation conducted a joint exercise away from China, and it was the PLAAF's first time participating in *Joint Sea* with Russia.¹⁶⁷² According to one report, joint service cooperation for future warfare is critical because “relying only on the PLA Navy, [China] will be unable to rule the seas and win a war.”¹⁶⁷³

Russia's large-scale military exercises are scheduled in four major drills on a rotating basis: *Vostok* (East), *Zapad* (West), *Tsentr* (Center), and *Kavkaz* (South), which correlate to Russia's military districts. As such, recent exercises were *Zapad 2017*, which included Belarus; *Vostok 2018*, which included Belarus, China, and Mongolia; *Tsentr 2019*, which included China, Pakistan, India, Kyrgyzstan, Kazakhstan, Tajikistan and Uzbekistan; and *Kavkaz 2020*, which included China, Armenia, Pakistan, and even the pseudo-state of Abkhazia.¹⁶⁷⁴ Only the 2018 and 2019 exercises included aircraft from participating air forces.¹⁶⁷⁵

In what appears to be the largest deployment of PLA Army Aviation assets outside of China, the 79th Group Army Aviation Brigade deployed six Mi-17, six Z-9, and 12 Z-19 helicopters to participate in the massive *Vostok 2018* exercise in Russia in September 2018 in conjunction with elements of a combined arms brigade and engineer and chemical defense brigade from the 78th Group Army. In addition, six PLAAF JH-7 fighter-bombers participated.¹⁶⁷⁶

In September 2019, Russia held *Tsentr 2019* in the Orenburg region of southwestern Russia near the Kazakhstan border.¹⁶⁷⁷ China, Pakistan, India, Kyrgyzstan, Kazakhstan,

Tajikistan and Uzbekistan all participated for the first time. Altogether, the PLA's Western TC's Army and Air Force sent 1,600 troops plus an undisclosed number of Type 96A main battle tanks, H-6K strategic bombers, JH-7A fighter-bombers, J-11 fighter jets, IL-76 and Y-9 transport aircraft, and Z-10 attack helicopters to participate. On the Russian side, the exercise was slated to involve 128,000 servicemen, over 20,000 pieces of hardware including 15 warships, 600 aircraft, 250 tanks, about 450 infantry fighting vehicles and armored personnel carriers, and up

to 200 artillery systems and Multiple Launch Rocket Systems. Besides China and Russia, the exercise included the participation of military personnel from member states of the Shanghai Cooperation Organization, as well as forces from the regional members of the Collective Security Treaty Organization (CSTO), all which included India, Pakistan, Kyrgyzstan, Kazakhstan, Tajikistan, and Uzbekistan. The Russian Ministry of Defence stated that the main objectives of the strategic command post exercise are to verify readiness levels of the Russian military and to improve interoperability between Russian forces and their international partners.

In July 2019, two H-6K bombers from the 10th AD's "Model Bomber Group" formed a mixed formation (混合编队) with two Russian Air Force Tu-95 bombers and conducted their first joint airborne strategic patrol (中俄联合空中战略巡航) over the Western Pacific.¹⁶⁷⁸ The H-6s flew over the Sea of Japan and East China Sea as well as a short trip through the Miyako Strait past the First Island Chain into the Western Pacific.

Other Bilateral Exercises

Shaheen (Eagle) (雄鹰) is a China-Pakistan Air Force combined training exercise originally launched in March 2011 in Pakistan that included combined training of operational aerial maneuvers.^{id} In September 2013, the PLAAF hosted *Shaheen II* in China and flew J-10s during the exercise.^{ic} In May 2014, the PLAAF returned to Pakistan for *Shaheen III*.^{if} *Shaheen IV* took place in Beijing in October 2015 and *Shaheen V* took place in Pakistan in April 2016.¹⁶⁷⁹ *Shaheen V* included PLAAF combat pilots, air defence controllers, and technical ground crew. It also witnessed the participation of three different types of frontline fighter aircraft belonging to various Pakistan Air Force squadrons for the first time. The 2017 exercise, *Shaheen VI*, took place in China and involved multiple types of aircraft and multiple branches. China dispatched J-11 fighters, JH-7 fighter-bombers, KJ-200 early warning aircraft and ground forces, including SAM, radar units and airborne special forces. Pakistan sent JF-17 Thunder fighter jets as well as early warning aircraft. PLAN Aviation also participated in the training. The exercise featured early warning aircraft throughout the entire process,¹⁶⁸⁰ included night-time confrontation combat, live munitions were used, and confrontation combat involved pilots from both countries sitting in the same fighter during the ongoing joint drills.¹⁶⁸¹ In the past, a campaign-grade joint training such as this would have been organized by a TC level or above headquarters organization, however, with the new base-brigade system, the Base was responsible for directing and organizing the joint training exercise in 2017. The 2018 version, *Shaheen VII*, took place at an air base in Karachi.¹⁶⁸² China hosted *Shaheen VIII* in 2019 with both PLAAF and PLAN Aviation participating, including J-10Cs, J-16s, JH-7s, and airborne early warning aircraft.¹⁶⁸³

China and Thailand have held four *Falcon Strike* exercises, all in Thailand, with the stated goal of testing tactics, combat methods, and weaponry, and improving actual combat training. *Falcon Strike 2015* took place at Korat Airbase,¹⁶⁸⁴ while *Falcon Strike 2017*, *Falcon Strike 2018*, and *Falcon Strike 2019* all took place at Udorn Airbase.¹⁶⁸⁵

Anatolian Eagle is a China-Turkey joint training activity, and Turkey hosts various *Anatolian*-type exercises with many countries. As they all take place in Konya, in central Anatolia, south of Ankara. The first known instance of a Sino-Turkish relationship took place in 2010 at the first such *Anatolian Eagle* exercise between the two countries. At that time, four Su-27s and at least one IL-76 participated. Turkey flew F-4s.¹⁶⁸⁶ This was the only time that China participated in the exercise.

id Ouyang, ed., "Chinese and Pakistani air forces hold joint training," *China Military Online*, 23 September 2013, found at http://eng.chinamil.com.cn/news-channels/photo-reports/2013-09/23/content_5527605.htm.

ic "Chinese and Pakistani air forces hold joint training," *China Military Online*, 23 September 2013, found at http://eng.chinamil.com.cn/news-channels/photo-reports/2013-09/23/content_5527605.htm.

if Yao Jianing, ed., "Ma Xiaotian meets with Portuguese Air force Chief of Staff," *China Military Online*, 9 December 2014, found at http://english.chinamil.com.cn/news-channels/china-military-news/2014-12/09/content_6261756.htm.

Airborne Training with Foreign Militaries

The Airborne Corps has participated in combined bilateral and multilateral exercises since 2005, with counterpart nations including Russia, Belarus, Venezuela, Indonesia, Australia, and the United States.¹⁶⁸⁷ Although many of the exercises are often billed as “anti-terrorism” drills, the content of the exercises often suggests that the units involved are practicing skills closer to combat activities.

The Airborne Corps has participated in the *Peace Mission* exercises, including the China portion of *Peace Mission 2005* and the *Peace Mission 2007* exercise in the PLA’s Jinan MR, but it has also begun to hold exercises outside the *Peace Mission* umbrella.¹⁶⁸⁸ In 2011 and 2012, the airborne troops participated in *Divine Eagle* (神鹰), which has also been identified as *Condor* and *Swift Eagle*, with Belarussian airborne forces in Belarus and China, respectively.¹⁶⁸⁹ PLAAF airborne troops also participated in the *Cooperation* (合作) 2011 urban combined training in October 2011 in Venezuela. The Airborne Corps visited Indonesia for the *Sharp Knife* (利刃) drills in 2013,¹⁶⁹⁰ and hosted Indonesia’s airborne forces for the *Sharp Knife Airborne 2014* drill in 2014.¹⁶⁹¹ In 2014, Russian airborne troops visited the PLAAF’s Airborne Troop College in Guilin to exchange views and become familiar with the college’s training and facilities.¹⁶⁹² Since 2014, Australia has hosted an annual survival training exercise known as *Kowari* that involves forces from Australia, the United States Marine Corps, and China. The first time the PLAAF Airborne Corps participated was in 2019.¹⁶⁹³

Competitions

In July 2014, as part of Russia’s International Army Games (IAG / 国际军事比赛), the Russian Air Force hosted “Aviadarts-2014” at Voronezh, Russia, which included the PLAAF and Belarus Air Force. Three PLAAF Su-30s and six pilots competed in six separate events aimed at showing pilot skills in visual reconnaissance, navigation, single-plane or two-plane aerobatics, and air-to-ground attacks. Each crew launched 24 rockets and fired 60 cannon rounds. Based on the total scores, Russia took first place, China took second, and Belarus third. In August 2015, three PLAAF JH-7s competed in the “Aviadarts-2015” competition, which was held within the framework of the “International Army Games 2015.”¹⁶⁹⁴ More than 100 pilots in over 50 flight crews from Russia, Belarus, Kazakhstan, and China flew 12 different types of fixed-wing warplanes and helicopters. Although China took second out of ten teams overall in the IAG that year, the PLAAF came in third behind Russia and Kazakhstan but beat Belarus in the Aviadarts competitions. Unlike 2014, when the PLAAF Su-30s used Russian munitions, in 2015 the JH-7s brought their own munitions. A new air combat evaluation system developed in 2016 used at the exercises shortened the time it takes to evaluate 4-aircraft air combat from three days to three hours. Without this system, it had taken more than 20 days to finalize the evaluation of a competition, whereas in 2016, it only took seven days. By adding close-range air combat to the competition, 2017 involved twice the number of sorties than the previous year, yet the evaluation only took nine days to complete.

Prior to 2016, “Red” and “Blue” were only arbitrary designations for separating the two competing teams. Starting in 2016, the directors set up a target area, clearly designating Red as the attacker and Blue as the defender. August 2017 was the first time the Aviadarts competition was held in China (Jilin Province). The 2018 and 2019 competitions were again held in Russia. As of 2019, the PLAAF has participated in the Aviadarts competition for five consecutive years.

Of note, the 4th Air [Transport] Division participated in both the Aviadarts-2018 international military competition and the *Peace Mission-2018* exercise in Russia.¹⁶⁹⁵ Pilots had to use English to speak with ground command and foreign military personnel. The unit had created a cultivation mechanism called “double aircraft commander, double language” (双机长, 双语言), in which aircraft commanders are able to operate two types of aircraft and are also able to work in both Mandarin and English. Every week, the unit organizes one or two missions in which

the flight is commanded and guided (指挥引导) in English. The unit also developed English learning software and sent pilots to civilian flight schools to learn specialist English.

The Airborne Corps has participated in every International Army Games (IAG) since 2015. The games have included over 30 participating countries, and has been held in ten different countries as shown below:

- August 2015: Held in Russia.
- July–August 2016: Held in Russia. 3,500 personnel from 19 states participated in 23 competitions.
- July–August 2017: Held in five countries (Russia, China, Azerbaijan, Belarus, and Kazakhstan) that involved 28 international competitions, including five new ones. The PLAAF’s Airborne Corps won first place in 11 out of 12 “Airborne Platoon” events that held in China’s Hubei Province.
- July–August 2018: Also held in Armenia and Iran for the first time.
- August 2019: Held in 10 countries (Russia, India, China, Azerbaijan, Armenia, Belarus, Iran, Mongolia, Uzbekistan, and Kazakhstan). Organized in 32 disciplines.

Chapter 7: PLAAF Military Diplomacy, Exchanges, and Cooperation

This chapter discusses the PLAAF's military diplomacy, which it sometimes describes using the term "military exchanges and cooperation," since the PLAAF was established in November 1949.^{ig} It is divided into the following three sections. Detailed information concerning training with foreign militaries is covered at the end of Chapter 6.

- Background on the PLA's overall military diplomacy
- PLAAF military diplomacy
- PLAAF-USAF relations.

Background on the PLA's Overall Military Diplomacy

Key Points

- The PLA and PLAAF conduct military diplomacy in support of PRC national security objectives.
- PLA overseas activities and activities with foreign militaries have expanded in recent decades, including increasing the number and presence of attachés and PLA troops abroad and the establishment of a PLA-organized regional security forum.

The People's Republic of China's (PRC) overall foreign diplomacy can be broken down into three components: diplomatic, economic, and military.¹⁶⁹⁶ The military component rarely occurs in isolation from the other elements.

What is PLA Military Diplomacy?

The *China Military Encyclopedia* defines military diplomacy as "diplomatic activities that represent the military interests of the nation."¹⁶⁹⁷ According to David Finkelstein and Michael McDevitt, "the PLA's conduct of foreign military diplomacy is considered a strategic-level activity that is expected to help achieve the national security objectives of the PRC."¹⁶⁹⁸ Based on these definitions, PLA military diplomacy is a strategic political activity conducted for the purpose of furthering the Chinese government's national objectives.¹⁶⁹⁹ As evidence of the PLAAF's role in these efforts, there are multiple examples of senior-level PLAAF visits and exchanges that supported broader growth in political and economic ties between China and other countries.¹⁷⁰⁰

For example, the PLAAF has also been involved in relations with countries in Latin America. The following bullets show how the PLAAF fit into overall relations with Chile from 1991 to 2002 shown in the order they occurred.¹⁷⁰¹ The visits resulted in the two countries signing a free trade agreement on the sidelines of the November 2005 Asia-Pacific Economic Cooperation (APEC) meeting in South Korea.^{ih} The deal is the first between China and a Latin American country.

- Wang Hai, PLA Air Force Commander (1991)
- Chi Haotian, Defense Minister

^{ig} The PLA's *Defense White Papers* typically have a section identified as "Military Exchanges and Cooperation" (军事交流与合作); however, most PLA publications use the term military diplomacy (军事外交).

^{ih} Geri Smith, "China and Chile: South America Is Watching," *Business Week Europe*, 21 November 2005. <http://uk.biz.yahoo.com/051121/244/fxg83.html>.

- Zhang Lianzhong, PLA Navy Commander
- Zhu Rongji, Vice Premier
- Li Peng, Premier
- PLA Navy ship visit
- Zhang Wannian, CMC Vice-Chairman
- Liu Shun Yao, PLA Air Force Commander (1998)
- Li Tieying, CCP Politburo member
- Tang Jiaxuan, Foreign Minister
- Jiang Zemin, President
- Guo Boxiong, CMC Member and DCGS
- Shi Yunsheng, PLA Navy Commander

In addition, from 2001 to 2005, the following senior PRC leaders plus a PLAN ship visited South Korea in the order shown:¹⁷⁰²

- Li Peng, Chairman, NPC Standing Committee
- Liu Shun Yao, Commander, PLA Air Force (2001)
- Su Shuyan, Deputy Director, General Logistics Department
- Tang Jiaxuan, Foreign Minister
- PLA Navy ship visit
- Xing Shizhong, Commandant, National Defense University
- Zhang Wentai, Political Commissar, Jinan Military Region
- Fu Quanyou, Chief of the General Staff
- Qian Shugen, Deputy Chief of the General Staff
- Wu Bangguo, Chairman, NPC Standing Committee
- Wu Dawei, Vice Foreign Minister
- Xu Zhigong, Deputy Commandant, National Defense University
- Qian Guoliang, Commander, Shenyang Military Region
- Hu Jintao, President and CMC Chairman.

The following statement in 2006 from *Xinhua*, the PRC's state-run news agency, further elaborates on the PLA's role and is still relevant today:

*“China’s military diplomacy will continue to be an independent foreign policy of peace, serve the state’s overall diplomacy and the national defense and army modernization drive, further increase mutual understanding, friendship and cooperation with the armed forces of other countries so as to contribute still more to world peace and stability and common development.”*¹⁷⁰³

Although the *Xinhua* article quoted above describes China's military diplomacy as an “independent foreign policy of peace,” the PLA is not free to conduct foreign military relations on its own, as indicated by the directly following statement that military diplomacy “serve[s] the state's overall diplomacy.” Evidence suggests that, although the PLA is responsible for managing and carrying out foreign military diplomacy, it is required to coordinate and consult with PRC State and Party bureaucracies.¹⁷⁰⁴ According to the *China Military Encyclopedia*, military diplomacy is a

“major component of the nation’s foreign relations” that is overseen by both the national foreign affairs apparatus and the military leadership.¹⁷⁰⁵

60 Years of PLA Military Diplomacy

To celebrate the 60th anniversary of the PRC’s founding in 2009, China Military Science carried an article by Professor Chen Zhiyong from the Nanjing Political Academy that provides a breakdown of the PLA’s military diplomacy since 1949 into the following six periods:¹⁷⁰⁶

- 1949 through the 1950s: During this period, China’s international strategy was based on a “leaning to one side” (一边倒) strategy that moved China toward the Soviet Union and away from the United States. As such, China established military attaché offices in several socialist countries, including the Soviet Union, Poland, Czechoslovakia, Bulgaria, North Korea, and Vietnam. The PLA utilized those relations to gain experience from their militaries, import weapon systems and equipment, and train Chinese military personnel overseas.
- 1960s: In this period, Sino-Soviet relations deteriorated, and China shifted its “leaning to one side” strategy to an “anti-imperialist and anti-revisionist (反帝反修) international united front strategy. As a result, China’s military diplomacy shifted from a focus on relations with the Soviet Union and East European socialist countries to supporting Asian, African, and Latin American countries’ independence and liberation movements.
- 1970s: In the 1970s, the Soviet Union became China’s primary security threat and Mao Zedong tried to create a united front against “hegemonism” (反霸). The PRC also became a permanent member of the United Nations Security Council and began to establish military relations, especially with Western nations. Relations with the United States also began to thaw, and diplomatic relations were established in January 1979 just before China’s border war with Vietnam.
- 1980s: During the 1980s, China put forth the concept of peace and development. Following China’s reform and opening up, military diplomacy and exchanges expanded rapidly worldwide.
- 1990s to 2009: During this period, the global security situation changed, and the PRC put forth the new security concept of “equality (平等), mutual trust (互信), mutual benefit (互利), and cooperation (协作).” As a result, military diplomacy was closely linked with China’s foreign policy and the Military Strategic Guidelines for the New Period [issued in 1993]. Military exchanges involved opening up and transparency, as well as high-level exchanges, strategic dialogue, bilateral and multilateral security forums, opening of barracks and exercises to observers, ship port visits, and combined exercises.

The authors were not able to locate a similar report from the 2019 timeframe on the 70th anniversary of the PRC’s founding and related PLA diplomacy, but the following section elaborates on developments from the 1990s to the present.

Contemporary Military Diplomacy in the Context of PRC Foreign Relations

Since China began the process of reform and opening to the outside world in the early 1980s, the PLA’s military diplomacy program has evolved as a means to advance China’s national defense policy. According to the PRC’s 2008 *Defense White Paper*:¹⁷⁰⁷

“China persists in developing friendly relations, enhancing political mutual trust, conducting security cooperation, and maintaining common security with all countries on the basis of the Five Principles of Peaceful Co-existence. The Five Principles for Peaceful Co-existence are: mutual respect for each other’s territorial integrity and

sovereignty; mutual non-aggression; mutual non-interference in each other's internal affairs; equality and mutual benefit; and peaceful co-existence.”

Based on information from the PRC's biennial *defense white papers* and other PLA writings, the five general goals of the PLA's foreign relations program are to:¹⁷⁰⁸

- Shape the international security environment to support key national security objectives.
- Improve political and military relations with foreign countries.
- Provide military assistance to developing countries.
- Enhance China's military and defense industry modernization by acquiring technology and advancing key research and development programs through foreign assistance.
- Help China's military leaders, younger officers, and civilian cadres acquire advanced military knowledge in doctrine, operations, training, military medicine, administration, and a host of non-combat-related areas.¹⁷⁰⁹

For all practical purposes, the PLA has been fairly successful in meeting each of these goals. As noted in *Military Exchanges with Chinese Characteristics* and *PLA International Initiatives under Hu Jintao*, China began establishing military diplomatic relations with various countries in the early-mid 1990s under Jiang Zemin, and the number and types increased under Hu. Several of these relationships have evolved over a period of years from lower-level relationships to more “strategic” relationships. The PLA has continued to conduct exchanges with countries under Xi Jinping based on this structure.¹⁷¹⁰

From the 1990s through 2010, China established strategic partnerships (战略伙伴) with at least 22 countries to “promote mutual trust and cooperation” and to discuss key issues such as non-proliferation, counterterrorism, bilateral military and security cooperation, disaster relief, peacekeeping, maritime safety, border joint patrols, and non-proliferation.ⁱⁱ Some of these countries include Russia, India, Germany, and New Zealand, as well as the SCO. By 2014, that number had increased to 50.^{ij} It is not clear what the total number stood at by the end of 2019.

Once these strategic partnerships were established, the PRC also built a structure of economic and/or military strategic dialogues (战略对话) and/or strategic consultations (安全磋商) with some countries starting in the mid-2000s.¹⁷¹¹ As a general rule, the CCP General Secretary and PRC President normally attends the opening meeting to establish the strategic partnership, but the Premier, one of the Vice Premiers or a senior military leader represents China at the remaining meetings, depending on the topic. However, the PLA does not always participate in strategic dialogues and consultations.

China and the United States have created several different dialogues since the late 1990s to include the following examples:

- 1998: Military Maritime Consultative Agreement (MMCA)¹⁷¹²
- 2005: What China called the China-U.S. Strategic Dialogue and the United States called the U.S.-China Senior Dialogue
- 2006: Defense Policy Coordination Talks (DPCT)¹⁷¹³
- 2008: Strategic Economic Dialogue¹⁷¹⁴

ii PRC 2010 *Defense White Paper*. A review of each relationship shows that strategic consultations is the generic term for a group of discussions, including the Chief of the General Staff dialogue (总参谋对话), defense and security consultation (防务安全磋商/防务与安全磋商), defense and strategic consultation (防务战略磋商), defense consultation (防务磋商), defense strategic consultation (防务战略磋商), meetings (会议), military cooperation dialogue (军事合作对话), security consultation (安全磋商), security dialogue and cooperation (安全对话与合作), strategic and security consultation (战略与安全磋商), strategic consultation (战略磋商), and strategic defense consultation (战略防务磋商).

ij Feng Zhongping and Huang Jing, “China's strategic partnership diplomacy: engaging with a changing world,” European Strategic Partnerships Observatory, Working Paper 8, June 2014, found at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2459948.

- 2009: The Strategic/Senior dialogue with the United States was merged with the Strategic Economic Dialogue to become the Strategic and Economic Dialogue (S&ED)
- 2011: The Strategic Security Dialogue (SSD) was created under the S&ED.¹⁷¹⁵
- 2017: Diplomatic and Security Dialogue (D&SD)¹⁷¹⁶
- 2017: Joint Staff Dialogue Mechanism (JSDM)¹⁷¹⁷

The overarching strategic objectives of China's leaders, primarily focused on achieving domestic priorities, shape China's foreign policy. Key among those objectives is that of preserving the rule of the CCP in the face of the declining popularity of communist ideology globally. The CCP sees modernizing China's economy and improving living standards as crucial to maintaining domestic stability and ensuring regime survival.¹⁷¹⁸ A second objective is to establish China as a leading power in Asia, making it capable of influencing the policies of other countries in the region. In keeping with this goal, Chinese leaders seek to build China's global influence and prestige. Chinese foreign policy is therefore guided by a strategy that emphasizes the need for a stable international and regional environment in which it is free to pursue economic growth and development and expand its influence abroad.¹⁷¹⁹ Since the mid-1990s, China has become increasingly engaged in the international system and progressively more adept at promoting its influence and protecting its interests.¹⁷²⁰

China's swift rise in economic and diplomatic influence, in conjunction with the PLA's rapid modernization, has caused anxiety among the international community concerning the PRC's intentions and aspirations as a rising power, some of which are discussed later in this chapter. This is one of the key drivers behind the Chinese government's decision to adopt a general policy of reassurance and "good neighborliness" toward other nations. For example, under Hu Jintao, part of this reassurance effort consisted of characterizing China's rising power in non-threatening terms such as "peaceful development."¹⁷²¹ The approach under Xi Jinping has shifted to greater emphasis on China's contributions to combating global and regional challenges and undertaking various bilateral efforts to support other countries. Despite this shift, PLA military diplomacy continues to play a vital role in reassurance, while serving to further a number of other PRC foreign policy objectives.

China's two most recent *Defense White Papers* summarize the PLA's approach to military diplomacy under Xi Jinping. According to the 2015 *Defense White Paper*:

*"Pursuing a security concept featuring common, comprehensive, cooperative and sustainable security, China's armed forces will continue to develop military-to-military relations that are non-aligned, non-confrontational and not directed against any third party. They will strive to establish fair and effective collective security mechanisms and military confidence-building measures (CBMs), expand military and security cooperation, and create a security environment favorable to China's peaceful development."*¹⁷²²

According to the 2019 *Defense White Paper*:¹⁷²³

"China actively develops constructive relationships with foreign militaries. A new configuration of foreign military relations which is all-dimensional, wide-ranging and multi-tiered is taking shape. China has engaged in military exchanges with more than 150 countries and set up 130 offices of military attachés and military representatives at Chinese diplomatic missions abroad, while 116 countries have established military attaché offices in China. In addition, China has put in place 54 defense consultation and dialogue mechanisms with 41 countries and international organizations. Since 2012, high level Chinese military delegations have visited over 60 countries, and defense ministers and Commanders-in-chief from over 100 countries have visited China."

Military Attaché Offices, Embassy, and Consulate Websites

As China has become increasingly engaged in the international community, it has correspondingly increased its exchange of military attachés with other nations. Attaché offices represent direct channels through which the PLA can communicate with foreign militaries. The military sections on PRC embassy and consulate websites represent a new mechanism for managing perceptions of the PLA.

PRC military attaché offices and embassy and consulate websites represent a key channel for military diplomacy.¹⁷²⁴ China's exchange of military attachés with other countries has expanded greatly in the last three decades, and the websites represent a completely new channel of communication. All of the national *defense white papers* published by China since 2000 have given prominent mention to the number of attaché offices that China has around the world and the number of foreign attaché offices in China. From 1988 to 2008, the number of Chinese military attaché offices abroad grew from 58 to 109, and the number of foreign countries with attaché offices in Beijing more than doubled from 44 to 100.¹⁷²⁵ By late 2019, 117 countries had military attaché offices in Beijing, while the *2019 Defense White Paper* stated that China had 130 offices of military attachés or “military representatives” abroad.¹⁷²⁶ Based on this data, it appears that China has markedly expanded its exchange of attachés with other countries within the last two decades.

The majority of China's military attachés abroad are Army officers, most of whom are career intelligence officers. This is in large part a reflection of the PLA's ground-force dominated culture. In early 2009, the PLA had Naval Attaché billets in only three countries (the United States, the United Kingdom, and Germany) and Air Attaché billets in only two countries (the United States and the United Kingdom).¹⁷²⁷ On the other hand, 21 of the 100 countries with military attaché offices in China in early 2009 had Air Attachés and 20 had Naval Attachés assigned.^{ik} As mentioned above, by late 2019 there were 117 countries with military attaché offices in Beijing, and 16 of those countries had air force officers, which will be discussed later in this chapter.^{il} Even though several countries have Naval and Air Attachés in Beijing, they do not necessarily have the opportunity to interact with PLA Navy (PLAN) and PLAAF officers on a regular basis. Normally, the only opportunity that foreign Naval and Air Attachés have to interact with PLAN or PLAAF officials is when they escort a visiting delegation or when they arrange for a PLAAF or PLAN delegation to visit their country. Also, only a few countries have attachés who have studied Chinese and can discuss or read about military issues in Chinese. As a result, they are limited in their ability to learn about the PLA.

Many PRC embassies and consulates abroad also use their websites to provide yet another channel for the PLA to communicate with the international community. Each website offers information in Chinese and English about the PLA in general and information about military exchanges with their host country in particular.^{im}

It appears that at least some of the information carried by individual embassy and consulate websites is used as a tool for portraying desired images about the PLA. For example, the PRC embassies in Cape Town, South Africa, and the Republic of Albania each carried the same article about the PLA Navy's history following the PLAN's 60th anniversary in April 2008.¹⁷²⁸ The article painted a highly positive picture of the PLAN, placing particular emphasis on its role as an international envoy of “world peace.” In addition, the websites of the PRC embassies in Grenada and Latvia published short articles showcasing senior PLA delegations that visited those countries during 2006.¹⁷²⁹

ik Based on correspondence with the U.S. Embassy in Beijing in August 2009, nine of the 21 air force attachés and 11 of the 20 Naval Attachés were concurrently serving as the defense/military attaché.

il Information for 2019 was received from correspondence with the U.S. Defense Attaché Office in Beijing. The countries with Air Force officers serving in the different attaché roles include Bangladesh, Bolivia, Brazil, France, Germany, India (since 2014), Indonesia, Japan, Mexico, Pakistan, Poland, Republic of Korea, Thailand, Turkey, Ukraine, and the United States. Of note, a Russian and UK naval officer serve concurrently as the Naval and Air Attaché. While China does not have an Air Attaché in Moscow, it does have one in London. A list of all PRC embassy and consulate officials in the UK can be found at <https://www.gov.uk/government/publications/foreign-embassies-in-the-uk>.

im None of the ten PRC embassy and consulate websites examined contained information in any language other than Chinese and English.

High-level Military Exchanges

While the PLA has markedly increased other forms of international engagement, the number of senior officer delegations that it sends abroad each year has remained constant since the early 2000s through 2019.

High-level military exchanges play an important role in PLA military diplomacy. Based on the 1998 *defense white paper*, the PLA defines foreign “high-ranking military delegations” as being led by “defense ministers, Commanders of the three services, and chiefs of the general staff.”¹⁷³⁰ The *defense white papers* refer only to “senior PLA delegations” without specifying the positions of the members of each delegation.ⁱⁿ According to the 2008 *Defense White Paper*, the purpose of these exchanges and other forms of cooperation is “to create a military security environment featuring mutual trust and mutual benefit.”¹⁷³¹ According to various PLA officials, another key purpose of these delegations is to learn about how foreign militaries organize, train, and equip their forces. These officials lamented the fact that their visits overseas are generally brief and the information they are able to gather is limited. According to the 2019 *Defense White Paper*, “Since 2012, high level Chinese military delegations have visited over 60 countries, and defense ministers and Commanders-in-chief from over 100 countries have visited China.”¹⁷³²

A review of senior PLA leader visits over the past three decades indicates that there are the following patterns:¹⁷³³

- Other than the Defense Minister;^{io} the Chief of the General Staff / Joint Staff), and the Deputy Chief in charge of foreign relations, all other senior PLA leaders are limited, by regulation, to one trip abroad per year; however, not every leader takes advantage of the opportunity.¹⁷³⁴
- Senior PLA leaders rarely, if ever, visit the same country twice except to attend conferences
- Senior PLA leaders rarely, if ever, host the same foreign military leader twice
- The defense minister does not necessarily host or meet with all of his counterparts, who are often hosted by one of the CMC vice chairmen
- There are clear time patterns for PLA leader visits abroad and hosted visits based on the CCP Party Congresses and other key Party events.

Senior PLAAF officer involvement in military diplomacy will be discussed in detail later in this chapter.

Functional and Academic Military Exchanges

A wider range and greater number of PLA personnel are participating in functional exchanges with an increasing number of countries.¹⁷³⁵ Functional exchanges provide PLA officers with first-hand knowledge of foreign militaries that inform decisions about PLA modernization efforts.¹⁷³⁶

According to the 1998 *Defense White Paper*, functional exchanges include exchanges and cooperation with foreign militaries in “the fields of scientific research, academic studies, military education, armed forces administration, culture, sports, and medical and hygiene work.”¹⁷³⁷ Functional exchanges rarely receive the sort of high-profile media coverage that high-level exchanges and ship visits do. As a result of this dearth of information, the conclusions that can be drawn about the nature and content of the visits are limited.

in *Defense White Paper* for the years 2002, 2004, 2006, and 2008. Based on a review of the information in the four *defense white papers*, it appears that “senior PLA delegations” refer to delegations led by the vice chairmen and members of the CMC, as well as the Commanders and Political Commissars of the Navy, Air Force, Second Artillery, Academy of Military Science, National Defense University, and each of the seven Military Regions, plus the deputies of the four General Departments.

^{io} Note that, although China’s official media uses “Minister of National Defense” and “Defense Minister” for its leader (国防部部长), this book uses “Defense Minister.”

Combined Exercises

Although the PLA had increased its engagement with foreign countries for high-level and functional visits during the 1980s and 1990s, including naval port calls, it did not conduct its first combined exercise with a foreign military until October 2002.¹⁷³⁸ That counter-terrorism military exercise was conducted with Kyrgyzstan.

Since 2002, the PLA has conducted bilateral and multilateral combined exercises with a growing number of countries. According to *2012 Defense White Paper*, “since 2002, the PLA has held 28 joint exercises and 34 joint training sessions with 31 countries in accordance with relevant agreements or arrangements.”¹⁷³⁹ According to *2019 Defense White Paper*, “since 2012, China has held over 100 joint exercises and training with more than 30 countries. These engagements have covered traditional and non-traditional security fields, in locations extending from China’s periphery to the open/far seas, and the participating forces have expanded from land forces to multiple branches including the army, navy and air force.”¹⁷⁴⁰

Today, China’s closest multilateral partnership is via the Shanghai Cooperation Organization (SCO), which was created in 2001 on the basis of the 1996 Shanghai Five organization. According to China’s *2002 Defense White Paper*, “the Shanghai Cooperation Organization has made outstanding progress in building mutual trust and developing a state-to-state relationship based on partnership rather than alliance, as well as in anti-terrorism cooperation.” According to the Council on Foreign Relations (CFR), the SCO was created as a confidence-building mechanism to resolve border disputes among the six participating countries—China, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan—but it is not yet a strong organization because of internal divisions.¹⁷⁴¹ In June 2017, the SCO expanded for the first time and admitted India and Pakistan as member states.¹⁷⁴² Within the overall SCO framework, the member states have signed the “Agreement on Conducting Joint Military Exercises” and the “Agreement on Cooperation of Defense Ministries.”¹⁷⁴³ The largest exercises to date—the “*Peace Mission*” joint counter-terrorism exercises—have taken place under the SCO umbrella in 2005, 2007, 2009, 2010, 2012, 2014, 2016, and 2018.¹⁷⁴⁴ All of the exercises involved the Army and Air Force, but only the first exercise involved the Navy, which has separate naval exercises with multiple countries.¹⁷⁴⁵

United Nations Peacekeeping Operations

According to *2012 Defense White Paper*, the PLA first became involved in United Nations Peacekeeping Operations (UNPKO) in 1990, when it sent five military observers to the UN Truce Supervision Organization (UNTSO).¹⁷⁴⁶ By the end of September 2014, China was the largest contributor of peacekeepers among the five permanent members of the UN Security Council (UNSC) and had deployed more than 27,000 military personnel around the globe to 23 UN peacekeeping missions (联合国维和行动).¹⁷⁴⁷ It also dispatches the most engineering, transportation, medical support, and security guard troops. China pays and contributes the largest share of UN peacekeeping costs among all developing countries. According to *2019 Defense White Paper*:

*“As of December 2018, China has participated in 24 UN peacekeeping missions and has contributed more than 39,000 peacekeepers. Thirteen Chinese military personnel have sacrificed their lives in the UNPKOs. In the missions, China’s peacekeepers have built and repaired over 13,000 kilometers of roads, cleared and disposed of 10,342 mines and various items of unexploded ordnance, transported more than 1.35 million tons of materials over a total distance of more than 13 million kilometers, treated over 170,000 patients, and fulfilled over 300 armed escorts and long or short-distance patrols.”*¹⁷⁴⁸

Combined versus Joint

Although the international community uses the term “combined” to describe relevant bilateral and multilateral military activities, the PLA uses the term “joint” (联合), even though, in the PLA, “joint” normally refers to two or more services (e.g., Army, Navy, and Air Force). For purposes of consistency, this book uses “combined” even though the original Chinese source, such as *China Military Online* or *Xinhua in English*, uses “joint”; however, all citations based on an official English title from a Chinese source uses “joint” when that term is used.

Of note, other than providing strategic airlift support to transport forces to the South Sudan peacekeeping mission in 2016, no PLAAF personnel have been involved in any peacekeeping operations. Overall, however, the PLA as a whole has learned some valuable lessons about how to train, deploy, and support troops for long-period operations in foreign countries.

Non-traditional Security Operations and Military Operations Other Than War

The PLA lumps humanitarian assistance and disaster relief (HA/DR) and United Nations peacekeeping operations (UNPKO) into what it calls non-traditional security operations, which is also identified as military operations other than war (MOOTW).¹⁷⁴⁹ According to the *2019 Defense White Paper*:

“China’s armed forces take an active part in the international efforts for humanitarian assistance and disaster relief (HA/DR). Military professionals are dispatched to conduct disaster relief operations in affected countries, provide relief materials and medical aid, and strengthen international exchanges in this respect. Since 2012, China’s armed forces [two PLAAF IL-76s and at least one Y-8] have participated in the search for the missing Malaysian Airliner MH370, and in the relief operations for Typhoon Haiyan in the Philippines, the Ebola epidemic in West Africa, the water scarcity in Maldives, the earthquake in Nepal [PLAAF IL-76 transport aircraft], and the flood caused by a dam collapse in Laos. Since it entered service a decade ago, the PLA Navy’s hospital ship Peace Ark has fulfilled seven voyages coded as Mission Harmony and visited 43 countries. During these visits, it provided medical services to the local communities, organized medical exchanges, and helped over 230,000 people.”¹⁷⁵⁰

This is in addition to Chinese PLAN Gulf of Aden deployments since 2008, which the white paper notes have comprised “over 100 vessels and 26,000 officers and sailors... deployed in 31 convoys.... They have provided security protection for over 6,600 Chinese and foreign ships, and rescued, protected or assisted over 70 ships in distress.”¹⁷⁵¹

Xiangshan Forum

In 2006, the China Association of Military Science (CAMS / 中国军事科学学会), which is subordinate to the PLA Academy of Military Science, held the first Xiangshan Forum (香山论坛) in Beijing.^{ip, 1752} The 5th forum, which was held in November 2014, included representatives from 57 countries, including more than 20 government officials at or above Deputy Defense Minister level. The theme was “cooperation and win-win, build Asian community of destiny.” According to one article, “until 2014, the forum remained fairly obscure owing to its relatively small size and track-2 status; however, the 2014 agenda appears to have attempted to transform it from an academic exchange ‘into a high-profile security and defense forum’ that, by inviting the Japanese and North and South Korean defense chiefs, Beijing hopes to create its own Shangri-La Dialogue.”¹⁷⁵³ According to the *2019 Defense White Paper*, the forum was upgraded in 2014 to a track-1.5 platform of international security and defense dialogue. In October 2018, the Xiangshan Forum was renamed the Beijing Xiangshan Forum. The following bullets provide information about the 7th to 9th forums, including their dates and themes. Of note, although the first eight forums were held every two years, the 9th and 10th forums were held one year later. Due to the COVID-19 crisis, the 10th forum was held virtually on 2 December 2020.¹⁷⁵⁴

^{ip} As noted on the screen in the photo, the English name during the 5th Xiangshan Forum was identified as the China Association for Military Science and the acronym was identified as CAMS; however, various official Chinese English-language articles from *Xinhua* and *China Military Online* identified it as the China Military Sciences Society and China Military Science Society (CMSS) and the China Society of Military Science (CSMS). No official website was found for the organization.

- The 7th forum, was held in October 2016:¹⁷⁵⁵
 - More than 400 representatives, including 350 foreign representatives from 64 countries and international organizations, including more than 20 government officials at or above Deputy Defense Minister level, participated in the forum.
 - The theme was “Build a New Type of International Relations through Security Dialogue and Cooperation.”
- The 8th forum was held in October 2018:¹⁷⁵⁶
 - More than 500 participants from 67 countries and seven international organizations attended the forum and exchanged new ideas and approaches for addressing regional security threats and challenges.
 - The theme was “Building a New Type of Security Partnership of Equality, Mutual Trust and Win-Win Cooperation.”
- The 9th forum was held in October 2019:¹⁷⁵⁷
 - The theme was “Maintaining International Order and Promoting Peace in the Asia-Pacific.”

PLAAF Military Diplomacy

Key Points

- Under the mantle of China’s overall program of military exchanges and diplomatic activities, the PLAAF has gradually expanded from merely exchanging delegations to a wider array of activities, such as airshows and combined exercises with regional fora and individual countries.
- PLAAF military diplomacy includes a mix of high-level visits, functional exchanges, academic exchanges, activities with foreign air forces, and HA/DR and other MOOTW activities.

The PLAAF began sending delegations abroad as early as August 1949, when its first Commander, Liu Yalou, led a delegation to Russia to purchase aircraft and equipment.¹⁷⁵⁸ He led two more delegations to Russia (1956 and 1961), as well as visiting Cuba (1963) and Pakistan (1964). Because of the PLAAF’s problems during the Cultural Revolution (1966 to 1976), no further Commander-led visits occurred until Zhang Tingfa (1977-1985) visited Pakistan in March 1979. Zhang’s visit, which came as a result of China’s economic opening, reinvigorated the PLAAF’s program to familiarize itself with foreign air forces and to try to acquire foreign equipment and technology by sending delegations abroad and by inviting foreign air force delegations to visit China.

From the 1980s and especially from the 2000s onward, the PLAAF has gradually expanded from merely exchanging delegations to a wider array of activities as part of China’s overall program of military exchanges and diplomatic activities.¹⁷⁵⁹ For example, the PLAAF has begun conducting combined exercises with the SCO and individual countries. In addition, PLAAF units have begun to perform military operations other than war (MOOTW) abroad to support national goals.

Overall, publicly-available information concerning PLAAF interactions with the international community is rather limited. Based on the available information, the PLAAF interacts with the international community and foreign militaries through a number of channels described further in this section.

The biggest question arising from the PLAAF’s involvement in foreign affairs is what the PLAAF is learning from these exchanges and how it is applying what it is learning.¹⁷⁶⁰ It is difficult to say that any one visit or set of exchanges has led to a particular reform in the PLAAF. Most likely, it is the sum total of the information derived from all its exchanges over the past 20 years that has enabled the PLAAF to implement specific reforms with Chinese characteristics. For example, it has learned how other air forces conduct officer education and training and has learned how to deploy aircraft to other countries for exercises and competitions that involve detailed logistics and maintenance support away from their home bases.

The PLAAF and the Zhuhai Airshow

Since 1996, China has held 12 China International Aviation and Aerospace Exhibitions, also known as the Zhuhai Airshow, in Zhuhai, Guangdong Province, on even numbered years.¹⁷⁶¹ In many ways, Zhuhai is the most public element of the PLAAF's military diplomacy efforts; the airshow is open to the public and is extensively covered by Chinese and foreign media.

The PLAAF has been actively involved in all of Zhuhai Airshows in various ways. For example, as discussed later in this chapter, the Bayi Flight Demonstration Team has flown in six of the airshows since the first time in 1998.¹⁷⁶² Also, with an eye toward improving its image regarding transparency (an issue discussed later in this chapter), the PLAAF has undertaken a number of activities at Zhuhai to provide details about its training and equipment to external audiences. For example, during the December 2012 air show, the PLAAF co-hosted a Military Flight Training Conference, where it provided detailed information about reforming its flight training program.

The PLAAF has also demonstrated some of its newest combat aircraft both on the ground and in the air at the airshows. For example, during the 10th Zhuhai Airshow in November 2014, the PLAAF conducted flight demonstrations with Y-20, KJ-2000, KJ-200, and J-10 aircraft.¹⁷⁶³ It also conducted ground demonstrations for 18 kinds of aviation equipment in active service, including the J-10, JH-7A, H-6M, Y-9, Z-8KA, and unmanned reconnaissance and attack aircraft, as well as six ground-based systems, including the HQ-6 missile-and-gun defense weapon system, HQ-7 ground-to-air missile weapon system launch vehicle, CSK002 parachute assault vehicle, and ZBD03-type light tracked infantry fighting vehicle. In addition, China's first female pilots also performed flight demonstrations at this airshow.

In 2016, the PLAAF flew two J-20s over the airshow for roughly one minute.¹⁷⁶⁴ In 2018, more than 30 representative equipment selected by the PLAAF were displayed at the show, which systematically demonstrated the new achievements of the Chinese Air Force. The equipment included the J-20 stealth fighter jet, as well as J-10B fighter jet, JH-7 fighter-bomber, Y-20 military transport aircraft, the KJ-500 early warning aircraft, and GJ-2 unmanned aerial vehicle (UAV), with particular emphasis on the WS-10 engine.¹⁷⁶⁵ Finally, on the last day of Zhuhai, a pair of J-20s opened their weapons bays to reveal a full loadout of air-to-air training missiles, including two PL-10 short range missiles and four PL-15 beyond visual range missiles. According to one PLA news article, "such openness is unprecedented for the PLA, and even rare for other air forces flying their own stealth fighters."¹⁷⁶⁶

Besides demonstrating hardware at the airshows, the PLAAF has also taken the opportunity to engage foreign military personnel face-to-face. For example, in November 2014, PLAAF Commander Ma Xiaotian attended the 10th Zhuhai Airshow and met with air force representatives from 23 countries. In November 2016, Ma met with air force leaders from 30 countries who were visiting the 11th airshow.¹⁷⁶⁷ Finally, during the 12th airshow in November 2018, the PLAAF Commander General Ding Laihang hosted a two-day Military Flight Training Conference, which he hailed as a way "to enhance military exchanges with his counterparts from 41 countries."¹⁷⁶⁸ One of the counterparts present was the Pakistani Air Force's Air Chief, who had hosted Ding's visit to Pakistan in April 2018. During the conference, the keynote PLAAF speaker, Senior Colonel Yang Weike from the PLAAF Staff Department, described the PLAAF's vision for engaging with foreign militaries as: "The PLA Air Force aims to enhance mutual understanding and cooperation with the respective counterparts around the world, jointly promote the innovative and scientific development of military flight training and aviation training equipment, and make joint contributions to safeguarding world peace."¹⁷⁶⁹

High-Level Visits Abroad

PLAAF Commander Visits Abroad

Since the mid-1980s, with only two exceptions (1987 and 1996) when the Commander conducted two visits abroad in the same year, PLAAF Commanders have traveled abroad only once per year and have hosted an average of two to eight visits to China annually by foreign air force Commanders.^{iq} In addition, as a general rule, the Commander never visits the same country twice or hosts the same foreign Commander twice. As shown in Table 7-1 below, from 1979-2019, PLAAF Commanders conducted a total of 72 visits to 37 different countries, including several countries more than once. The three most visited countries have been Pakistan (10), Turkey (6), and Thailand (5). As a general rule, each visit abroad included two to three countries. Overall, the number of PLAAF high-level visits abroad has fluctuated considerably since the early 2000s. Of note, former PLAAF Commander General Xu Qiliang did not travel during 2012 before turning over his position to General Ma Xiaotian during the 18th Party Congress in October 2012. Once Ma took command, he made it public knowledge that he was not going to travel abroad because he had traveled abroad several times while serving as the Deputy Chief of the General Staff in charge of military diplomacy. He wanted to spend all of his time focusing on the PLAAF's daily issues. Since assuming command in August 2017, the current Commander, General Ding Laihang, has only travelled abroad once (Thailand and Pakistan in April 2018).¹⁷⁷⁰

Both the most frequent visits overall as well as the most recent visits have been to countries in Asia (31). No visits have occurred to the United States since 1995, to Africa since 2001, to the Middle East since 2003, to Latin America since 2008, or to Europe since 2010.

Table 7-1 below shows the 72 visits to 37 different countries by the PLAAF Commanders and the 119 visits by air force Commanders from 49 different countries from 1979 through 2019.¹⁷⁷¹ In addition to hosting 19 meetings in Beijing in November 2014 to celebrate the PLAAF's 65th anniversary, Ma Xiaotian met with air force representatives from 23 countries who were attending the Zhuhai Airshow. In November 2016, Ma also met with air force leaders from 30 countries who were attending Zhuhai.

^{iq} The only two years in which Commanders traveled twice were in 1987, when Commander Wang Hai visited the United States in April and North Korea in August, and in 1997, when Commander Yu Zhenwu visited Australia, Portugal, and Turkey in May and Pakistan and Russia in August.

Table 7-1: Commander-Level Exchange Visits: 1979-2019

PLAAF Commander Visits Abroad (72 visits to 37 countries)	Foreign Air Force Commander Visits to China (119 visits from 49 countries)
Asia (13 countries, 31 visits)	Asia (16 countries)
Australia (96, 00)	Australia (94, 97, 14, 16)
Bangladesh (84, 90, 93)	Bangladesh (92, 96, 04, 07, 13)
India (05, 07)	Burma/Myanmar (97, 98, 05)
Indonesia (97)	Cambodia (17)
Japan (01, 08)	India (01, 08)
Malaysia (97, 09)	Indonesia (98, 00, 07)
New Zealand (00)	Japan (00)
North Korea (87)	Malaysia (08)
Pakistan (79, 87, 88, 93, 96, 00, 06, 09, 18)	Myanmar (14)
Singapore (00)	New Zealand (01, 13)
South Korea (01)	North Korea (88, 08)
Sri Lanka (84)	Pakistan (79, 92, 95, 99, 03, 08, 15, 18)
Thailand (81, 90, 93, 97, 18)	Philippines (02, 08)
	South Korea (05, 08, 13)
	Sri Lanka (82)
	Thailand (81, 84, 91, 97, 98, 13, 18)
Europe (10 countries, 21 visits)	Europe (16 countries)
Belgium (82, 01)	Belarus (01, 05, 14)
Britain/UK (85, 10)	Belgium (98)
Finland (07)	Britain/UK (88, 01, 07, 16)
France (85, 99, 10)	Bulgaria (13, 17)
Germany (10)	Croatia (02)
Portugal (96, 98)	Czech (99)
Spain (05)	France (14)
Sweden (05)	Germany (07)
Russia (94, 96)	Greece (15)
Turkey (88, 96, 98, 01, 06, 09)	Italy (86, 00, 15)
	Portugal (94, 97, 99, 05, 14)
	Russia (95, 00)
	Spain (15)
	Sweden (87)
	Switzerland (07)
	Turkey (95, 99, 05, 08, 19)
Africa (4 countries, 4 visits)	Africa (5 countries)
Algeria (80)	South Africa (07, 15)
Sudan (01)	Sudan (06)
Tanzania (92)	Tanzania (92, 17)
Zimbabwe (92)	Zambia (96, 13)
	Zimbabwe (91, 93, 00, 15, 17)

Middle East (2 countries, 4 visits)	Middle East (3 countries)
Egypt (88, 94, 03)	Egypt (91, 94, 09)
United Arab Emirates (94)	Iran (15)
	Jordan (07)
North America (1 country, 3 visits)	North America (2 countries)
United States (87, 88, 95)	Canada (14)
	United States (85, 87, 89, 94, 98, 13)
Latin America (5 countries, 9 visits)	Latin America (7 countries)
Argentina (98)	Bolivia (88, 92, 01, 14)
Brazil (98, 05)	Brazil (94, 04, 05)
Chile (91, 98, 08)	Chile (01, 05, 06, 08)
Cuba (96, 08)	Cuba (95)
Peru (91)	Mexico (18)
	Peru (06)
	Venezuela (01)

PLAAF Political Commissar Visits Abroad

The PLA's General Political Department (GPD) / Political Department since 2016 did not become actively involved in the PLA's foreign exchange program until 1988, when the GPD Director, General Yang Baibing, traveled to East Germany and the PLAAF's PC, Lieutenant General Zhu Guang, followed immediately thereafter with a trip to the United States. One of the primary reasons for this lag is that officers visiting abroad from the GPD system presented a challenge to the foreign relations program. Specifically, except for visits to other communist countries that also have a PC system, it has been difficult determining who the PC's counterpart is and what they would discuss.

A unique situation arose in November 1988 when the PLAAF's PC, Zhu Guang (1985-1992), who was PLAAF Commander Wang Hai's co-equal in grade (MR leader) but one rank lower, visited the United States.^{ir} Because former CSAF General Charles Gabriel had already hosted Wang Hai for a visit to the United States in 1984 when Wang was one of the PLAAF Deputy Commanders and Wang hosted General Gabriel in Beijing in October 1985, Zhu's host was the Secretary of the Air Force, Pete Aldridge, who had visited China in September 1987 along with the USAF Thunderbirds.¹⁷⁷² In September 1988, the PLA re-instituted its rank system for the first time since it was abolished in 1966, so Zhu wore his new rank of lieutenant general.

As shown in Table 7-2 below, although PLAAF PCs have traveled abroad to 16 countries since 1998, they apparently have not traveled every year.¹⁷⁷³ The only countries visited more than once are Russia (three times) and Cuba (two times), both of which are communist countries with military PCs, while no visits were made to any Asian countries. The last trip noted was in 2007. One reason Deng Changyou may not have traveled in 2008 was because of his involvement during the Sichuan earthquake and the Olympics; however, he did not travel at all during the last three years of his assignment either.

Although General Tian Xiusi became the PC during the 18th Party Congress in 2012 and General Yu Zhongfu became the PC in 2015, neither of them have traveled abroad. As noted in Chapter 4, Tian had never served a day in the PLAAF prior to becoming the PC, while Yu Zhongfu served his entire career in the Air Force after joining as an enlisted member in 1974.

^{ir} During the visit for which the lead author was one of the escorts, I had the opportunity to have lengthy one-on-one conversations with him at night and learned a lot about how the Political Commissar system works.

Table 7-2: PLAAF Political Commissar Travel Abroad: 1988-2019

Asia (0 countries)
Europe (5 countries, 7 visits)
Greece (03)
Italy (00)
Portugal (98)
Russia (96, 00, 03)
Turkey (98)
Africa (4 countries, 4 visits)
Mozambique (07)
Tanzania (04)
Zambia (07)
Zimbabwe (07)
Middle East (1 country, 1 visit)
Egypt (04)
North America (1 country, 1 visit)
United States (88)
Latin America (5 countries, 6 visits)
Argentina (06)
Cuba (96, 01)
Mexico (01)
Peru (06)
Venezuela (01)

Senior-Level Delegation Participants

The Commander's and PC's delegation usually consists of about 5-10 people, including personnel from PLAAF HQ and MRAF / TCAF headquarters. Occasionally, PLAAF officers are part of a delegation led by the Minister of National Defense, a Vice Chairman of the CMC, or one of the leaders in the General Staff / Joint Staff Department or seven MRs / five TCs. For example, during 2013-2014, three of the four PLAAF Deputy Commanders accompanied one of the two CMC vice chairmen, the Minister of Defense, the Chief of the General Staff, and the Director of the General Armament Department on visits abroad. Senior officers from the Jinan and Beijing MRAFs were also part of other delegations. As a general rule, this is the only time the accompanying officers ever travel abroad; however, their participation often presages promotion.

Historically, the PLAAF Commander has hosted about five counterparts each year; however, even though Ma did not travel while serving as the Commander, he has hosted over 20 air force leaders from Australia, Bangladesh, Belarus, Bulgaria, Egypt, France, Myanmar, New Zealand, Pakistan, Russia, South Korea, Thailand, United States, and Zambia. He also held separate meetings with other foreign military leaders hosted by other key PLA leaders. Since taking office, Ding Laihang has reportedly only hosted four counterparts. In November 2017, Ding met separately with the Commander of the Bulgarian Air Force and the Zambian Air Force.¹⁷⁷⁴ In May and June 2018, he hosted his Mexican and Pakistan counterparts, respectively.¹⁷⁷⁵ No information was found concerning any hosted visits during 2019.

Delegation Composition

As a general rule, each of the PLAAF delegations abroad has been led by the Commander or PC, and has included Directors from key headquarters departments, regional Commanders, and/or personnel from PLAAF academic

and research institutes. In addition, most of the PLAAF Deputy Commanders, Deputy PCs, and MRAF / TCAF Commanders have visited abroad as part of delegations led by senior PLA or PLAAF officers. For example, a PLAAF Deputy Commander was included as a member of the entourage for Defense Minister Chi Haotian's delegation to Brazil in 1994, CMC Vice Chairman Zhang Wannian's delegation to Thailand, Cambodia, and Myanmar in 1996 and Russia in 1999, and Chief of the General Staff (CGS) General Fu Quanyou's delegation to India in 1998.

These visits also help indicate on a short term basis who the PLAAF is grooming as the future Commander. For example, as a PLAAF Deputy Commander, Lieutenant General Liu Shun Yao accompanied Defense Minister Chi Haotian to the United States in November 1996; he became the Commander the following month. In September 1998, Deputy PC, Lieutenant General Qiao Qingchen, accompanied Vice Chairman of the CMC, General Zhang Wannian, to the United States; he became the PC three months later. When the current PLAAF Commander, General Xu Qiliang, was a Deputy Chief of the General Staff (2004-2007), he led delegations to Romania, France, and Finland (2004), and to Australia (2007).¹⁷⁷⁶ He also visited Tajikistan during a joint anti-terror exercise in 2006.¹⁷⁷⁷

Keeping track of field-grade officers also helps indicate their future movement up the ladder for other key leadership positions. For example, former PLAAF Deputy Commander Lieutenant General He Weirong was a key player in the PLAAF's education and training system for almost two decades, including his time as Commander of the PLAAF's Test and Training Center and a Deputy Commandant of the AFCC.^{is, 1778} As one of the PLAAF's Deputy Chiefs of Staff, Major General He led a delegation to Chile in April 2002, which was a reciprocal visit to China in October 2001 by the Chilean Air Force Commander.¹⁷⁷⁹ He became the Jinan MRAF Commander in June 2003, PLAAF Chief of Staff in January 2004, and a PLAAF Deputy Commander in December 2005. In September 2006, He accompanied the PRC's Minister of Defense, General Cao Gangchuan, on a visit to Bulgaria, Hungary, Romania, and Belarus.¹⁷⁸⁰

As noted earlier, PLAAF officers other than the PLAAF Commander normally only get to travel abroad as part of a senior delegation once in their career, such as with the Minister of Defense, a CMC vice chairmen, or CMC Member.¹⁷⁸¹ Unfortunately, not all articles about senior travel abroad includes the names of the delegation members and no information was found for 2018 or 2019. The bullets below provide examples for 2013 to 2017:

- May 2013: Deputy PC and concurrent Director of the Political Department Fang Jianguo accompanied Defense Minister Chang Wanquan to Brunei to attend the China-ASEAN Defense Ministers Consultative Meeting.
- July 2013: Deputy Commander Chen Dong accompanied Chief of the General Staff Fang Fenghui to Russia.
- May 2014: Deputy Commander Zheng Qunliang accompanied Defense Minister Chang Wanquan to Laos, Myanmar, and Vietnam, which included attending the 4th ASEAN-China Defense Ministers' Consultative Meeting in Myanmar.
- May 2014: Chief of Staff Ma Zhenjun and Assistant to the Chief of the General Staff Yi Xiaoguang accompanied Chief of the General Staff Fang Fenghui to the United States and Cuba.
- November 2016: Deputy Commander Chen Dong accompanied CMC Vice Chairman Fan Changlong to Ethiopia.¹⁷⁸²
- June 2017: Deputy PC Song Kun accompanied CMC Vice Chairman Fan Changlong to Spain, Finland, and Vietnam.¹⁷⁸³

is He was born in October 1949, joined the PLAAF at age 17 in June 1966, and attended a PLAAF flight school. At some point, he conducted postgraduate studies at an unidentified academic institution. During his career, he served as a pilot, Flight Group Commander, Deputy Regiment Commander, Regiment Commander, Air Division Chief of Staff, Air Division Commander, Commander of the Air Force Test and Training Center at Cangzhou, Deputy Commandant of the PLAAF Command College, and an Air Corps Deputy Commander.

However, as with everything in the PLA, there are always exceptions. For example, the following bullets show five trips by PLAAF Deputy Commander Zhang Honghe as part of a senior officer's delegation. The most likely reason for this is because his portfolio probably specializes on weapons and equipment.

- July 2013: Deputy Commander Zhang Honghe accompanied the Director of the General Armament Department Zhang Youxia to Italy.
- October 2013: Deputy Commander Zhang Honghe accompanied CMC Vice Chairman Xu Qiliang to Russia.
- June 2014: Deputy Commander Zhang Honghe accompanied Director of the General Armament Department Zhang Youxia to Russia.
- May 2016: Deputy Commander Zhang Honghe accompanied the Director of the CMC Equipment Development Department, Zhang Youxia, to Italy.¹⁷⁸⁴
- May 2017: Deputy Commander Zhang Honghe accompanied the Director of the CMC Equipment Development Department, Zhang Youxia, to Belarus and Hungary.¹⁷⁸⁵

General Yi Xiaoguang's travel abroad is also a good example of how to assess the future of key PLAAF officers. He became the Commander of the Central TC in August 2017 and is currently the only PLAAF Commander of a TC. Early travel abroad helped identify him as a key PLAAF leader. That travel included a visit to the United States in July 1997 when he was the Director of a Training Base in Yunnan Province. As one of the two Assistants to the Chief of the General Staff in May 2014, he accompanied the Chief of the General Staff to the United States. After becoming one of the Deputy Chiefs of the General Staff, he led a delegation to Malaysia in November 2015 for China's first combined military exercise with Malaysia.¹⁷⁸⁶

Foreign Air Force Visits to China

Because few PLAAF officers have the opportunity to travel abroad, meeting with foreign air force delegations allows PLAAF officers in Beijing and the MRAFs / TCAFs to discuss topics of interest with the visiting delegations. In addition, most visits by foreign air force leaders are linked to reciprocal visits by senior PLAAF officers to their country either the previous or following year.

Most foreign air force delegations begin their 5- to 9-day visit to China by spending a couple of days in Beijing. There, they usually meet with the PLAAF Commander and other senior PLA leaders, and may visit the AFCC or NDU. They also visit the Great Wall and other historic sites around Beijing. The second most visited city is Xi'an, Shaanxi Province, where delegations see the Terra Cotta Warriors and visit the Air Force Engineering University. Most delegations also visit at least one MRAF / TCAF headquarters and perhaps an operational air unit or PLAAF academic institution.

Functional Exchanges¹⁷⁸⁶

Since the PRC and foreign media generally cover only high-level PLAAF visits, little information is available about the types and total number of lower-level functional exchanges; however, several official PLAAF articles have provided a glimpse at the scope of the program.

The PLAAF has been sending functional exchange delegations abroad led by senior colonels or major generals since the late 1980s that include discussions on personnel, training, logistics and maintenance issues. These visits offer most PLAAF officers their only chance to travel abroad. PLAAF functional delegations normally visit the host country's air force headquarters, academic institutions, and operational units, where they receive briefings, ask

it Apart from the 1,160-strong PLA forces, China dispatched a missile destroyer, a missile frigate, a hospital ship, four transportation planes, and three helicopters to the exercise, dubbed Peace and Friendship 2015.

questions, view equipment and sometimes see live demonstrations. The following paragraphs provide a snapshot of PLAAF functional exchanges since the late 1980s. According to a 1993 *Xinhua* article:

“The PLAAF has sent close to 100 delegations and more than 2,000 officers to over 20 countries for goodwill visits over the past decade (1993-2003) for importing foreign advanced technology and equipment, placing orders, training and academic exchanges. In addition, the PLAAF had received over 100 visiting foreign air force delegations from over 40 countries, including 38 foreign air force Commanders.”¹⁷⁸⁷

A good illustration of this was when the PLAAF sent Lieutenant Colonel Hu Xiao, a Q-5 pilot, to France in 1989 for two years of study at the National War College in Paris.¹⁷⁸⁸ After completing the training, Hu became the first and only pilot to serve as an Assistant Air Attaché in the United States for about three years. Similar programs apparently continued into the 2000s.

Other PLAAF pilots have had the opportunity to fly aircraft while visiting a foreign country as part of a delegation. For example, one pilot, Wang Dianli, flew one of the Italian Air Force flight demonstration team’s Aermacchi MB339 aircraft in December 2001,¹⁷⁸⁹ and Xu Xiliang (徐锡良), who was a first-grade pilot and Deputy Chief of Staff of an air regiment in a PLAAF Flight Test and Training Base, visited France in February 2004 and flew in the back seat of a Mirage-2000.¹⁷⁹⁰

A February 1999 *Xinhua* report attests to the growing PLAAF foreign relations program by stating:

*“All senior officers in China’s Air Force have learned advanced military skills and been trained in management techniques by the air forces of a number of foreign countries from 1996 through 1998. The program was the first of its kind in the history of the PLAAF. Senior leaders believed it would broaden the minds of those sent abroad and encourage positive changes in the way personnel are trained. Delegation members included Division Commanders, presidents of academic institutions, and senior officers from air force bases. They spent time working with the air forces of Pakistan, Thailand, Turkey, and the United States. As a result of these exchanges, China’s top military leaders have paid attention to the PLAAF’s reports about the differences between the air forces, their style of command, combat readiness, aircrew training, and the range of equipment and aircraft.”*¹⁷⁹¹

Although no specific figures are available today, the total number of PLAAF delegations sent abroad from 1980 to 2010 most likely reached between 200 and 250, and the PLAAF has probably hosted an equal number of foreign delegations. Although the PLAAF originally did not allow foreigners to visit many of its operational units, the number of aircraft units and academic institutions opened to foreigners has increased appreciably since the mid-1980s.

From 2002 through 2014, the PLAAF’s monthly journal, *China Air Force*, published about 25 articles written by PLAAF delegation members who visited foreign countries or by officers who studied abroad including France, Italy, Pakistan, Britain, Australia and Russia.¹⁷⁹² The delegations visited flight schools and operational units, where they focused on pilot recruitment, education and training, including simulators. The articles noted that pilots also had the opportunity to fly in the back seat of various aircraft, including a Swedish L-39 trainer.

In July 2003, Senior Colonel Guo Chengliang (郭成良), who was the Director of the PLAAF HQ’s Military Affairs Department, led a delegation to France to discuss pilot recruitment and NCO selection. His delegation visited eight organizations, including the Air Force Schools Command, 721st Base, 217th Base, and personnel center.¹⁷⁹³

In January 2007, the PLA’s official newspaper, *PLA Daily*, reported, “In recent years, the PLAAF organized a total of 13 groups of senior- and middle-ranking officers to visit other countries. During the same period, the PLAAF received air force delegations from 43 foreign countries.”¹⁷⁹⁴

During its 60th anniversary in November 2009, the PLAAF held one of the largest functional exchanges in its history that included over 300 representatives from 35 countries. Since November 2010, the PLAAF has also become actively involved in the biennial Zhuhai Air Show.

In November 2014, the PLAAF reported that more than 50 foreign air force Commanders and Chiefs of Staff had visited China in the past few years, and that it has sent more than 600 senior science and technology officers from units and academic institutions to visit and study abroad.¹⁷⁹⁵ In addition, over the past five years (2009-2014), not including combined exercises, it had sent 400 groups (3,000 personnel) abroad annually to attend conferences and discussions, as well as hosting more than 90 foreign delegations (1,500 personnel) per year.

Beginning in late 2014, the PLAAF and Thai Air Force began exchanging four pilots each for training in each other's country.¹⁷⁹⁶ The exchange pilots will sit in the back seat and learn from the pilot in the front seat.

Although it is difficult to determine exactly what types of relations the PLAAF has with different countries, the following example provides a glimpse. In December 2014, PLAAF Commander Ma Xiaotian hosted the Portuguese Air Force Chief of Staff, where they stated that the two air forces have carried out a number of pragmatic cooperation in personnel training, logistics, and other areas, and there is great potential for cooperation in more areas.¹⁷⁹⁷

Finally, the PLAAF often hosts selected members of the Beijing Military Attaché Corps for visits to various PLAAF organizations. For example, in November 2013, the PLAAF Aviation Medicine Research Institute hosted 38 foreign attachés.

Unfortunately, no additional information was found for any events past 2014.

Academic Exchanges¹⁷⁹⁸

The PLAAF Command College (AFCC), located in Beijing, forms the foundation for academic exchanges, including sending students and faculty abroad and hosting foreign officers. These exchanges are rapidly expanding to allow PLAAF officers, including pilots, to interact on a wider range of issues with foreign air forces. The three main courses that are involved in interaction with foreign air forces are the Campaign Command Course, the Advanced Course, and the Foreign Student Training Program, which will be covered in more detail in the PLAAF Education Chapter.

Starting in the 1990s, the PLAAF began sending students from its Command College's year-long Advanced Course abroad for a couple of weeks to allow them to gain first-hand knowledge of foreign air forces. For example, PLAAF Deputy Chief of Staff He Weirong led a delegation of about 30 students to the United States in July 1998, Deputy Chief of Staff Xu Xinde led 41 students to Australia and New Zealand in June 1999, and a 58-member student delegation, including eight major generals, visited India in June 2003.¹⁷⁹⁹

Each year, a PLAAF Deputy Chief of Staff also leads students from the college's Campaign Command Course abroad for two weeks to allow them to gain first-hand knowledge of foreign air forces. For example, since 2014, AFCC has sent a delegation of faculty and students to the United States for several days.¹⁸⁰⁰ The delegations in 2015 to 2019 each visited Air University and Washington, D.C., where they had meetings with relevant academic institutions and USAF personnel in the Pentagon.

AFCC also has sent faculty members abroad to several countries, including Russia and Italy, to study for one to three years. Other PLAAF officers have studied in military colleges in Britain, Russia, Pakistan, Italy and France. In some cases, they have had the opportunity to fly as part of the curriculum.

In 2001, AFCC began providing training for foreign field-grade officers. As of 2012, more than 600 air force officers from 75 countries had attended. The courses began with students from only one country, one language or one specialty at a time, but that model was replaced in 2009, whereby students from multiple countries, languages and specialties attend together. The new model also included PLAAF students, including pilots, for the first time. It was reported that 21 foreign students including 11 pilots came from 12 countries—such as Bangladesh, Malaysia, Uganda, Nigeria, Myanmar, Sri Lanka, Egypt, Singapore and Tanzania—attended one course. Each PLAAF officer was paired with a foreign counterpart during the course, and they all spoke English. In addition, AFCC offers longer

courses for foreign students. For example, in July 2005, 88 students from 25 countries graduated from a one-year course with an unidentified curriculum.¹⁸⁰¹

From September 2011 to January 2012, the college held a course that included foreign and PLAAF pilots with a focus on tactics, combat methods and simulated training. Besides six PLAAF pilots, a total of 69 officers, including several pilots, from 41 countries participated. The countries included Venezuela, the Philippines, Pakistan, Chile, Singapore and Saudi Arabia. During the training, the pilots simulated various tactics and techniques, including close-in engagements as well as reconnaissance and counter-reconnaissance. Of note, the U.S. Air Force has never had an officer participate in the course or received an invitation.

In July 2014, the PLAAF Command College, for the first time, awarded a Master's in Military Command degree to 20 two-year students from 16 unidentified countries.¹⁸⁰² The degree was available in five specialties and three languages (English, French, and Russian). This was in addition to a four-month command course for foreign officers that the college initiated in 2000 and has held once per year since then.

The Air Force Aviation University (AUAF), located in Changchun, Jilin Province, has also been involved in academic exchanges.^{iu} For example, in May 2012, it hosted the first International Student Week that involved 22 officer students from foreign professional military education institutions in 11 countries, including the United Kingdom, France, and Germany. It has also hosted air force cadets from various countries, including the United States and France. In October 2014, it hosted the second session, which involved a total of 35 cadets from air force academies of 14 countries, including the United States, United Kingdom, and Canada.

In December 2013, the Air Force Engineering University (AFEU), located in Xi'an, Shaanxi Province, hosted a "Model United Nations Conference."^{iv} More than 200 male and female students from the university's Foreign Language Department attended the event, as well as cadets from several other countries; English was used throughout the event.¹⁸⁰³

Since the late 1990s, China has been sending an increasing number of military students overseas. For example, in 1999 and 2000, the PLA sent around 200 military personnel to study abroad.¹⁸⁰⁴ During 2007 and 2008, the PLA sent over 900 military students to more than 30 countries—a 350 percent increase in eight years.¹⁸⁰⁵ As of early January 2007, the PLA Air Force alone had sent a total of 13 groups of mid- and senior-level officers to study abroad. In addition, the PLAAF Command College had received air force delegations from 43 different countries.¹⁸⁰⁶ Moreover, 20 military academic institutions in China have established exchange programs with counterpart institutions in over 20 countries, including the United States, Russia, Japan and Pakistan. According to the *2019 Defense White Paper*:

"Cooperation and exchanges in personnel training have intensified. Since 2012, the PLA has sent over 1,700 military personnel to study in more than 50 countries. Over 20 Chinese military academic institutions have established and maintained inter-collegiate exchanges with their counterparts from more than 40 countries. Meanwhile, more than 10,000 foreign military personnel from over 130 countries have studied in Chinese military universities and colleges."¹⁸⁰⁷

In addition to short-term student visits abroad, a growing number of PLAAF officers have had the opportunity to study abroad. For example, PLAAF officers have studied in military colleges in Britain, Russia, Pakistan, Italy, and France.¹⁸⁰⁸ Since the late 1970s to early 2000s, more than 2,000 PLA officers reportedly studied abroad. According to a PRC website, as of early 2009, about 300 PLA officers were studying abroad in more than 30 countries.¹⁸⁰⁹

Combined Exercises with Foreign Air Forces

In 2002, the PLA began conducting combined exercises, which it calls joint exercises, with other countries. As of 2016, it had participated in more than 70 exercises and drills with militaries from over 30 countries. As part of

iu The lead author visited this institution in 1988 with the Beijing Military Attaché Corps, when it was still the 7th Flight Academy.

iv The lead author visited this university about five times while escorting USAF delegations there from 1987-1989.

this effort, the PLAAF has increasingly become involved in combined exercises with foreign air forces, including multirole combat aircraft, bombers, and airborne forces. These exercises have allowed the PLAAF to demonstrate its improving capabilities to the international community, observe and learn from foreign militaries in an operational environment, and serve as a vehicle for building trust and solidifying security cooperation with select countries. The combined exercises can be divided into two categories: those with the SCO and those with individual, non-SCO countries. More detailed information will be presented in the PLAAF Training Chapter.

Bayi Aerobatics Team

The PLAAF's Bayi (August 1st) Aerobatics Team (八一飞行表演队), which was established in 1962 near Tianjin and upgraded from the J-7 to the J-10 in 2009, has participated in both domestic and international air shows, including six of the biennial Zhuhai Air Show beginning in 1998.^{iw} It has also participated in several international air shows outside of China in recent years. The team has staged more than 600 aerobatic performances in China for over 700 delegations from 168 countries and regions.¹⁸¹⁰ The following bullets highlight the airshows:

- The first foreign performance was at the 2013 Moscow Air Show (MAKS), which included seven J-10s and two IL-76 support aircraft.
- During the 10th China International Aviation & Aerospace Exhibition (Zhuhai) in November 2014, the PLAAF's "Bayi" and the Russian "Knights" aerobatic demonstration teams performed.
- Its third show was in March 2015, at the Langkawi International Maritime and Aerospace Exhibition in Malaysia. After performing in the air show, the Bayi Aerobatics Team flew back through Thailand and participated in a military exchange program.¹⁸¹¹
- In November 2015, following the Falcon Strike exercise, the team performed in Thailand at the invitation of the Royal Thai Air Force at the Korat Royal Thai Air Force Base.¹⁸¹²
- In November 2017, the team performed for the first time in the United Arab Emirates at the 15th Dubai Airshow.¹⁸¹³ On the way home from Dubai, the team performed in Quetta, the capital city of Pakistan's Balochistan Province, which was the first time it had performed at high altitude.¹⁸¹⁴
- In August 2018, it performed for the second time in Moscow at the Army 2018 International Military and Technical Forum.
- In March 2019, the Bayi Aerobatics Team visited Pakistan and flew during Pakistan's National Day.¹⁸¹⁵
- From 5 to 18 February 2020, nine aircraft and 100 personnel assigned to the Bayi Aerobatics Team visited Singapore to participate in the Singapore Airshow.¹⁸¹⁶

Of note, in September 1987, the USAF's Thunderbirds Air Demonstration Squadron visited Beijing and flew its demonstration flights over Nanyuan Airfield, which is located just south of Beijing. The aircraft then conducted a flight over the Great Wall, which is shown in the photo section of this book.^{ix}

HA/DR and MOOTW

Although the PLAAF has always conducted domestic disaster relief operations, such as the 2008 Sichuan (Wenchuan) earthquake, its international relief efforts were minimal until the 2000s. For example, one of the first PLAAF disaster relief efforts abroad occurred in early May 1991, when it sent two MI-8 helicopters to Bangladesh for a month to provide support after a typhoon. One of the first operations by PLAAF transports occurred in March 2002, when a single transport flew 400 tons of supplies to Kabul, Afghanistan, following an earthquake. A major

^{iw} Note: The PLAAF uses both "aerobatic team" and "aerobatics team" as an English translation. For purposes of this book, "aerobatics team" is used.

^{ix} The lead author of this book was the in-country manager for the visit, which coincided with a visit by Secretary of the Air Force Pete Aldridge.

change occurred in response to CMC Chairman Hu Jintao's "historic mission and tasks" initiated in 2004 but did not really take effect in a large scale for the PLAAF until February 2011, when it sent IL-76s to evacuate Chinese civilians from Libya. Altogether, the aircraft flew 1,655 Chinese citizens from Libya to Khartoum, Sudan, and then brought 287 back to China. In September 2011, four IL-76s from the 13th Air Division in the Guangzhou MRAF took supplies to Pakistan following severe flooding and, in October 2011, three IL-76s took supplies to Thailand following flooding there.¹⁸¹⁷ According to a *China Air Force* article, the PLAAF's aircraft transported 30 million *renminbi* worth of relief supplies from Urumqi to Pakistan, which was 3,000 kilometers away.¹⁸¹⁸ Altogether, the aircraft carried 390 tons of supplies, including 7,000 items. In October 2011, three IL-76s carried about 100 tons of relief supplies to Thailand following flooding there.¹⁸¹⁹ In 2014, the PLAAF provided an emergency airdrop of drinking water mission in the Maldives following a tsunami.¹⁸²⁰ In April 2015, the PLAAF provided disaster relief operations to Nepal and Burma following a Nepal earthquake.¹⁸²¹ The support lasted 19 days, included eight large transport aircraft, and had 37 cross-border sorties.

During March 2014, two IL-76s and at least one Y-8, along with PLA Navy vessels, participated in unsuccessful search and rescue efforts for the lost Malaysian civil airliner MH370 in the Indian Ocean. The aircraft conducted several of their sorties out of Hainan Island, a Malaysian airfield, and Royal Australian Air Force Pearce Base near Perth. According to *The Global Times*, an influential tabloid published by the ruling Communist Party's official *People's Daily*, estimated that an IL-76 costs \$10,000 an hour to keep in the air on fuel alone, not including money spent on maintenance or accommodation for the crews.

One of the key challenges for the PLAAF is the growing use of its heavy transports to support operations outside China's borders and advance military relations. For example, an IL-76 from the 13th Air Division transported the bodies of Korean War People's Volunteer Army martyrs from South Korea to Shenyang, Liaoning Province, four separate times from March 2015 to March 2018.¹⁸²² Other strategic airlift support activities include transporting relevant forces to the South Sudan peacekeeping mission in 2016 and support for the PLA Army to travel overseas to participate in international military combined exercises. Besides its IL-76s, the PLAAF is now using Y-20 transports that are assigned to both the 4th Air Division and the 13th Air Division to support troop movements within China, and, beginning in 2020, to deliver COVID-19-related supplies to foreign militaries and transport an honor guard to Russia.

So far, all of these were all relatively small-scale operations, however, and the PLAAF acknowledges the need to expand its strategic airlift capacity.¹⁸²³ The fact that the PLAAF is now using its IL-76s and Y-20s for foreign evacuation and HA/DR missions is significant not only for its domestic and international implications, but also because these aircraft are being used even though the PLAAF does not have enough to support the Airborne Corps or its deployment of new-generation aircraft around China or to foreign countries for exercises. Today, the PLAAF only has about 20 IL-76s, which were purchased from Russia starting in the early 1990s with the primary aim of supporting the PLAAF's 15th Airborne Division.¹⁸²⁴ The 2003 DOD report stated that "the PLA's ability to project force beyond China's land borders, while improving, remains limited due to a shortage of amphibious ships, heavy cargo carrying aircraft, long-range transports, and other logistical shortcomings."¹⁸²⁵ The 2011 DOD report noted: "The PLA's new missions are also driving discussions about the future of the PLAAF, where a general consensus has emerged that protecting China's global interests requires an increase in the Air Force's long-range transportation."¹⁸²⁶

Air Force Attachés at Home and Abroad

As noted in the background section, in 2019, 117 countries had military attaché offices in Beijing and China had set up 130 attaché offices abroad. Of the 117 attaché offices in Beijing, 16 countries had Air Force officers, including 10 who served solely as Air Attachés, one who served concurrently as the Air Attaché and Defense Attaché, and five

who served concurrently as the Air Attaché and as a Deputy Defense Attaché.^{iy} Although Russia had an Assistant Air Attaché in 2009, the United States is currently the only country with any Assistant Air Attachés.

Regarding PLAAF attachés abroad from the 1980s through the 2010s, the PLAAF had attaché billets in only two countries—the United States and United Kingdom. Of note, no information was found concerning any Air Attaché billets assigned to the embassy in Russia at any time, nor was any information found concerning a Russian Air Attaché in Beijing during the 2000s or 2010s.¹⁸²⁷ It appears, however, that the PLAAF did have an Air Attaché in Mongolia and South Korea for a short period of time in the 2010s as shown in the following bullets. No information was found concerning PLAAF attachés in any other countries. Of note, all PLA Defense Attachés (国防武官) abroad are Army officers; however, some of the Defense Attachés are also identified as the concurrent Air Attaché and/or Naval Attaché.¹⁸²⁸ Information on known PLAAF attachés is summarized below:

- United States: 1988-2019, including six Air Attachés and five Assistant Air Attachés.^{iz} Other than the Assistant Air Attaché from 1999-2002 and the Air Attaché from 2014-2019 who were both career pilots, the other nine attachés were all career intelligence officers. [Note: The Assistant Air Attaché who arrived in 2012 returned home in February 2019, and the Air Attaché who arrived in 2014 left in July 2019; neither of them had been replaced as of July 2020. It is not clear why they were not replaced.]
- United Kingdom: 1980s to present.^{ja}
- Mongolia: 2011-2012.¹⁸²⁹
- Republic of Korea (South Korea): 2018.^{jb}

Concerning the PLAAF attachés in the United States, the first Air Attaché was assigned in 1988 and the first Assistant Air Attaché was assigned in 1999. Their tours ranged from two to five years. Of these attachés, only two have ever served as a pilot, including Colonel Hu Xiao (Q-5 Attack Aircraft) as the Assistant Air Attaché from 1999 to 2002 and Senior Colonel Ye Jiang (J-7 and J-8 fighters) as the Air Attaché from 2014 to 2019.^{jc}

Since Sino-U.S. diplomatic relations were established in January 1979 to the end of 2019, the USAF has had six brigadier generals who served as the Defense Attaché (DATT).¹⁸³⁰ The first two, William Webb and Jon Reynolds, began as the Air Attachés and then served concurrently as the DATT. The third USAF officer, John Garrison, served only as the DATT and concurrent Air Attaché (AIRA). The fourth to sixth USAF officers, Ralph Jodice, David Stilwell, and Robert Spalding, served only as the DATT. The USAF has had 15 AIRAs, including the first three who served as concurrent DATTs, and 26 Assistant Air Attachés (A/AIRA).

In early 2009, only 27 of the 100 countries with military attaché offices in China had Air Attachés.^{jd} This included seven who served as the Defense Attaché, nine who served as an Assistant Defense Attaché, and ten who served solely as the Air Attaché. By late 2019, 16 countries had senior air force officers in Beijing, including 10 who served

iy Information for 2019 was received from correspondence with the U.S. Defense Attaché Office in Beijing. The countries with Air Force officers serving in the different attaché roles include Bangladesh, Bolivia, Brazil, France, Germany, India (since 2014), Indonesia, Japan, Mexico, Pakistan, Poland, Republic of Korea, Thailand, Turkey, Ukraine, and the United States. Of note, a Russian and UK naval officer serve concurrently as the Naval and Air Attaché. While China does not have an Air Attaché in Moscow, it does have one in London. A list of all PRC embassy and consulate officials in the UK can be found at <https://www.gov.uk/government/publications/foreign-embassies-in-the-uk>, which is updated regularly.

iz The lead author of this book has interacted with every Air Attaché and Assistant Air Attaché.

ja The PLAAF has had an Air Attaché in the United Kingdom since at least the 1990s. The current attaché, Senior Colonel Dai Jinhua, has held that position since around August 2018. There are no indications that there has ever been an Assistant Air Attaché in London. See the London Diplomatic List at <https://www.gov.uk/government/publications/foreign-embassies-in-the-uk>.

jb Two Chinese online news reports noted that the PLAAF had an unidentified Air Attaché in Seoul in late 2018, but correspondence with a South Korean in 2019 confirmed that he was no longer in that billet in 2019. It appears that this was a one-time event for only a short period of time. There is no information indicating that the PLAAF has ever had an attaché assigned to the Democratic Republic of Korea (North Korea). See <http://world.huanqiu.com/exclusive/2018-10/13396367.html?agt=15422> and <https://cn.yna.co.kr/view/ACK20181227005100881>.

jc The lead author of this book has known every PLAAF attaché assigned to Washington and has had several meetings with each one of them.

jd Based on correspondence with the U.S. Embassy in Beijing in August 2009, nine of the 21 air force attachés and 11 of the 20 Naval Attachés were concurrently serving as the defense/military attaché.

solely as Air Attachés, one who served concurrently as the Air Attaché and Defense Attaché, and five who served concurrently as the Air Attaché and as a Deputy Defense Attaché.^{je,1831}

Even though countries have Air Force Attachés in Beijing, they do not necessarily have the opportunity to interact with PLAAF officers on a regular basis. Normally, the only opportunity that foreign attachés have to interact with PLAAF officials is when they are planning for or escorting a visiting delegation or when they are arranging for a PLAAF delegation to visit their country.

Print and Online Publications

In 1958, the PLAAF established its own newspaper, *Air Force News* (空军报), which has been published five times per week (Monday through Friday) for several decades.¹⁸³² Although it had always been published for internal use only, those restrictions were removed in 2009 and the newspaper became available to the public through a post office subscription. However, there is virtually no overlap between the articles in *Air Force News* and the website. Specifically, a comparison of all of the articles in *Air Force News* and the kj.81.cn website for September 2018 provided the following analysis:

- The newspaper averaged 15-20 articles per issue for a total of about 350 articles per month, while the website only averaged four articles per publication date for a total of 42 articles for the month.
- None of the articles published in *Air Force News* appeared on the website, and vice versa.
- The primary sources for the articles on the website included PLAAF kj.81.cn reporters, *China National Defense News* (中国国防报), *PLA Pictorial* (解放军画报), and *Xinhua News Agency* (新华社), and other Chinese media sources.

In 1986, the PLAAF began publishing *China Air Force* (中国空军) magazine, which started as a bimonthly magazine (50 pages) and then became a monthly magazine in 2010 (80 pages).

In August 2009, MND created official websites in Chinese (www.mod.gov.cn) and English (<http://eng.mod.gov.cn/>), which is also known as “*China Military Online*” or chinamil.com, and also features articles about the PLAAF. In 2018, the PLAAF additionally created www.kjzfw.mil.cn to promote pilot recruitment (中国空军招飞网), but it appears to have disappeared to the public by 2019. The PLAAF also created a separate aviator recruiting website (<http://www.kjzfw.net/>), and a site called PLAAF.net has additionally popped up in recent years. PLAAF.net has had both the names *Air Force News Net* (空军新闻网) and *China Air Force Net* (中国空军网). One of the links (友情链接) at the bottom of the site was also to similar military fan (军迷) sites, as opposed to official media, which are normally linked to official websites. Therefore, this appears to have been a fan website as opposed to an official one.

Other various PLA publications such as *PLA Daily* and the bimonthly *PLA Pictorial*, which are available in hardcopy and online, also cover PLAAF activities. However, the PLA as a whole began cutting off public access to its written publications in 2018, including *Air Force News* and *China Air Force*.

je Information for 2019 was received from correspondence with the U.S. Defense Attaché Office in Beijing. The countries with Air Force officers serving in the different attaché roles include Bangladesh, Bolivia, Brazil, France, Germany, India (since 2014), Indonesia, Japan, Mexico, Pakistan, Poland, Republic of Korea, Thailand, Turkey, Ukraine, and the United States. Of note, a Russian and UK naval officer serve concurrently as the Naval and Air Attaché. While China does not have an Air Attaché in Moscow, it does have one in London.

PLAAF-USAF Relations

Key Points

- PLAAF-USAF relations are embedded within the broader dynamics of the Sino-U.S. relations and bilateral defense relations.
- PLAAF-USAF relations occur via a variety of channels, but have featured few high-level exchanges since military exchanges began in the 1980s.
- Significant roadblocks hamper USAF delegations' travel to China. When USAF delegations do have the rare opportunity to visit China, they need to learn as much as possible before they depart to maximize their trip.

The remainder of this chapter focuses on military relations between the PLAAF and the U.S. Air Force (USAF) to include a brief overview of Sino-U.S. military relations, information concerning interaction between the PLAAF and USAF at the high level, and information on functional and education exchanges.¹⁸³³ It also provides some implications and suggestions for how the USAF can better engage the PLAAF.

Sino-U.S. Military Relations

Since the United States and China initiated military exchanges in the 1980s, the relationship has had its highs and lows. Each side has certain core issues that have limited the ability to develop a more robust relationship. The U.S. side consistently cites a lack of reciprocity (places visited and issues discussed) and transparency (information on personnel, order of battle, and “doctrine”). Since 2000, the PLA has focused on “building trust” and ameliorating the “three obstacles”: arms sales to Taiwan, reconnaissance missions near China’s border, and Congressional restrictions imposed in 2000 National Defense Authorization Act (NDAA).¹⁸³⁴

Transparency Issues

Disagreements on the issue of transparency have been at the core of China’s military diplomacy with the United States in recent decades. For example, in September 2014, U.S. Assistant Secretary of State Daniel Russell, the senior U.S. diplomat for East Asia, stated, “Frankly, the lack of transparency in China’s military modernization is the source of some concern to its neighbors. And we believe that all of the region, including China, would benefit from increased transparency.”¹⁸³⁵ Lack of transparency has likewise been one of the key themes for the U.S. Department of Defense’s (DOD) *Annual Report to Congress on the Military and Security Developments Involving the People’s Republic of China* for the years 2010 through 2020.

Five defense-related issues regarding transparency are typically raised in the *Annual Reports to Congress* and other U.S. Government reports on China.¹⁸³⁶ First, the reports raise concerns the intentions behind the PLA’s rapid modernization, including how China plans to employ its new and more capable forces vis-à-vis the United States and China’s neighbors. When DOD engages Chinese counterparts, its interactions fall under “statutory limitations of the National Defense Authorization Act for Fiscal Year 2000, as amended.”

Second is China’s unclear stance regarding its disputed sovereignty and territorial claims and the coercive approach it leverages against other claimants, particularly the lack of clarity surrounding its maritime and territorial claims in the South China Sea. According to a joint press conference between President Barack Obama and Xi Jinping in September 2015,¹⁸³⁷ President Obama stated, “I conveyed... our significant concerns over land reclamation, construction, and the militarization of disputed areas, which makes it harder for countries in the region to resolve disagreements peacefully. And I encouraged a resolution between claimants in these areas. We are not a claimant; we just want to make sure that the rules of the road are upheld.” Xi responded by saying: “We’re committed to

respecting and upholding the freedom of navigation and overflight that countries enjoy according to international law. Relevant construction activities that China are undertaking in the... Nansha [Spratly] Islands do not target or impact any country, and China does not intend to pursue militarization.” The 2019 *Annual Report to Congress* report notes that the United States disinvented China from the 2018 RIM OF THE PACIFIC exercise “as a result of China’s continued militarization of disputed features in the South China Sea, violating a pledge by Chinese President Xi Jinping not to militarize the Spratly Islands” made during this 2015 meeting with President Obama.

Third, China has a long-stated “no first use” (NFU) policy, summarized by DOD as “China will never use nuclear weapons first at any time and under any circumstances, and will unconditionally undertakes not to use or threatening to use nuclear weapons against any non-nuclear-weapon state or in nuclear-weapon-free zones.”¹⁸³⁸ DOD notes ambiguity “over the conditions under which China’s NFU would apply” as well as concerns “regarding the scope and scale of its nuclear modernization program” China’s nuclear force policy has come into closer scrutiny given the PLAAF has been reassigned a nuclear mission and the DIA Director’s 2019 statement that “China is likely to at least double the size of its nuclear stockpile” over the coming decade.¹⁸³⁹

Fourth, DOD cites “poor accounting transparency” in China’s published defense budget, noting that the budget omits certain categories, including China’s arms imports from other countries and some research and development (R&D) categories.¹⁸⁴⁰

Fifth, despite an agreement made between President Obama and President Xi in 2015 “that neither country’s government will conduct or knowingly support cyber-enabled theft of intellectual property, including trade secrets or other confidential business information, with the intent of providing competitive advantages to companies or commercial sectors,” Chinese cyber-enabled economic espionage continues, as well as hacking against DOD and other U.S. Government systems.¹⁸⁴¹

Although the PLA’s most recent two *Defense White Papers* (2015 and 2019) did not specifically address the issue of transparency, there is recognition that external audiences view the PLA as lacking transparency. A commentary in *China Military Online* by Rear Admiral Guan Youfei, Director of the MND Foreign Affairs Office, at the time the 2012 white paper was published, stated:¹⁸⁴²

“It should be said that the transparency of the PLA is consistent with the reality of our national and military situation. Military transparency is important for national security. The extent, method, content and timing of transparency to the outside world should be determined according to each country’s safety situation and no country is absolutely transparent when it comes to military affairs. In recent years, the Chinese military has adopted a series of measures to open itself to the world, such as establishing news spokesperson system for MND, opening a website of MND (<http://eng.mod.gov.cn>), and inviting foreign correspondents to visit and interview, all of which were unimaginable ten years ago. It could be said that China is very transparent on military affairs.”

In 2014, PLA media highlighted increasingly transparency throughout the force, with the narrative that the PLA was becoming more open and confident as a result of engaging in more combined-arms, joint, and combined exercises, which has helped enhance China’s deterrence capabilities.^{jf, 1843} For example, according to Zhang Junshe, a researcher at the Naval Military Academic Research Institute, training and exercises in 2014 allowed the PLA to make remarkable achievements; however, they also exposed some weaknesses in operational commanding and information technology application. Zhang noted that improvements were also needed in strategic delivery, rapid reaction and joint operations. According to Hou Xiaohe, an associate professor with NDU, the 2014 drills and exercises addressed problems that could be resolved in order to be able to fight real battles.¹⁸⁴⁴

jf For the PLA, “joint” (联合) refers to two or more services working together, but the PLA also uses it for bilateral and multilateral training with foreign countries, which the U.S. calls combined. Unfortunately, the PLA is not consistent and often uses the term for two or more branches/arms, which is actually combined arms (合成/合同).

Some of the DOD annual reports have identified certain areas of growing transparency as well. For example, DOD's 2010 annual report stated that "China does not publish equivalents to the U.S. National Security Strategy, National Defense Strategy, or National Military Strategy. Rather, China uses 'white papers,' speeches, and articles

as the principal mechanisms to communicate policy and strategy publicly. The transparency of China's military and security affairs has improved in recent years, including its biennial publication of *Defense White Papers* and the 2009 launch of an official MND website."¹⁸⁴⁵ Of note, however, not every *Defense White Paper* has included information about organizational structure. For example, the 2002, 2006-2012, and 2019 *Defense White Papers* provided an overview of the PLAAF's organizational structure, but neither the 2004 nor the 2015 versions had any information. The 2015 version focused strategy, and no white paper was published in 2017 at all.

Regarding USAF issues concerning PLAAF transparency, although the USAF would like to have detailed information about the PLAAF's personnel, such as numbers by ranks and grades and specialties, as well as types of weapons and equipment and order of battle information, the PLAAF does not provide that information publicly.

Although the PLAAF became more transparent through its newspaper, magazine, and online website for several years in the early 2010s, it has clearly become less transparent since the new reorganization was implemented in 2016. Key PLAAF sources include a monthly magazine (*China Air Force*) and the PLAAF's newspaper (*Air Force News*), which is published five times a week. In 2012, the PLAAF also created a separate website (kj.81.cn), which adds new articles about three times per week.¹⁸⁴⁶ However, the PLA as a whole began cutting off public access to its written publications in 2018, including *Air Force News* and *China Air Force*.

One other issue concerning transparency is the PLAAF's concerted efforts over the past few years to hide information from the public about the tail numbers on its aircraft, which are discussed in Chapter 3. Specifically, the tail numbers on all PLAAF aircraft used to be red in color and were clearly visible from a distance in the air. Around the mid-2000s, it began changing the color from red to low observable numbers with a combination of gray and light blue for some aircraft such as the J-8, but not all fighter aircraft, so that the numbers were more difficult to see at a distance. As late as 2019, it appears that the tail numbers on bombers were still red, but the numbers on transport aircraft have all been changed to yellow. Because outside analysts were using these numbers to help figure out the order of battle for the PLAAF's aircraft, the PLAAF apparently began photoshopping out or blurring the numbers on fighters and fighter-bombers as early as mid-2017 in its official magazine (*China Air Force*) and newspaper (*Air Force News*). A search online also found that almost no photos for fighters and fighter-bombers now show the tail number.

PLAAF-USAF Relations

The first military diplomacy exchanges between the PLAAF and USAF began in the early 1980s, which resulted in a \$550 million foreign military sales (FMS) program (Peace Pearl) for a fire control system in China's J-8-2 fighter;¹⁸⁴⁷ however, the program was cancelled after the 4 June 1989 Tiananmen military crackdown on civilian demonstrators. (See the Personal Background section at the end of this book for more details.) Overall, with the exception of the FMS program, the relationship has focused on senior level visits, functional exchanges, and educational exchanges.

The PLAAF and USAF have had only a limited military relationship following the June 1989 military crackdown on civilians around Tiananmen Square. For example, the PLAAF has had 12 Commanders since it was established in 1949 and nine since diplomatic relations were established in 1979. Of these, only one, General Yu Zhenwu, has visited the United States, which occurred in 1995; however, his visit was cut short when Taiwan's President Lee

¹⁸⁴⁷ Peace Pearl was one of four FMS programs, which included a \$22 million program for help in modernizing factories to produce army artillery ammunition and projectiles, an \$8 million program for naval Mk-37 torpedoes, and a \$62 million program for army artillery-locating radar.

Teng-hui announced his visit to the United States. In addition, General Xu Qiliang was supposed to visit the United States in 2008, but that trip was cancelled due to the Sichuan earthquake.

Of note, in 1988, the PLAAF's PC, Zhu Guang, visited the United States as a guest of Secretary of the Air Force Pete Aldridge reciprocating his visit to China in late 1987. Zhu was only the second PLA PC to ever travel abroad. No following PLAAF PCs have visited the United States.

Relations came to yet another standstill after the United States inadvertently bombed China's embassy in Belgrade, Yugoslavia in May 1999. The next high-level visit occurred in September 2013, when Chief of Staff General Mark Welsh visited. PLAAF Commander Ma Xiaotian chose not to have a reciprocal visit. This was the first CSAF visit to China since General Michael Ryan visited in 1998.

Table 7-3 below shows all USAF Chief of Staff visits to China since 1979. As noted earlier in this chapter, only one Secretary of the Air Force (SECAF), Pete Aldridge, has visited China (1987) and he hosted the PLAAF PC (Zhu Guang) in 1988. Table 7-4 provides a list of the PLAAF Commanders since 1949 and their visits to the U.S. and hosted visits by the U.S. CSAF and SECAF.

Table 7-3: U.S. Chiefs of Staff of the Air Force and Reciprocal Visits¹⁸⁴⁸

CSAF	Dates	China Visit (Host)	Hosted Counterpart
Lew Allen	07/78-06/82		
Charles Gabriel	01/82-06/86	10/85 (PLAAF CDR Wang) ¹⁸⁴⁹	
Larry Welch	07/86-06/90	04/89 (PLAAF CDR Wang)	
Michael Dugan	07/90-09/90		
Merrill McPeak	10/90-10/94	09/94 (PLAAF CDR Cao)	
Ronald Fogleman	10/94-09/97		05/95 (PLAAF CDR Yu)
Michael Ryan	10/97-09/01	05/98 (PLAAF CDR Liu)	
John Jumper	09/01-09/05		
Michael Mosley	09/05-07/08		
Norton Schwartz	08/08-08/12		
Mark Welsh	08/12-06/16	09/13 (PLAAF CDR Ma)	
David Goldfein	07/16-07/20		

Table 7-4: PRC Air Force Commanders and Reciprocal Visits

PLAAF Commander	Dates	U.S. Visits (Host)	Hosted Counterpart
Zhang Tingfa	04/77-07/85		
Wang Hai	07/85-11/92		10/85 (CSAF Gabriel) 09/87 (SECAF Aldridge) 04/89 (CSAF Welch)
Cao Shuangming	11/92-11/94		09/94 (CSAF McPeak)
Yu Zhenwu	11/94-12/96	05/95 (CSAF Fogleman)	
Liu Shun Yao	12/96-05/02		05/98 (CSAF Ryan)
Qiao Qingchen	05/02-10/07		
Xu Qiliang	10/07-10/12		
Ma Xiaotian	10/12-08/17		09/13 (CSAF Welsh)
Ding Laihang	08/17-Present		

The next high-level air force exchanges following General Yu's visit in 1995 occurred in 2007, when PACAF Commander, General Paul Hester, hosted the Nanjing MRAF Commander, Major General Jiang Jianzeng, and in 2008, Major General Jiang hosted PACAF Commander, General Howie Chandler for a reciprocal visit.

General Welsh's delegation to China in September 2013 included PACAF Commander, General Hawk Carlisle, and Chief Master Sergeant of the Air Force, James Cody. CMSGT Cody was the first CMSAF to visit China; however, his predecessor, Chief Master Sergeant James Roy, led the first and only joint enlisted force delegation by any country to China in 2008 while serving as the Senior Enlisted Leader at PACOM. While in China, CSAF's delegation, which was hosted by PLAAF Commander General Ma Xiaotian, also met with General Xu Qiliang, who became one of the two CMC Vice Chairmen in 2012 and is the first PLAAF officer to hold that billet. During the week-long visit, CSAF's discussions on future military-to-military relations touched on advancing cooperation in several areas, notably senior-level exchanges, military medicine and education, search and rescue, air-to-air safety, and disaster-relief operations. Besides meetings with senior leaders, the delegation visited Nanyuan Airfield just south of Beijing, where General Welsh had the opportunity to sit in a visiting J-10. The delegation also visited PLA NDU, where CSAF gave a speech. Unfortunately, General Ma declined a reciprocal visit to the United States or any other countries during 2014.

In September 2014, the PACAF Commander, General Hawk Carlisle, hosted the Nanjing Military Region Air force (MRAF) Commander Lieutenant General Huang Guoxian, and a seven-member delegation, including the PLAAF Air Attaché to the United States, for a visit to PACAF Headquarters in Hawaii.¹⁸⁵⁰ The delegation then visited Elmendorf Airbase in Alaska, where they had the opportunity to observe the F-22 Raptor for the second time. There was no reciprocal visit.

In November 2014, PACAF Commander, General Lori Robinson, represented USAF for the first time at the 10th biennial China International Aviation & Aerospace Exhibition (Zhuhai Airshow) in southern China, where she gave a speech. Her delegation also took a C-17 Globemaster III to the airshow for display.

Most functional exchanges between the two air forces, which can also be considered high-level exchanges based on who is leading the delegations, have been minimal over the past 25 years (1989-2014). For example, the 13th Air Force Commander, Lieutenant General Hawk Carlisle, did attend the PLAAF's 60th Anniversary in 2009.¹⁸⁵¹ Finally, in October 2019, PACAF Commander General Charles Q. Brown Jr. had a short meeting with the PLA's Northern TCAF Commander Lieutenant General Xu Xueqiang in Seoul, Korea.¹⁸⁵² Both of them were there for separate meetings with the ROK Air Force.

Although the USAF and PLAAF have engaged only minimally in any service-to-service high-level and functional exchanges since the 1980s, they have had various academic exchanges. Prior to 2014, the last visit to the United States by PLAAF Command College students was in 2007. When the visits resumed in May 2014, the PLAAF Command College's commandant, Major General Ma Jian, led a 29-member delegation of faculty and students from the college ranging from lieutenant colonel to colonel to the United States, where they had separate meetings in Washington, D.C., with the Center for Naval Analyses (CNA) and in Santa Monica, CA, with the RAND Corporation. They also then spent a day at AU in Montgomery, AL, where they met with AU's Commander and President, Lieutenant General David Fadok, and toured several organizations, including Air War College (AWC) and the Air Force Research Institute. The lead author of this book, who helped escort the delegation at Maxwell AFB, was extremely impressed with the fact that every PowerPoint briefing presented there used Chinese characters and was given by AU faculty and USAF officers who were high-level Chinese speakers. In addition, the key personnel from AU's *Air and Space Power Journal*, which has been published in Chinese for eight years, participated in the visit.

The USAF Air War College has also sent students to China every year for 10-12 days beginning in 2005 except for 2009 and 2010 because of tensions surrounding Taiwan arms sales. Visits resumed in 2011 and have continued every year since then, including in April 2019.¹⁸⁵³ The delegations have visited the PLA's NDU, as well as PLAAF HQ, various colleges, and operational units. Of note, although USAF officers have attended the PLA NDU's foreign

officer program, none have participated in the PLAAF Command College's foreign student program discussed earlier in this chapter.

In 2003, the U.S. Air Force Academy (USAFA), which has a robust four-year Chinese language curriculum, and the PLAAF began a program of reciprocal cadet visits. USAFA cadets visited the PLAAF's Aviation University (AUAF) and Engineering University (AFEU), and PLAAF cadets occasionally visited USAFA and Air University (AU). For example, in May 2005, the PLAAF's official magazine, *China Air Force*, had a two-page article about four USAFA cadets who visited the Aviation University in March.¹⁸⁵⁴ However, those visits for both sides were eliminated in 2014.¹⁸⁵⁵ USAFA has not hosted any PLAAF cadets since 2014 and no USAFA cadets have visited the PLAAF organizations since 2014 either, when they attended an international student conference at the AUAF.¹⁸⁵⁶

However, USAFA has established two separate programs for its cadets at Nanjing University known as the Cadet Summer Language Immersion Program (CSLIP) and the Cadet Semester Study Abroad Program (CSSAP). The PLAAF has not had a reciprocal program for its cadets to attend programs in the United States. The number of cadets in the four- to six-week CSLIP grew from 14 in 2004 to 48 in 2009 and 62 in 2010. It was reduced to 30 in the mid-2010s and the length of time spent in China was reduced to three weeks. In addition, starting in 2007, as many as four to six cadets per year spent a semester abroad (about five months) at Nanjing University in CSSAP.¹⁸⁵⁷ However, the last group of cadets to participate in either program was 2018.¹⁸⁵⁸ No cadets were sent to China in 2019 for either program, but a group of cadets were sent to Taiwan for both programs.

In addition to USAF-PLAAF direct exchanges, USAF officers have also been part of U.S. NDU delegations that have visited PLAAF facilities in China during the 2010s. Finally, several USAF officers have studied in China as an Olmsted Scholar.

In terms of non-service-to-service interaction, in 1998, the Department of Defense (DOD) and China's MND signed a Military Maritime Consultative Agreement (MMCA). Since then, DOD has asked to have MND include PLAAF officers, because the U.S. position is that operational safety extends to both the maritime and air domains and there is an obvious need for improvement in both. At the same time, DOD has also encouraged MND to include PLAAF officers in the Defense Consultative Talks (DCTs), which began in 1997. The last DCT was in 2014, and no PLAAF officers have yet to participate in either venue.¹⁸⁵⁹

In addition, some USAF officers and enlisted members have been members of multi-service delegations that have visited China. For example, in 2007, five USAF lieutenant colonels and colonels were part of a 20-member delegation of PACOM mid-level officers who visited China. The first and only enlisted force delegation to China took place in 2008, led by USAF Chief Master Sergeant James Roy with several PACAF NCOs in attendance.

Finally, other DOD leaders have visited various PLAAF facilities. For example, Chairmen of the Joint Chiefs General Peter Pace and Admiral Michael Mullen visited PLAAF units in 2007 and 2011, respectively. General Martin Dempsey visited China in 2013, but visited only the Army Aviation Institute and an Army Aviation regiment.

USAF Efforts to Understand the PLAAF

Even though the PLAAF has released more content in recent years, only a small percentage of the information is available in English. As a result, the USAF historically has not been aware of the majority of the information openly available about the PLAAF. In 1997, the USAF created an International Affairs Specialist (IAS) program that was divided into two components—a Regional Affairs Strategists (RAS) program and a Political-Military Affairs Strategists (PAS) program.^{jh} However, the program was not actually implemented until 2005. In 2017, the RAS program was renamed the Foreign Affairs Officer (FAO) program.¹⁸⁶⁰

jh While there are several differences between the RAS and PAS programs, one of the biggest differences is that the RAS program is regionally focused and requires language skills and the PAS program is broadly pol-mil focused and does not require language skills. Furthermore, RAS officers are dual-tracked and alternate assignments between RAS and their core Air Force Specialty Code (AFSC), while officers in the PAS program generally serve one career-broadening PAS tour and then return to their core AFSC. Of note, the first FAO to be selected as an Assistant Air Attaché for DAO Beijing served from 2015-2018.

As of 2019, only a small number of USAF officers are qualified Chinese linguists who can conduct original research using Chinese language materials.¹⁸⁶¹ To help with this situation, the Air Staff recently created the Chinese Aerospace Studies Institute (CASI), which is similar in scope and mission to the U.S. Navy's Chinese Maritime Studies Institute (CMSI) based at the Naval War College. In 2014, CASI began as a component of RAND Corporation's Project AIR FORCE, but it became a separate entity under Air University in 2017.¹⁸⁶²

Conclusion and Implications

Over the past decade (2009-2019), the PLAAF has expanded its relationship with current and future air force leaders and pilots from multiple countries, including high-level visits, functional exchanges, combined exercises, and academic programs. These exchanges allow the PLAAF to evaluate itself and to identify how foreign air forces, including the USAF's friends and allies, recruit, educate, train, and operate. In contrast, PLAAF-USAF relations have been only minimal for 25 years. In order for both sides in the PLAAF-USAF relationship to benefit more from engagement, a wider variety and depth of exchanges at multiple levels would allow for a more reciprocal relationship. Part of the problem, however, is that there is a lack of trust between the two sides. For example, the PLAAF engages foreign air forces to either learn about them (i.e., intelligence collection), to learn from them, or to teach them.^{ji}

PLAAF perceptions of engagement with the USAF is that the USAF, which conducts frequent activities near China, including reconnaissance missions off China's coast, only wants to learn about the PLAAF. As a result, the PLAAF is not as open as it may be with other air forces. On the U.S. side, difficulties in obtaining information and advancing meaningful progress in engagements may lead to the perception that counterparts are willing to learn from and about the United States, but not share or adjust their approach. In this, ironically, PLAAF and USAF views of each other may be fairly similar.

Yet another problem is that the interaction between senior PLAAF and USAF leaders will continue to be minimal for various reasons, including that PLAAF Commanders can only travel once per year and rarely visit the same country twice during their four-to-eight-year tenure. In addition, they rarely invite the same foreign Commander back to China. The last CSAF to visit China was General Welsh in 2013. As noted earlier, his counterpart at that time, General Ma Xiaotian, publicly announced that he would not visit any countries while he was the Commander (2012-2017). In addition, his successor, General Ding Laihang, has only taken one trip abroad (2018) and will most likely not opt to visit the U.S. As a result, CSAF and the PLAAF Commander will most likely not meet again.

CSAF and any lower-level USAF delegations must also fit into the U.S. Government's list of leaders who want to visit China. Even when there is engagement, the U.S. delegations and staffs must get up to speed on and carefully follow restrictions on engagement with the PLA laid out in the 2000 NDAA.

When USAF delegations do have the rare opportunity to visit China, they need to do their homework and learn as much as possible from multiple sources before they depart. In addition, USAF units that host PLAAF delegations also need to do their homework and prepare properly in order to have meaningful two-way discussions during the visit. Specifically, the USAF needs to use PLAAF terms when asking questions about the PLAAF rather than using USAF terms. The following 15 principles are examples of important differences to keep in mind when USAF personnel meet with PLAAF counterparts:

1. The PLA is the armed wing of the Communist Party, but organizationally it does not have a civilian leadership structure like the U.S. military;

^{ji} The lead author of this book first presented the concept of learn about, learn from and teach at a NATO conference in London in March 2013. The theme of the conference was "NATO cooperation with the Asia-Pacific region: what potential role for engagement with China and the PLA?" Although the concept focused on the PLA, it applies to all militaries around the world.

2. Everything in the PLA, including services, branches/arms, functional and administrative departments, and billets, are organized in protocol order;
3. The PLA assigns 15 grades and 10 ranks to its officers, whereby grades are more important than ranks;
4. Every organization is assigned one of the 15 grades, and organizations can only command an organization at a lower grade and can only coordinate with an organization at the same grade;
5. Every grade has two ranks, so the Commander and Political Commissar, who have the same grade, can have different ranks;
6. Officer grade and rank promotions rarely occur at the same time (grade promotions are every three years and rank promotions every four years up to the regiment commander level);
7. Unlike the USAF, PLAAF personnel do not address each other by their rank but by their position, such as Commander Wang or Director Li;
8. The PLAAF currently has five Theater Command Air Forces based on geographical areas plus corps-level bases, divisions, brigades, regiments, flight/maintenance groups (battalions), and flight/maintenance squadrons (companies), while the USAF has major commands organized by geographical areas and/or missions, numbered air forces, wings, groups, squadrons, flights, and elements;
9. The USAF can discuss its own air superiority, air supremacy, and air dominance but needs to ask the PLAAF about its command of the air, which is more like the USAF's air dominance (a specific airspace over a specific time, not 24/7);
10. Understanding the differences between key terms and concepts are extremely important;
11. The USAF has strategy and doctrine, but the PLAAF has strategy, theory, and thought—it does not have doctrine;
12. The USAF has tactics, but the PLAAF has tactics and combat methods, which are different than each other;
13. The USAF conducts offensive counterair (OCA)^{jj} and defensive counterair (DCA),^{jk} but the PLAAF does not use those terms or acronyms, since it implements air offensive campaigns^{jl} and air defense campaigns,^{jm, 1863}
14. The USAF uses airborne warning and control system (AWACS) aircraft while the PLAAF uses airborne early warning and command (AEW&C) aircraft, which are managed differently.
15. The USAF uses “professional military education” (PME), while the PLAAF uses “military professional education,” and they have different meanings.

As the lead author has always said, “The more you know, the more they will tell you,” and “It is how you ask the question as to what answer you will get.” For example, rather than just ask a question, ask the question and explain what you already know about it through a PLAAF lens. Prior preparation and understanding of the PLA and PLAAF will drastically improve the chances of a successful interaction, meeting, or engagement.

jj The USAF's OCA focuses on 1) attack operations, including attacks on missile sites, airfields, command and control, and infrastructure;

2) suppression of enemy air defenses; fighter escort, and fighter sweep.

jk The USAF's DCA focuses on 1) active air and ballistic missile defense; and 2) passive air and missile defense, to include detection and warning, chemical, biological, radiological, and nuclear, camouflage, concealment, deception, hardening, reconstruction, dispersion, redundancy, and mobility.

jl The PLAAF's air offensive campaign is series of airborne sudden-attack activities implemented by an Air Force campaign large formation in coordination with other services and arms against an enemy within a fixed space and time. The basic missions of the air offensive campaign are to 1) wipe out or weaken the enemy's aviation forces and ground air defense forces in order to seize command of the air; 2) wipe out or weaken the enemy's heavy force groupings; 3) destroy the enemy's communications and transport systems in order to create conditions for ground and sea campaigns; and 4) conduct sudden-attacks on the enemy's political, military and economic targets in order to weaken the enemy's war potential or obtain specified strategic goals.

jm The PLAAF's air defense campaign is a series of operational activities implemented by the Air Force campaign large formation in coordination and cooperation with other services, service arms, local force-units and people's air defense strengths, in accordance with a unified intention and plans, and in order to frustrate the enemy's air raids. Its basic goal is to smash the enemy air raid intention and safeguard the security of important targets. Its basic missions are to 1) closely monitor the dynamic state of the enemy air raid; 2) promptly discover and ascertain the enemy's implementation of air raid activities and time opportunities, as well as notify various force-units and people's air defense organizations; 3) resist the enemy's air raid against our military, political and economic targets and reduce the harm of the enemy's air raids; 4) organize the counterattack operations and wipe out and weaken the enemy air raid strengths; 5) organize information warfare and seize information dominance; and organize the protection work and reduce the losses of personnel and war resources brought about from encountering enemy air raids.

Chapter 8: Predictions for PLAAF Reforms from 2020-2029

This chapter provides predictions for reforms and related trends concerning the PLAAF for the period of 2020 through 2029. The information is organized based on this book's six key chapters (Chapters 2 to 7). Two elements are important to keep in mind as the PLAAF continues to modernize through 2029. First, as with all previous reforms, everything is a step-by-step process aligned with the PLA's overall reforms. Second, as in evidence during previous reforms, not all initiatives have been successful—the National Defense Student Program is a recent example. New approaches will require new concepts, programs, and experimentation to be successfully adopted wholesale.

Although this book does not focus on specific types of weapon systems and platforms, the PLAAF will most likely increase its inventories of systems developed in the 2000s and 2010s and upgrade current variants, such as the J-20 fighter, Y-20 transport aircraft, and possibly a new H-20 bomber, and field other new systems, including SAMs and UAVs.^{jn, 1864} Likewise, aging and outdated platforms, particularly aircraft, will continue to exit the force. The fielding and employment of more advanced systems will further shape strategic, doctrinal, organizational, personnel, and training reforms throughout the PLAAF.

Laying the Foundation

This section expands on Chapter 1 with an emphasis on PLA-wide trends likely to shape the PLAAF from 2020 through 2029, including future force reductions and possible changes to the rank and grade system.

Since 1949, the PLA has had 11 force reductions.^{jo} For three reasons, the PLA will most likely implement a 12th force reduction sometime in the late 2020s. First, there continues to be an overly high proportion of senior officers remaining in the force. Second, the current system is slow to shed officers, as most officers do not leave the force until they retire (when they have met their mandatory retirement age based on their grade) unless they are demobilized during a force reduction. Third, some Chinese academic literature suggests the PLA seeks to shrink further, potentially to as low as roughly 1.5 million total troops in the coming years.¹⁸⁶⁵ As with the previous force reductions, the first phase will focus on “above the neck” (e.g., above the corps level) and the second phase will focus on the corps level and below. Because officers do not need to retire until they reach their mandatory age based on their grade, the PLA's senior officer corps has become bloated. As a result, the 2003 force reduction resulted in officers consisting of 85 percent of the 200,000 personnel who were demobilized; for the 2016 force reduction, officers were 50 percent of the 300,000 who were demobilized. In 2003, the PLA additionally allowed officers to voluntarily leave the service after serving only eight years. The 12th force reduction will most likely involve at least 100,000 more troops, including at least 50 percent officers. It will also most likely include an increase in the number of civilian personnel across all of the services and forces. Although the force reduction will again focus on the Army, the PLAAF will also most likely be affected to a smaller degree.

Concerning possible changes to the rank and grade system to prioritize ranks rather than grades, it is not clear whether any major changes to the PLA's current system will take place. Although rumors abounded in 2015 that the system would be changed, nothing had changed by the end of 2020.¹⁸⁶⁶ Specifically, some of the rumors raised the possibility that the PLA would completely abolish the 15-grade system and move solely to a 10-rank system, with the

jn Following former PLAAF Commander General Ma Xiaotian's 2016 public statement that China was developing a new generation of long-range bombers, a number of reports suggest the new bomber, likely named the H-20, could debut sometime in the next decade.

jo The 11 force reductions began in 1950, 1952, 1953, 1957, 1975, 1980, 1982, 1985, 1997, 2003, and 2016.

underlying motivation that the PLA wanted to make its system more similar to those of other militaries. Based on several interviews by the lead author with various PLA delegations and personnel, however, the interviewees were opposed to abolishing the grade system because “it was their system and they were used to it.”

If the grade and/or rank systems are modified, one driving force for potential changes could be the PLA-wide shift from a division-regiment structure to a base-brigade structure, which has affected how officers can move up their career ladder grade by grade. Specifically, in the PLAAF a flight group Commander (battalion leader grade) cannot become a brigade Deputy Commander (regiment leader grade) for three years after he or she serves as a flight group Commander. Likewise, a brigade Commander (division deputy leader grade) cannot become a Base Deputy Commander (corps deputy leader grade) for at least three years after he or she serves as a brigade Commander. This bottleneck is significant because most pilots serve in one unit for the majority of their careers, but the current system forces them to temporarily leave the command structure within their unit (by either taking a staff position or serving as a regular pilot in the unit) in order to advance to the next rung of the career ladder. However, these changes to a brigade structure will most likely continue to proliferate throughout the PLAAF during the 2020s, including the possibility of changing the PLAAF bomber and transport divisions and subordinate regiments to a brigade structure. As noted in Chapter 3, however, these bomber, transport, and special mission units will most likely continue to be directly subordinate to PLAAF HQ or one of the TCAF HQ rather than to a Base.

A second driving factor for potentially changing the rank system is that the highest-ranking officer in the PLA is a three-star flag officer, which is different from most militaries around the world whose highest-ranking flag officer is a four-star. One of the reasons the PLA re-instituted a rank system in 1988 was because the PLA was increasing its diplomatic relations with multiple countries around the world. When a PLA delegation visited another country or hosted a foreign military delegation, protocol and other issues were complicated by the fact that no one knew what to call the PLA delegation members. Today, the PLA’s highest rank of three-star flag officer still does not translate well to a foreign military four-star from the foreign military’s perspective, with similar issues at lower levels of rank and grade impacting exchanges as well.¹⁸⁶⁷ This discrepancy challenges for engaging with foreign counterparts—an activity that PLA leaders and units are likely to increasingly undertake as both the PLA’s overseas presence and exchanges with counterparts in China continue to grow. Rumored proposals have included abolishing the senior colonel rank and adding a four-star flag officer rank, but it is not clear which officers would receive a fourth star. A fourth star could be potentially be awarded to the CMC vice chairmen and members, or potentially also to Theater Commanders, service commanders, and/or PCs.

PLAAF Strategy, Theory, and “Doctrine”

This section discusses predictions for the PLAAF’s strategy, theory and “doctrine” for 2020 through 2029. Based on 2018 and 2019 articles in State media as discussed in Chapter 2, PLAAF leaders are focused on developing a vision for a “world-class air force” that aligns with Party and military leaders’ guidance for PLA-wide accomplishments by 2020, 2035, and 2049. It appears unlikely that the PLAAF is poised to soon declare victory on becoming a “strategic air force” that integrates air and space and is capable of both offensive and defense operations, despite at least one PLAAF official raising this as a goal to accomplish by 2020. Such a proclamation could happen later than 2020 but prior to 2029 in order to keep the PLAAF roughly “on track” with the 2035 and 2049 PLA milestones. Alternatively, the PLAAF could adjust or abandon elements of the strategic air force concept present since 2004. As Chapter 2 mentions, the “integrated air and space” element of the concept particularly raises questions given the PLAAF’s failed bid for leadership of the space portfolio in favor of the PLA establishing the PLASSF instead. However, given senior CCP’s leadership endorsement of the strategic air force concept, wholesale replacement with a different concept is unlikely.

Other elements of the strategic air force concept bear closer scrutiny over the coming decade. “Coordinated offensive and defensive operations” implies the PLAAF will complete a shift in mindset to viewing offensive activities as at least as important as the PLAAF’s traditional air defense mission, including offensive operations by manned and, increasingly, unmanned systems. When PLAAF air-launched nuclear missiles and supporting systems are fully integrated and enter service, the “offensive” and “strategic” elements of PLAAF strategy and theory will take on new meaning, with implications for regional deterrence and beyond. As PLAAF ISR and other enabler systems proliferate, so too will the “coordination” element evolve. One major implication of the 2015-2016 PLA-wide reforms is that the PLAAF—along with the other services—is to man, train, and equip forces (in this case, as the air component) to operate and fight under the PLA’s joint Theater Command structure. While service identity, culture, and processes will remain mainstays of future analysis of the PLAAF, PLAAF contributions to joint strategy and theory along with the operational insights from the Theater Commands and associated joint systems and processes will be an increasingly important lens for understanding the changing role of airpower in the PLA.

Another likely trend is the continued increase of PLAAF activities and operations outside of China’s borders—particularly those of its aviation units, aligned with continued Party and military leaders’ calls for greater overwater capability and the ability to protect China’s overseas interests. As one example of changes already underway, around the time that the Y-20 entered service in 2016, total known contemporary PLAAF operations with aircraft landing in other countries stood at roughly three dozen as of October 2016, including exercises, competitions, and air shows as well as non-combatant evacuations, HA/DR operations, and personnel recovery missions.¹⁸⁶⁸ After four years of little fanfare, Y-20 aircraft transported COVID-related supplies and personnel to Wuhan in February 2020.¹⁸⁶⁹ The Y-20 then supported PLAAF operations to over 20 countries in spring 2020, delivering COVID-19-related supplies to Pakistan and Thailand and transporting an honor guard to Russia for a parade.¹⁸⁷⁰ The PLAAF’s spring 2020 activities marked a dramatic increase in overseas activities that is likely to only continue to expand as more Y-20s enter service.

Growing overseas PLAAF operations are likely to encompass more than airlift and associated HA/DR operations, however. In January 2019 during a Party study session with hundreds of senior CCP officials, Xi Jinping stated that “[we] must establish a security support system (安全保障体系) for the Belt and Road Initiative” or BRI.¹⁸⁷¹ This was followed by Minister of National Defense Wei Fenghe’s comments in July 2019 at a forum for senior defense officials from the Caribbean and South Pacific, in which Wei stated that the PLA will promote and increase exchanges with countries “under the framework of the BRI.”¹⁸⁷² BRI-related exchanges “with PLAAF characteristics” could potentially manifest as greater PLAAF senior leader engagement with counterparts from BRI member nations; PLAAF officers supporting broader PRC BRI-related delegations; exercises or visits by PLAAF units to BRI countries or BRI-friendly regional fora; and expanded academic engagements linked to BRI. Either in conjunction with or separate from BRI activities, the PLA could pursue additional military or dual-use facilities overseas where the PLAAF could operate as part of a formal basing presence in the vein of the PLA’s first overseas base in Djibouti, where PLAN forces are currently stationed. Likewise, access or support agreements or other mechanisms could also facilitate more frequent and complex overseas PLAAF operations.

Finally, broader PLA-wide trends will shape the PLAAF through 2029. These include the PLA’s efforts to harness new or advanced technologies such as artificial intelligence to “intelligentize” (智能化) future warfare by improving the speed of decision-making and increasing the tempo of military operations.¹⁸⁷³ Culmination of any or all of these individual trends by 2029 is not guaranteed, but the opportunities provided by airpower in terms of speed, range, flexibility, and decisive potential will continue to orient strategic debate and developments—both within the PLAAF and in the PLA writ large—for the next decade and beyond.

PLAAF Organizational Structure

This section explores potential changes to PLAAF HQ, operational units, and MUCDs.

Concerning the organizational structure of the headquarters at each level from PLAAF HQ down to the battalion level, Chapter 3 noted that the PLAAF had merged its Logistics Department and Equipment Department into a single Support Department at the TCAF level and below. However, PLAAF HQ still had both departments. These two departments will most likely be merged into a Support Department in PLAAF HQ during the 2020s. Like the Logistics Department and Equipment Department, the Support Department will continue to have both a Director and a PC.

As noted in Chapter 3, the PLAAF attempted to incorporate dissimilar fighter and attack aircraft into separate flight groups within a single air brigade starting in 2011, so that brigades could conduct dissimilar aircraft training on an easier basis, but these efforts did not appear to be successful. As a result, when the remaining air brigades were created in 2017 and were all subordinate to Bases, they mostly had a single airframe. One of the obstacles for integrating dissimilar aircraft was aircraft maintenance issues. How well the PLAAF is able to build up its maintenance force for each unit in order to coordinate dissimilar aircraft training between brigades in the 2020s will determine whether it continues to have single airframe brigades, or whether it again tries to merge them together.

Also, it is likely that some units, such as the H-6N nuclear-capable bombers, will remain separate from the shift to the Base-brigade structure, and will instead be either directly subordinate to the relevant TCAF HQ, PLAAF HQ, even though it was removed from the operational chain of command in 2016, or possibly directly subordinate to the CMC Joint Operations Command Center.

Finally, as noted in Chapter 3, the PLA has had a five-digit military unit cover designator (MUCD) system, which is a system the PLA uses to understand how units relate to one another, since 1975. The MUCD system was completely revised in 2000, which was 12 years after the PLA transitioned from 11 to 7 Military Regions. Following the 2016 reorganization, the PLA has adjusted some but not all of the MUCDs, such as assigning a new MUCD to the 106th Air [Bomber] Brigade (93671). As a result, the PLA will most likely completely revise the entire MUCD system sometime in the 2020 in order to match the new five Theater Command structure and the creation of a PLA Army HQ, Strategic Support Force (PLASSF), and Joint Logistics Support Force (JLSF).

PLAAF Personnel

This section covers future personnel changes at the CMC level, TC HQ level, and PLAAF HQ, as well as potential reforms regarding enlisted and NCO personnel, enlisted force conscription and its relationship to the training cycle, the role of women in the PLAAF, and personnel benefits and mental health issues.

Concerning personnel reforms relevant for the PLAAF within the CMC, which is the highest level in the PLA, there are four key issues.

- First, General Xu Qiliang, who was the PLAAF Commander from September 2007 until October 2012 and then became one of the two CMC vice chairmen, will most likely retire and be replaced during CCP's 20th Party Congress in late 2022. He was the first ever PLAAF officer to serve as a vice chairman; one key question is whether another PLAAF officer will replace him.
- Second, although the PLA added the Commanders of the Navy, Air Force, and Second Artillery (now the Rocket Force) as CMC Members in 2004, they were not added in 2017 to the current CMC membership, as discussed earlier in this book. The PLA could bring them back as members during the Party Congress in 2022 or 2027, or may opt to leave them off of the CMC.

- Third, although the PLA in 2016 abolished the old four General Departments and created 15 new organizations that report to the CMC, none of the Directors of the 15 organizations have been PLAAF officers. Most likely, a few non-Army officers (Navy, Air Force, and Rocket Force) will become Directors and/or Deputy Directors for a few of the organizations in the 2020s.
- Fourth, although the PLAAF had an officer serve as one of the Deputy Chiefs of the General Staff / Joint Staff Department starting in 2004, the billet became vacant in August 2017, when then Deputy Chief of Staff General Yi Xiaoguang became the Commander of the Central TC. The billet remained empty until July 2018, when Major General Chang Dingqiu assumed the billet. However, at that time, the grade for all of the Deputy Chiefs was reduced from MR / TC leader to TC deputy leader. The primary reason for the downgrading was because, prior to that, PLAAF officers needed to serve in the grade of MR / TC leader for at least two years before they could become the

PLAAF Commander and receive a grade promotion to CMC Member. Given the PLA's overall goal of creating a more joint CMC structure, including the JSD, the PLAAF will most likely continue to have one officer serve as a Deputy Chief of the Joint Staff in the future.

Concerning reforms at the TC HQ level, PLAAF General Yi Xiaoguang became the Commander of the Central TC in August 2017. As of 2020, he has remained the only PLAAF officer to serve as a TC Commander 2019. It is not clear if the Central TC Commander will remain a permanent PLAAF officer billet after Yi retires when he meets his mandatory retirement age of 65 in 2023. Even if it is not, at least one of the Eastern, Northern, or Western TC HQ will most likely have a PLAAF Commander. The Southern TC, which is responsible for the South China Sea, will most likely continue to always have a PLAN officer as the Commander. Unlike the 15 CMC organizations, the five TCs have truly become joint organizations with one permanent Army, Navy, and Air Force Deputy Commander; however, as of late 2019, all five of the TC PCs were Army officers. This will most likely continue to be the case through the 2020s, because the Army is still the dominant force within the PLA and is reluctant to make major changes that will affect its status.

PLAAF HQ will continue to see some major changes during the 2020s. As noted in Chapter 4, the PLAAF has held 13 Party Congresses since 1956, with the last one occurring in 2019. The Party Congress normally takes place about 13 to 20 months after the CCP Party Congress. Therefore, the PLAAF will most likely hold its 14th Party Congress in 2024 and 15th Party Congress in 2029. As noted in Chapter 4, changes to the actual leadership of the PLAAF rarely take place during the Party Congress. Based on analysis of the PLAAF's leadership history and PLA regulations, it appears that General Ding Laihang, who is the current (12th) Commander, will retire in 2022 when he reaches age 65, and that his successor will most likely serve for about five more years and retire in 2027. In addition, General Yu Zhongfu, who is the current (13th) PC, will retire in 2021 when he reaches age 65, and his successor will also most likely retire around 2026. In addition, every other member of the PLAAF Party Standing Committee will serve for about five years and be replaced twice through 2029.

Concerning the composition of the enlisted force, the percentage of NCOs will most likely increase, while the percentage of the two-year enlisted force will decrease. As in the past, the percentage of NCOs in the PLAAF will most likely exceed the percentage within the Army. In addition, the number of two-year enlistees who already have some college education and become an NCO will most likely increase, but will most likely not exceed 50 percent because there appears to be a set percentage and there is concern that non-college students may feel undervalued and not perform at their peak during their two years of service if they believe they have no opportunity to become an NCO. Although the PLA created a formal master chief program in 2014, the NCOs who fill those billets are still not part of the Party Standing Committee, so overall their leadership role is not extensive. Therefore, it is unlikely that master chiefs will gain much more responsibility concerning actual leadership of the PLAAF during the 2020s.

In order to recruit civilian college and university students and graduates, in 2013 the PLA moved the entire recruitment/conscription process forward three months, which is now called the summer / fall conscription/recruitment cycle instead of the winter

conscription/recruitment cycle. As noted in Chapter 6, in 2015, the PLAAF increased its basic training from about seven weeks to three months and consolidated its basic training into “new soldier brigades” each of which has about 1,000 new enlistees. In January 2020, the PLA announced that it would begin enlisting new enlisted personnel during two separate periods per year instead of just once per year.¹⁸⁷⁴ The primary reason for this is that, under the one-a-year system, the overall PLA and each of services and branches without about 400,000 new enlisted personnel while waiting for their replacements to finish basic training, and are, therefore, not up to 100 percent all year long. As such, their peak exercise season occurs during the spring and summer; however, even then they are not at 100 percent because every new officer has just graduated from a military academy and has no operational experience. According to the announcement:

“Recruitment for the first half of the year will run from mid-February to the end of March, and the recruitment for the second half will run from mid-August to the end of September. Retirement for military personnel, therefore, will also change to twice a year. Conscripts shall serve in active service for two years. The total number of recruits will remain stable compared with previous years. The standards, procedures and relevant policies of the recruitment remain unchanged, and the focus will still be on college students.”

However, an official news release in February 2020 stated that China had suspended the new system due to COVID-19 and postponed various elements of recruitment, though recruitment did continue for the year.¹⁸⁷⁵ The new cycle program was reinstated in December 2020 for 2021.¹⁸⁷⁶

This program will most likely continue through the 2020s and will affect how units change their annual training cycle accordingly. As Blasko and Clay explain, “When implemented, two recruitment and demobilization cycles per year could even out personnel strength at higher levels in “conscript-heavy” units allowing for increased unit coherence and readiness,” as the recruitment and training cycle has traditionally been a key driver in these units’ waxing and waning readiness throughout the year.¹⁸⁷⁷ In addition, “in theory, being less dependent on conscripts, ship and aviation units should be able to maintain higher levels of unit readiness for longer periods of time than the ‘conscript-heavy’ units in most of the Army, Marines, Airborne, and the Rocket Force.”¹⁸⁷⁸

The PLAAF’s employment of female pilots and air crews spans decades, as women began serving in the aviation branch/arm starting in 1951 (see Chapter 6 for more details). Given that there was only a two-year interval between the 11th and 12th cohorts of PLAAF female aviators recruited, in 2017 and 2019, respectively, this pattern will most likely continue such that education and training for the 13th to 17th groups will most likely occur through the 2020s. In order to be able to deploy these female pilots, the PLAAF will most likely include more female fighter and attack (JH-7) pilots, as well as increase the number of female transport pilots for the new Y-20s.

Overall, however, less than 0.1% of the pilots the PLAAF recruited between 1987 and 2018 were women, and for much of that period the PLAAF did not fully integrate women into operational units with men.¹⁸⁷⁹ The PLAAF appears to have realized at least some of the flaws of this system and has increased the rate of recruitment to one cohort only every three-to-eight years in the 1990s and 2000s down to every two years for recent cohorts. However, the program remains miniscule; cohort size only increased from 35 women in 2017 intake to 40 in 2019. It is also not clear if women will be allowed to serve as bomber or special mission aircraft pilots. Overall, whether the PLAAF will move beyond token employment of women in the force by 2029 is yet to be determined. As discussed in Chapter 4, little information is available on the role of women in other branches and organizations within the PLAAF, but the

lack of propaganda attention highlighting women in non-aviation roles suggests the story in those organizations is not much better.

Finally, as discussed in Chapter 4, during the 2000s, the PLA as a whole had to adjust its regulations by significantly increasing the amount of payment provided for off-base housing for married personnel in order to be able to retain qualified personnel, who were not permitted to live on base with their family until they had about 12 years in the service. This program will most likely continue through the 2020s by providing more benefits for families and will pull more money out of the operating budget. In addition, as noted in Chapter 4, the PLA has had to deal with a growing amount of mental health issues during the 2010s. This situation will most likely increase during the 2020s due to more intense training under more difficult requirements, COVID-19-related issues, and family issues.

PLAAF Education System

This section examines prospects for additional education system reform within the PLA and potential new student recruitment initiatives.

As noted in Chapter 5, the PLA held 16 PLA Military Educational Institutions Conferences from 1950 to 2011. Although it held a conference about every 13 years from 1986 to 2011, it did not hold any conference through 2020 under Xi Jinping's leadership, even though major changes occurred in 2017 when the number of officer academic institutions was reduced from 67 to 37 and reduced the number of PLAAF officer academic institutions was to nine. Therefore, the next conference will most likely take place around 2024.

Given the PLAAF's organizational structure and the responsibility assigned to each PLAAF academic institution to educate and train personnel for each career track and billet, it is doubtful that the number of PLAAF academic institutions will be reduced again during the 2020s. The story is similar for flight schools; although the PLAAF originally had about 15 flight schools in the early 1980s, that number was reduced to seven in the 1990s when they became flight academies, and to three in 2011 when they were merged and renamed as flight academies. Given the different responsibilities for the three flight academies in 2019, it is doubtful if the number will be decreased or increased during the 2020s.

One mystery that remains, however, is that in 2017 when the PLA reduced the total number of officer academic institutions, it also abolished the Airborne Troop College. It is not clear where the PLAAF's Airborne Corps' officers are receiving their college education.

A larger question is whether any program(s) will replace the PLA's National Defense Student Program, which began in 1998 and was implemented into 118 civilian universities and colleges, which included 19 PLAAF programs. This program began to close down in 2017 when the program did not recruit any new students. As a result, the final class of students graduated in 2020, and as of the end of 2020, it is not clear if the PLA will implement any follow-on initiatives to replace it. Although the PLA originally desired 60 percent of its new officers to come from the National Defense Student program and from direct recruitment of college graduates, that goal was not met.¹⁸⁸⁰ Assuming that the PLA will replace this program with direct recruitment of graduating college seniors, they will have not had any military training at all, so they will need to receive not only some basic training but also technical and skills training. In addition, there are a number of obstacles to implementing such a program, as well as changes that the PLA and PLAAF will need to consider:

- 1) Very few of these students would likely already be Party members, so they cannot be part of the unit's Party Committee until they become a Party member, which normally takes two years; as such, they will not be able

to be part of the Party Committee system within their unit. This may lead the PLA to begin requiring all future student program members to become Party members before they go on active duty.

- 2) Under the National Defense Student program, there was a five percent quota for women to participate the program. In addition, about 40 percent of the students went directly to graduate school. Under a new program, the PLAAF could directly recruit graduate students, or else recruit immediate college graduates and allow them to attend graduate school before they assume their air force billets. Also, a continued quota would significantly restrict women's participation in the program.
- 3) Most of the graduates served in the special technical career track rather than the other four tracks, so it is not clear if newly recruited officers under the new program would also be confined to the special technical track.

As noted in Chapter 5, two relatively new programs support PLAAF recruitment of cadets and are likely to continue. The PLAAF instituted a Dual-Enrollment Program (DEP) in three Beijing universities starting in 2011 that will most likely remain about the same size over the next decade. The Dual-Enrollment Program is not part of the National Defense Student Program. In 2018, 180 students completed their three-year program and began their next year at the Air Force Aviation University (AUAF). Also as discussed in Chapter 5, the PLAAF created 16 Teenagers Aviation School of the Air Force (TASAF) to begin preparing middle school and high school students to become pilot cadets. In 2015, the first five schools recruited a total of 405 students. In August 2018, 178 of the students (44 percent) were selected to attend AUAF.¹⁸⁸¹ Once all 16 schools have students graduating and attending AUAF, that number should reach about 570 new cadets at AUAF each year. Together, the DEP and TASAF programs will equate to about 50 percent of all new cadets, which means that the PLAAF will not have to directly recruit as many high school graduates for the program.

PLAAF Training System

This section explores how, during the 2020s, the PLAAF's training system will be influenced by a new *Outline of Military Training and Evaluation* (OMTE) to include joint and combined training, more complicated training exercises and competitions (the Five Key Training Brands), and training farther beyond China's borders.¹⁸⁸² Given that there has been an eight to nine year period between the last three outlines, the next outline will most likely be put out for testing around 2024-2025 and be approved in 2026-2027.^{jp} As the PLAAF implements these changes, it will also incorporate new aircraft and other systems and platforms into its training system.

One of the key components will most likely be the enhancement of joint training. For example, in 2018, the PLAAF Party Committee actively reflected on ways to adapt to the new joint operations command system. Specifically, it addressed major issues such as "what does 'joint' entail in operations command," "how to collectively build and manage troops," and "how to integrate joint support."¹⁸⁸³ In addition, the new OMTE will most likely include discussion of more training over water at longer distances and more training at night and under poor weather conditions. It is not clear, however, if that training will include an increased amount of joint training in the same airspace with Naval Aviation.

Additionally, in the latest version of China's *Defense White Paper* released in 2019, the PLA states that its goal is to "meet its rightful security needs and contribute to the growth of the world's peaceful forces."¹⁸⁸⁴ All this considered, we can expect any changes in the new OMTE in the 2020s to align with similar calls on the PLA to expand its activities outside of China's borders. The PLAAF will most likely continue promotion of "open/far-seas" training while engaging in long-range navigation over water to ensure pilots are ready to meet the challenge of a potential conflict outside Chinese borders.

^{jp} Since 1955, the revised OMT / OMTE documents were approved and issued in 1957, 1978, 1980, 1989, 1995, 2002, 2009, and 2018.

One last consideration for the OMTE is the extent to which the PLA is able to bridge the most innovative parts of China's civilian and military sector via its military-civil fusion strategy. If the PLA is relatively successful, China may reap greater economic efficiencies in manufacturing and marketing while promoting synergies in aerospace technology. The new OMTE would adapt to these new advancements through increased combat training during all times of year, weather, and at night, increasing complexity and duration to maneuvers and tactics, adoption of more advanced flight simulation training technology, or some combination of all of the above.

One of the key driving factors for any changes in the training system will be the deployment of more advanced weapon systems, including aircraft and SAMs. As in the past, it will still most likely take a brand new type of aircraft or weapon system about one to two years to become initial operational capable (IOC) once it is deployed to the first operational unit. The reason for this is that the unit must start from scratch to train its operators, maintenance personnel, and logistics personnel, as well as write all the new regulations and maintenance manuals from start to finish. The period may also take longer if it involves receiving a brand new system from another country like Russia, because the PLAAF doesn't necessarily receive any written maintenance manuals for the new systems and the Russians apparently do not deploy any personnel to help train the PLAAF in the new airframe. For example, several *Air Force News* articles from 2002-2006 described the process and difficulties units had while transitioning to new Sukhoi aircraft. Specifically, one of the major themes was that all of the instrument plates and voice warnings were in Russian, so the pilots had to learn enough Russian to pass a test before they could get in the aircraft. Besides learning basic Russian, the pilots spent the first part of their training studying theory and conducting simulator training for the new aircraft.

The PLAAF has apparently changed the way it has conducted this transition in recent decades, but it will still most likely take at least one year to complete the full transition for new aircraft that are somewhat similar to models already within the force. For example, the transition to the Russian Su-35s likely moved along quickly because of the similarities between the Su-27 and Su-35 aircraft. However, brand new aircraft, such as the J-20, could take longer.

Overall, given that the PLA as a whole is beginning to shift to two cycles of new enlisted personnel per year, this will most likely affect the PLAAF's annual training cycle, such that more training can be accomplished each month rather than focusing on the summer period. However, it is important to remember that all officer cadets graduate around 1 July and are assigned directly to their operational unit, where they have no operational experience and are on probation for a year. As such, even though the enlisted force is at their peak in the summer period, the junior officer corps is not.

The PLAAF will continue to expand its five key training brands through the 2020s, which will still be a step-by-step process. This will include more free air combat and pilot autonomy training, as well as more dissimilar aircraft and confrontation training where the "Blue Force" wins, but it does not necessarily mean that pilots will be able to spontaneously react to an unfamiliar situation by using tactics or combat methods that they have not trained on before. However, as time progresses and there is more use of systems like the Flight Parameter Recording System (*feican*), the PLAAF will most likely reduce the amount of time it takes to identify the need for new types of tactics and combat methods and the process it takes to test and approve them. Naval Aviation will also most likely become more involved in the five training brands and will most likely win some of the awards.

As the PLAAF receives more advanced aircraft with better engines and better maintenance capabilities, the annual flying quota for each flight group and pilot will most likely increase gradually. However, aircraft and engine maintenance will continue to be a limiting factor, to include having a dedicated maintenance crew for each airframe and needing to have quarterly maintenance stand downs and one day of maintenance for each flying day. The PLAAF will also most likely improve its simulators, so that pilots can simulate their missions before they actually fly them. Even though the pilots may receive more flying hours, pilot fatigue, especially at night, will continue to be an issue.

As the PLAAF increases the size of its Y-20 force, it will most likely use those aircraft to support the PLAAF's and PLA's military diplomacy, including exercises and visits to foreign countries. For example, as noted earlier, several Y-20s have been used to provide COVID-19-related medical supplies to multiple countries in early 2020.¹⁸⁸⁵ The Y-20 fleet will also continue to increase its support for the Airborne Corps to deploy more troops for training missions and, if necessary, employ them during combat.

Although the PLAAF had not flown any sorties across the centerline of the Taiwan Strait from 2011 through 2019, as discussed in Chapter 1, the PLAAF and Naval Aviation began flying frequent sorties across the centerline and into Taiwan's ADIZ between Taiwan and Pratas (Dongsha) Islands in the South China Sea in February 2020.^{jq,1886} Although, as noted in Chapter 1, there was a tacit agreement about a centerline and the PRC's MND used the term as late as March 2020, Beijing denied in September 2020 that any such agreement existed.¹⁸⁸⁷

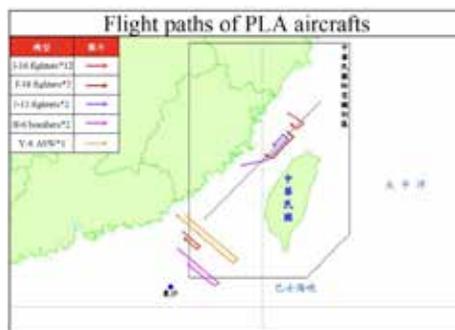
The increase in sorties was partially in response to PRC perceptions of increasing political and military relations between the United States and Taiwan. Specifically, since February 2018, the U.S. Congress has submitted at least five pro-Taiwan bills in order to improve relations.¹⁸⁸⁸ This included approving 1) the Taiwan Travel Act, which encourages high-level government exchanges between Taipei and Washington, 2) the Taiwan International Participation Act, which advocates that international organizations include Taiwan despite China's customary opposition, and 3) the Taiwan Allies International Protection and Enhancement Initiative Act, which directs the State Department to tell Congress about government moves aimed at strengthening Taiwan's diplomatic relations "partners" in the Indo-Pacific. In February 2020, U.S. Senator Ted Cruz proposed a bill to undo a ban on Taiwan diplomats and military personnel displaying Taiwan's official flag on U.S. government property. In May 2020, Representative Mike Gallagher introduced the Taiwan Defense Act to ensure the United States can help Taiwan resist China's "aggressive military build-up" by maintaining the ability to fend off a Chinese invasion. In addition, in 2020, the United States began the process to approve seven foreign military sales programs worth \$13.2 billion, including mines, cruise missiles, drones, F-16 fighter jets, M1A2T Abrams tanks, portable Stinger anti-aircraft missiles, and MK-48 Mod 6 torpedoes.¹⁸⁸⁹

The sorties escalated in August 2020 in response to a two-day visit by the Secretary of the U.S. Health and Human Services (HHS), Alex Azar, who arrived on 9 August for an official visit. Azar's trip to Taiwan was the highest-level visit by a U.S. official since Washington severed diplomatic relations with Taipei in 1979. The health secretary's trip was facilitated by the Taiwan Travel Act, which was passed in 2018 and calls for reciprocal visits by officials of both countries "at all levels." His visit was followed shortly thereafter by a visit by Keith Krach, who is the State Department's Undersecretary for Economic Affairs. The PLAAF continued to fly sorties throughout September and October and will most likely continue to fly similar sorties on a routine basis and in response to any other visits to Taiwan or visits to the United States by high-level personnel.

In response to all of the flight activity in 2020, Taiwan's MND created a tab on its official website that showed daily PLA flight activity in Taiwan's ADIZ covering flights between the coast (Fujian, Zhejiang, and Guangdong) and the centerline and flights crossing the middle line and also flying into the southern portion of the ADIZ between Taiwan and Pratas Islands.¹⁸⁹⁰ Figure 8-1 provides an example of the types and number of PLA aircraft that entered Taiwan's ADIZ on 19 September 2020.¹⁸⁹¹

^{jq} Altogether, the aircraft involved during the flights starting in February 2020 included H-6 bombers, fighters (J-10, J-11, J-16, Su-30), KJ-500 AEW&C aircraft, Y-9 electronic warfare (EW), and Y-8 antisubmarine warfare (ASW), EW, ELINT, and reconnaissance aircraft.

Figure 8-1: PLA Aircraft Flight Paths in Taiwan ADIZ



On 7 October 2020, Taiwan’s MND reported that the PLA had conducted 1,710 military aircraft sorties into the ADIZ over the Taiwan Strait in 2020, of which 49 crossed the centerline and 219 flew into the southwest portion of the ADIZ between Taiwan and Pratas (Dongsha) Islands, which was the highest number of total sorties in any year since 1990 and the first time the PLA crossed the centerline since 2011.¹⁸⁹² According to Taiwan MND reports, the PLA conducted incursions into Taiwan’s ADIZ on 29 days from 16 September to 30 October 2020, which included KJ-500s, Y-9s, and Y-8s.¹⁸⁹³ As of 6 December 2020, the PLA had flown more than 120 incursions into the ADIZ since mid-September.¹⁸⁹⁴ The following bullets summarize the flights from 20 September to 6 December:¹⁸⁹⁵

- The following aircraft were involved, but it is not clear which ones belong to the PLAAF and Naval Aviation:
 - o Y-8 anti-submarine warfare (ASW / 反潜机), Y-8 reconnaissance (技术侦察机), Y-8 electronic warfare (EW / 远干机), Y-8 ELINT (电侦机).
 - o Y-9 EW.
 - o KJ-500 AEW&C.
 - o H-6 bombers.
 - o J-10, J-11, J-16, and Su-30 fighters.
- Sorties were flown on 55 out of the 81 days.
- Sorties were flown on every day of the week, including Saturday (10) and Sunday (8).
- Only two sorties involved H-6 bombers (two aircraft per sortie), which were escorted by fighters.
- Only two sorties involved a KJ-500 but no other aircraft were involved.
- Only seven sorties involved a Y-9.
- Only three sorties involved fighters.^{jr}
- Y-8s flew the most sorties: ASW (49), Reconnaissance (20), EW (11), ELINT (1).

Concerning predictions for the rest of the decade, the PLA will most likely continue to conduct a roughly equivalent number of sorties per month into Taiwan’s ADIZ. It will most likely gradually increase the number of sorties by bombers and fighters, but will still include only a few per month.

According to Taiwan military officials, Taiwan’s core existing fighters—F-16s, Mirage 2000s and Indigenous Defense Fighter (IDF) jets—have all been in service for over 20 years.¹⁸⁹⁶ As such, the dramatic increase in incidents has not only forced Taiwan’s pilots and fighter jets to maintain a higher degree of combat readiness, it has also led to a huge increase in maintenance costs, including fuel and replacing spare parts as well as increasing the workload of maintenance crews and military logistics personnel. One of the main challenges is due to the fact that most of Taiwan’s military aircraft were made overseas and Taiwan does not have the ability to build these spare parts itself.

^{jr} One sortie involved 2xH-6, 4xJ-10, 4xJ-11, and 8xJ-16. One sortie involved 2xH-6, 2xJ-10, 2xJ-11, and 12xJ-16. One sortie involved 2xJ-10, 2xJ-16, and 2xSu-30.

The military officials also pointed out that the PLA aircraft incursions are a greater burden on China as the Mission Capable Rate of the PLA's latest generation of fighter jets is only about 60 percent. PLA fighter engines also have a relatively short lifespan which is only about one-fourth that of the engines of U.S. fighters.

Finally, the PLAAF will most likely increase the amount and types of combined training it does with foreign militaries both abroad and in China. For example, on 23 July 2019, two H-6K bombers from the “Model Bomber Group” formed a mixed formation (混合编队) with two Russian Tu-95 aircraft and conducted the first joint airborne strategic patrol (中俄联合空中战略巡航) over the Western Pacific.¹⁸⁹⁷ As noted in Chapter 6, on 22 December 2020, two Russian Tu-95s and four PLAAF H-6Ks from an unidentified unit conducted the second joint patrol over the Western Pacific.¹⁸⁹⁸ Although the article stated that the missions were both over the Western Pacific, it clearly identified the flights as being over the Sea of Japan and the East China Sea, so they most likely did not actually fly into the Western Pacific. According to the Russian Defense Ministry, the joint mission was intended to “develop and deepen the comprehensive Russia-China partnership, further increase the level of cooperation between the two militaries, expand their ability for joint action and strengthen strategic stability.” These types of joint maritime patrols will most likely continue at least once a year and will extend farther into the Western Pacific. Besides continuing its combined training with Russia, Pakistan, and others mentioned in Chapters 6 and 7, the PLAAF will most likely begin training with new countries as well.

PLAAF Military Diplomacy

The section assesses future PLAAF international and overseas exchanges by leaders, units, and academic institutions.

The PLAAF will likely gradually expand its military diplomacy, exchanges, and cooperation efforts through the next decade. This will likely include increasing its combined training with foreign countries, including the annual *Shaheen* exercise with Pakistan, the SCO *Peace Mission* exercise series, and exercises with other countries. The Bayi Aerobatics Team will most likely continue to participate in the Zhuhai Airshow and the PLAAF will hold a conference during the airshows, both of which will be attended by dozens of foreign air force leaders. The Bayi Aerobatics Team will also likely participate in foreign airshows as well, and the Airborne Corps will most likely continue to participate in exercises with other countries.

The Commander will most likely continue to be limited to one trip abroad per year and host several counterparts. Furthermore, as in the past, the Commander will most likely not visit the same country twice or host the same foreign Commander twice. The PC will most likely rarely travel abroad or host any foreign air force leaders. The number of functional exchanges to discuss issues such as training or aircraft logistics and maintenance will most likely continue but will not increase to any extent.

The AFCC will continue to host the foreign officer course that was created in 2000 and will most likely increase the number of foreign countries involved, though the USAF has never sent anyone to the course and most likely will not do this during the 2020s. Each year the Command College also sends about 20 students from its Campaign Command Course abroad to one or two countries for a couple of weeks. As a general rule, this is often the only time these officers are allowed to travel overseas. This will most likely not change during the 2020s. In addition to hosting the foreign officer course, the Command College has also sent faculty members abroad to several countries, including Russia and Italy, to study abroad for at least one year. The PLAAF will also take advantage of the annual Xiangshan Forum in Beijing to meet with foreign air force leaders who attend the event. These exchanges will most likely continue through the 2020s and will also most likely include some new countries.

As in the past, some senior PLAAF officers, including TCAF senior officers (Commanders and Deputy Commanders), will have the opportunity to travel abroad as part of a senior PLA delegation, such as a CMC vice

chairman or Chief of the Joint Staff. Their participation will continue to be an indicator that they will move up their career ladder in the next few years.

As the PLAAF's Y-20 fleet increases, it will most likely support UN peacekeeping operations by transporting personnel abroad rather than using civilian aircraft. In addition, the PLAAF likely continue to provide even more airlift support for domestic and international military operations other than war (MOOTW), such as earthquakes, tsunamis, and pandemics. For example, in April 2020, the PLAAF used Y-20s and Y-9s to send COVID-19-related medical supplies to several countries, including Cambodia, Myanmar, Pakistan, and Laos.

Finally, although the PLAAF has increased its exchanges with foreign air forces, it has not increased its overall transparency, especially concerning its order of battle and force size (personnel), and most likely will not do so during the 2020s. However, increasing the scale and scope of operations beyond China's border will provide more opportunities for other militaries to witness the PLAAF in action. Likewise, the PLAAF will continue to have the opportunity to learn firsthand how foreign militaries operate.

Final Thoughts: The PLAAF's 10 Questions

In June 2005, *Air Force News* had a lengthy article on page 1 that posed 10 questions about PLAAF war preparedness as presented during a briefing given at a conference in the Nanjing MR by Senior Colonel Xu Xueqiang, who was the Commander of the 29th Air

Division in Quzhou, Zhejiang Province.^{js, 1899} The title of his briefing was “Cast Away Illusions and Prepare for War” (丢掉幻想准备打仗). The theme of the conference was “Preparing for Military Struggle” (军事斗争准备). The briefing focused on the following “nine questions” plus one final question that PLAAF personnel consistently asked about the PLAAF's preparation for military struggle. The article did not provide answers for the questions, but did state that the briefing “stirred the deaf and enlightened the blind” (振聋发聩). Nor was it possible to discern from the tone of the article whether the PLAAF believed it was or was not prepared for war based on the 10 questions.¹⁹⁰⁰ The questions were:

1. If we were at war right now, have we prepared well?
如果现在就打仗, 我们准备好了没有?
2. Have our airborne flight commanders [the lead pilot of two formations] mastered their skills sufficiently?
我们有没有过硬的空中指挥员?
3. Have we inculcated the psychological and physical qualities required for harsh/cruel warfare? [Note: In other words, have we prepared ourselves psychologically and physically for the harshness of war?]
我们有没有适应残酷战争的心理素质和身体素质?
4. If we had to undertake sustained/continuous combat [operations] for one to two months or for half-a-year, could our air crews, ground crews, and staff do it?
我们的空勤, 地勤和参谋人员如果连续一两个月或者半年连续值班战斗行不行?
5. Can we sustain operations continuously 24 hours a day?
24小时连轴转能否演得过来?
6. How many takeoffs and landings [sorties] can our pilots fly during high sortie periods?
飞行员进行强度出动能飞几个起落?
7. Can our maintenance personnel guarantee our aircraft will not have any malfunctions?
机务保障能否保证飞机没有故障?

js In 2011, Xu became the Commander of the Shanghai Command Post. In 2013, he was promoted to major general and, in 2014, he became the Chief of Staff of the Nanjing MRAF. In 2016, he remained as the Chief of Staff of the Eastern TCAF. In August 2017, he became the Commander of the Northern TCAF and a concurrent Deputy Commander of the Northern TC. He was promoted to lieutenant general in June 2019.

8. Do we have the proper tactics to shoot down and damage enemy aircraft?
我们有没有击落敌机战术意识?
9. Have we organized [our] human talent into units that can fight a war victoriously?
有没有组织打胜仗的人才队伍?
10. Have we made preparations just like we would if we were to go to war tomorrow?
我们有没有像明天就要打仗一样做准备?

Given Xu's current position as the Commander of the Northern TCAF, he and other PLAAF leaders are probably still asking the same questions. Although the PLAAF has made progress in each area, it is most likely that, based on information presented in this book, it is still asking the same questions and still has shortcomings in each area that it will continue to address during the 2020s.

Appendix A: Abbreviations and Acronyms

This appendix includes all of the English acronyms such as PLAAF and abbreviations such as Bur for bureau found in this book. The second column has the full English term. The third column has the Chinese characters that are relevant to the entries that are based on Chinese military terms. No Chinese characters are listed for non-military entries or entries that are based on English acronyms, abbreviations, and terms (e.g., Department of Defense, Air Force Doctrine Document).

Acronym or Abbreviation	English Term	Chinese Term
1LT	1st Lieutenant	中尉
2LT	2nd Lieutenant	少尉
A/AIRA	Assistant Air Attaché	空军副武官
A/ALUSNA	Assistant U.S. Naval Attaché	
A/ARMA	Assistant Army Attaché	
AAA	Antiaircraft artillery	高射炮
AD	Air division	航空兵师
ADF	Air Defense Force	防空军
ADIZ	Air Defense Identification Zone	防空识别区
ADM	Admiral	海军上将
AECT	Academy of Equipment and Command Technology	装备指挥技术学院
AEW	Airborne early warning	空中预警
AEW&C	Airborne early warning and command	空中预警指挥
AFB	Air Force Base (USAF)	
AFCC	Air Force Command College	空军指挥学院
AFDD	Air Force Doctrine Document (USAF)	
AFEU	Air Force Engineering University	空军工程大学
AFPRO	USAF's Air Force Plant Representative Office	
AIRA	Air Attaché	空军武官
AIT	American Institute in Taiwan	
ALBM	Air-launched ballistic missile	空射弹道导弹
ALUSNA	U.S. Naval Attaché	
AMS	Academy of Military Science	军事科学院
AOR	Area of responsibility	责任区
ARMA	Army Attaché	
ATC	Air traffic control	航空管制
AU	Air University (USAF)	
AUAF	Aviation University of the Air Force	空军航空大学
AWACS	Airborne Warning and Control System (USAF)	
AWC	Air War College (USAF)	
BUAA	Beijing University of Aeronautics and Astronautics (Beihang)	北京航空航天大学(北航)
Bur	Bureau	局
C2	Command and control	指挥管制

C3	Command, control, and coordination	指挥管制协同
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance	指挥、控制、通信、计算机、情报、监视和侦查一体系统 ¹⁹⁰¹
CAAC	Civil Aviation Administration of China	中国民用航空局
CAPS	Council for Advanced Policy Studies	
CASI	China Aerospace Studies Institute	
CBM	Confidence-building measures	
CCDI	Central Commission for Discipline Inspection	中国共产党中央纪律检查委员会
CCP	Chinese Communist Party	中国共产党
CDR	Commander	司令员; 长; 主任; 海军中校
CEIP	Carnegie Endowment for International Peace	
CEME	Complex electromagnetic environment	复杂电磁环境
CIA	Central Intelligence Agency	
CISS	China Institute for International Strategic Studies	中国国际问题研究所
CMC	Central Military Commission	中央军事委员会; 中央军委
CMSAF	Chief Master Sergeant of the Air Force (USAF)	
CMSGT	Chief Master Sergeant (USAF)	
CMSI	China Maritime Studies Institute	
CMSS	China Military Sciences Society and China Military Science Society and China Association of Military Science	中国军事科学学会
CNA	Center for Naval Analyses	
CNKI	China National Knowledge Infrastructure	中国知网
COL	Colonel	大校
COVID	Coronavirus	
CP	Command post	指挥所
CPPCC	Chinese People's Political Consultative Conference	中国人民政治协商会议
CPT	Captain	上尉; 海军上校
CRSSTAW	China Research Society of Sun Tzu's Art of War	中国孙子兵法研究会
CSAF	Chief of Staff of the Air Force (USAF)	
CSBA	Center for Strategic and Budgetary Assessments	
CSLIP	Cadet Summer Language Immersion Program	
CSMS	China Society of Military Science	中国军事科学学会
CSSAP	Cadet Semester Study Abroad Program	
DAAR	Defense against air raid	
DAO	Defense Attaché Office	武官处
DATT	Defense Attaché	国防武官
DCA	Defensive counterair (USAF)	
DCT	Defense Consultative Talks	
DDIR	Deputy Director	副X长
DEP	Dual-Enrollment Program	双学籍
Dept	Department	部
DGI	Defense Group Inc.	
DIA	Defense Intelligence Agency	
DIC	Discipline Inspection Commission/Committee	纪律检查委员会
Div	Division	师; 处
DLI	Defense Language Institute	
DOD	Department of Defense	
DSU	Directly subordinate unit	直属部队
ECM	Electronic countermeasures	电子对抗

ELINT	Electronic Intelligence	
ENS	Ensign	海军少尉
ESF	East Sea Fleet	东海舰队
FA	Field army; Flight academy	野战军; 飞行学院
FEAF	Far East Air Forces	
FEZ	Fighter engagement zone	战斗机交战区; 战斗机作战空域
FIR	Flight Information Region	飞航情报区; 飞行情报区
FMS	Foreign military sales	
FTTB	Flight Test and Training Base	飞行试验训练基地
FTTC	Flight test and training center	飞行试验训练中心
GAD	General Armament Department	总装备部
GCI	Ground-control intercept	
GDP	Gross domestic product	
GEN	General	上将
GLD	General Logistics Department	总后勤部
GPD	General Political Department	总政治部
GSD	General Staff Department	总参谋部
HA/DR	Humanitarian assistance and disaster relief	人道主义救援与减灾
HHS	U.S. Health and Human Services	
HPF	Housing Provident Fund	
HQ	Headquarters	Note: No PLA term for headquarters
IADS	Integrated air defense system	
IAG	International Army Games	国际军事比赛
ICAO	International Civil Aviation Organization	国际民航组织
IDA	Institute for Defense Analysis	
IDF	Indigenous defense fighter	
IFR	Instrument flight rules	复杂气象飞行
IISS	International Institute for Strategic Studies	
IO	Information operations	信息作战
IOC	Initial operational capability	
ISR	Intelligence, surveillance, and reconnaissance	
JASDF	Japanese Air Self Defense Force	
JEZ	Joint engagement zone	
JLSF	Joint Logistics Support Force	联合保障部队
JMAS	Joint Military Attaché School	
JOCC	Joint Operations Command Center	联合作战指挥中心
JSD	Joint Staff Department	联合参谋部
KMT	Kuomintang; Chinese Nationalist Party	國民黨 (国民党)
LCDR	Lieutenant Commander	海军少尉
LD	Logistics Department	后勤部
LOROP	Long-Range Oblique Reconnaissance	
LT	Lieutenant	海军上尉
LTC	Lieutenant Commander	海军少校
LTG	Lieutenant general	中将
LTJG	Lieutenant Junior Grade (JG)	海军中尉
LTSG	Long Term Strategy Group	
MAAG	Military Assistance Advisory Group	
MAC	Military Area Command; Military Affairs Commission	军区; 中央军事委员会/ 中央军委

MAI	Ministry of Aviation Industry	航空工业部
MAJ	Major	少校
MAKS	Moscow Air Show	
MANPAD	Man-portable air defense system	
MAS	Ministry of Aero-Space Industry; Ministry of Aeronautics and Astronautics	航空航天工业部
MASINT	Measurement and Signature Intelligence	
MCF	Military-civil fusion	军民融合
MEZ	Missile engagement zone	导弹交战区; 导弹使用区; 导弹拦截区
MG	Major general	少将
MMCA	Military Maritime Consultative Agreement	
MND	Ministry of National Defense	国防部
MOE	Ministry of Education	教育部
MOOTW	Military operations other than war	非战争军事行动任务
MOU	Memorandum of Understanding	
MR	Military Region	军区
MRAF	Military Region Air Force	军区空军
MSG	Military Strategic Guidelines	军事战略仿真
MUCD	Military unit cover designator	部队代号
MUHS	Modoc Union High School	
N/A	Not applicable; Not available	
NAD	Naval air division	海军航空兵师
NASIC	National Air & Space Intelligence Center	
NCO	Noncommissioned officer	士官
NDAA	National Defense Authorization Act	
NDU	National Defense University	国防大学
NFU	No first use	
NPC	National People's Congress	全国人民代表大会
NTS	Navigation Training School	
NUDT	National University of Defense Technology	国防科学技术大学
O&M	Operations and maintenance	
OCA	Offensive counterair	
OJT	On-the-job training	在职训练
OMT	<i>Outline of Military Training</i>	军事训练大纲
OMTE	<i>Outline of Military Training and Evaluation</i>	军事训练与考核大纲
OPFOR	Opposition force	对抗
OSD	Office of the Secretary of Defense	
OTHR	Over-the-horizon radar	超视距雷达
PACAF	Pacific Air Force	
PACOM	Pacific Command (currently INDOPACOM)	
PAFD	People's Armed Forces Department	人武部; 人民武装部
PAPF	People's Armed Police Force	人民武装警察部队
PC	Political commissar	政治委员; 政委
PD	Political Department	政治部
PKO	Peacekeeping operations	联合国维持和平行动
PKU	Peking University	北京大学; 北大
PLA	People's Liberation Army	人民解放军
PLAA	PLA Army	人民解放军陆军

PLAADF	PLA Air Defense Force	人民解放军防空军
PLAAF	PLA Air Force	人民解放军空军
PLAN	PLA Navy	人民解放军海军
PLARF	PLA Rocket Force	人民解放军火箭军
PLASAF	PLA Second Artillery Force	人民解放军第二炮兵
PLASSF	PLA Strategic Support Force	人民解放军战略支援部队
PME	Professional military education	
POL	Petroleum, oil, and lubricant	油料
PRC	People's Republic of China	中华人民共和国
PWD	Political Work Department	政治工作部
R&D	Research and development	研究发展
RADM	Rear Admiral	海军少将
RCS	Radar cross-section	
Ret.	Retired	
RIMPAC	Rim of the Pacific Exercise	
RMB	Renminbi	
ROC	Republic of China (Taiwan)	中華民國 (中华民国)
ROCAF	Republic of China Air Force	
ROE	Rules of engagement	
ROK	Republic of Korea	
S&T	Science and technology	科学技术
SAM	Surface-to-air missile	地空导弹
SAR	Strategic air raid	
SAR	Search and rescue	
SCO	Shanghai Cooperation Organization	上海合作组织
SCOL	Senior colonel	大校
SCPT	Senior captain	海军大校
SD	Staff Department	参谋部
SEAD	Suppression of enemy air defense	
SEATO	Southeast Asia Treaty Organization	
SECAF	Secretary of the Air Force (USAF)	
SIGINT	Signals Intelligence	
SMS	Science of Military Strategy	军事战略学
SoS	System-of-systems	体系对抗
SSF	South Sea Fleet	南海舰队
TASAF	Teenagers Aviation Schools of the Air Force	空军青少年航空学校
TC	Theater Command	战区
TCAF	Theater Command Air Force	战区空军
TDY	Temporary duty (USAF)	
TRB	Technical reconnaissance bureau	技术侦察局
TUD	True unit designator	部队番号
U.S.; US	United States	美国
UAV	Unmanned aerial vehicle	无人机
UCD	University of California at Davis	
UN	United Nations	联合国
UNPKO	United Nations Peacekeeping Operations	联合国维和行动
UNSC	United Nations Security Council	联合国安全理事会
USAF	United States Air Force	

USAFA	U.S. Air Force Academy	
USCC	United States-China Economic and Security Commission	
USD	U.S. dollar	
USSR	Union of the Soviet Socialist Republics; Soviet Union	
VADM	Vice admiral	海军中将
VFR	Visual flight rules	简单气象飞行

Appendix B: PLAAF Generals and Lieutenant Generals

PLAAF Generals¹⁹⁰²

When the PLA instituted its first rank system from 1955-1965, the following two PLAAF officers were given the rank of general:

- Liu Yalou, who was the Commander from 1949-1965, received the rank of general in 1955
- Wu Faxian, who was the PC from 1957-1965 and the Commander from 1965-1971, received the rank of general in 1955.

Since the PLA reinstated ranks in 1988, the following 12 PLAAF Commanders and PCs received the rank of general. Note that the grade for the PLAAF Commander and PC was MR leader until 2016 and TC leader since then. As discussed in Chapter 4, each grade has two ranks. As can be seen, 1) Wang Hai did not have any ranks until 1988 when ranks were reinstated; 2) Cao Shuangming, Yu Zhenwu, Ding Wenchang, Liu Shunyao, Qiao Qingchen, Deng Changyou, Yu Zhongfu, and Ding Laihang did not receive the rank of general until they had held their billet for at least one year; and 3) Xu Qiliang and Ma Xiaotian had already received their rank of general while serving as a Deputy Chief of the General Staff with the grade of MR leader. Finally, as discussed in Chapter 1, the PLAAF Commanders from 2004-2017 received a “policy promotion” to CMC Member grade while serving as CMC Members.

- Wang Hai, who was the Commander from 1985-1992, received the rank of general in 1988 when ranks were reinstated.
- Cao Shuangming, who was the Commander from 1992-1994, received the rank of general in 1993.
- Yu Zhenwu, who was the Commander from 1994-1996, received the rank of general in 1996.
- Ding Wenchang, who was the PC from 1992-1999, received the rank of general in 1996.
- Liu Shunyao, who was the Commander from 1996-2002, received the rank of general in 2000.
- Qiao Qingchen, who was the PC from 1999-2002 and Commander from 2002-2007, received the rank of general in 2000.
- Deng Changyou, who was the PC from 2002-2012, received the rank of general in 2006.
- Xu Qiliang, who was the Commander from 2007-2012, received the rank of general in 2007 while serving as a Deputy chief of the General Staff.
- Ma Xiaotian, who served as the Commander from 2012-2017, received the rank of general in 2009 while serving as a Deputy chief of the General Staff.
- Yu Zhongfu, who has served as the PC since 2012, received the rank of general in 2017.
- Ding Laihang, who has served as the Commander since 2017, received the rank of general in 2019.

The following six PLAAF officers also received the rank of general but they did not serve as the PLAAF Commander or PC:

- Fan Xiaojun, who was the PC of the Northern TC when he received the rank of general in 2019.
- Liu Chengjun, who was the commandant of the Academy of Military Science when he received the rank of general in 2010.
- Liu Yazhou, who was the PC of the National Defense University when he received the rank of general in 2012.
- Liu Zhenqi, who was a Deputy Director of the General Political Department when he received the rank of general in 2008.
- Yi Xiaoguang, who was a Deputy chief of the Joint Staff in 2016 when he received the rank of general and then became the Commander of the Central TC in 2017.
- Zheng Shenxia, who was the commandant of the Academy of Military Science when he received the rank of general in 2004.

PLAAF Lieutenant Generals

When the PLA instituted its first rank system from 1955-1965, several PLAAF officers were given the rank of major general or lieutenant general; however, no good list was found for those officers. The information in this subsection concerns 83 PLAAF officers who received the rank of lieutenant general after the PLA re-instituted ranks in 1988 and reduced the number of PLA grades from 18 down to 15. Only piecemeal information was found concerning PLAAF officers who received the rank of major general from 1955-1965 and after 1988, so no separate table was created.¹⁹⁰³

Following the changes in 1988, PLAAF lieutenant generals could hold one of the following three grades and relevant billets until they met their mandatory retirement age based on their grade. Note that each grade has two ranks, and the officer must serve in a minimum number of years in grade to receive a rank promotion and a minimum number of years in rank to receive a grade promotion. Grade and rank promotions rarely occur at the same time. The three grades are as follows:

- MR / TC leader: PLAAF HQ Commander and PC.
- MR / TC deputy leader: PLAAF HQ Deputy Commanders and Deputy PCs, Chief of Staff, and Director of the Political Department; MRAF / TCAF HQ Commander and PC.
- Corps leader: PLAAF HQ Deputy Chiefs of Staff and Deputy Director of the Political / Political Work Department; PLAAF HQ Director of the Logistics Department and Equipment Department; MRAF / TCAF HQ Deputy Commanders and PCs and Chief of Staff and Director of the Political Department; Air Corps Commanders (from 1988-2004 when they were downgraded to bases and command posts at the corps deputy leader-grade level); Airborne Corps Commander; Air Force Command College and Air Force Engineering University commandants and PCs.

There were no ranks between 1966 and 1988 when the rank system was re-instated, so many of the officers were merely given the rank of major general in 1988. Although the list in Table B-1 does not necessarily have every officer who served as a lieutenant general since 1988, it provides enough good data for analyzing approximately how many officers received a promotion to lieutenant general each year starting in 1988. Although information was not found for every officer's promotion to major general, the existing data provides a good overview of how many years officer served as a major general before they received a promotion to lieutenant general. The entry [1988] means that those

officers received the rank of major general when ranks were re-introduced in 1988. Given their age and position, the time it took for them to be promoted to lieutenant general does not necessarily represent the standard time for those officers who received their major general and lieutenant general promotions after 1988. The three primary sources are:

- *PLA Aerospace Power: A Primer on Trends in China's Military Air, Space, and Missile Forces*, 2nd Edition, (Washington, D.C.: USAF China Aerospace Studies Institute, 29 July 2019).
- ["PLA Air Force Lieutenant Generals"] [中国人民解放军空军中将], no date but accessed on 14 April 2020, <https://zh.wikipedia.org/wiki/Category:中国人民解放军空军中将>.
- He Guoqiang, ed., [*Chinese Communist Party Central Committee History Dictionary 1921-2003*] [中国共产党历届中央委员大辞典1921-2003], (Beijing: Chinese Communist Party History Press, 2004).

Altogether, the *Wikipedia* website had 134 entries for Air Force lieutenant generals, but entries were not made for officers who were born in the 1920s and 1930s because they did not have any information about the date they received their promotion to lieutenant general.

Unfortunately, none of the entries in the website included PLAAF officers who received a third star, so information from the *Chinese Communist Party Central Committee History Dictionary 1921-2003* was included.

As can be seen from the data in Table B-1 below, the lowest number of years between receiving the rank of major general and lieutenant general was four years (2013), and the most was 12 years (2014). The number of years to receive a promotion from major general to lieutenant general ranged from a low of four to a high of 12. Based on the data in this Appendix, it took one officer four years, nine officers five years, four officers six years, nine officers seven years, two officers eight years, seven officers nine years, three officers ten years, one officer eleven years, and one officer 12 years to get promoted. While most years had from zero to two promotions per year, the highest number of promotions in a single year was 10 (2014), but it is not clear what led to this high number. The following information shows the number promotions by year: 1990 (2); 1991 & 1992 (0); 1993 (1); 1994 (1); 1995 (5); 1996 (4), 1997 (1); 1998 (2); 1999 (4); 2000 (1); 2001 (0); 2002 (1); 2003 (1); 2004 (5); 2005 (7); 2006 (1); 2007 (4); 2008 (2); 2009 (0); 2010 (2); 2011 (1); 2012 (3); 2013 (6); 2014 (10); 2015 (1); 2016 (2); 2017 (2); 2018 (6); and 2019 (4).

PLAAF Lieutenant General Promotions 1988 to 2019

Table B-1 summarizes PLAAF promotions to lieutenant general from 1988 to 2019, organized first chronologically and then alphabetically by last name. The table includes the officer's name in Chinese characters, their name in English, their year of birth, the date they were promoted to major general if known, the date they were promoted to lieutenant general if known, and, finally, the number of years they served as a major general before receiving their promotion.

Table B-1: PLAAF Lieutenant General Promotions: 1988-2019

#	Chinese Name	English Name	DOB	MGEN	LGEN	Years
1	余振武	Yu Zhenwu	1931		(1988)	
2	毕皓	Bi Hao	1927	(1988)	1990	
3	丁文昌	Ding Wenchang	1933	(1988)	1990	
4	施志清	Shi Zhiqing	1933	(1988)	1993	
5	吴光宇	Wu Guangyu	1940	(1988)	1994	
6	黄恒美	Huang Hengmei	1940	(1988)	1995	
7	景学勤	Jing Xueqin	1940	(1988)	1995	
8	刘顺尧	Liu Shun Yao	1939	(1988)	1995	
9	卢登华	Lu Denghua	1941	(1988)	1995	
10	徐承栋	Xu Chengdong	1942	(1988)	1995	
11	韩瑞阶	Han Ruijie	1937	(1988)	1996	
12	李永德	Li Yongde	1941	(1988)	1996	
13	乔清晨	Qiao Qingchen	1939	(1988)	1996	
14	许其亮	Xu Qiliang	1950	1991	1996	5
15	王吉连	Wang Jilian	1941	(1988)	1997	
16	王良旺	Wang Liangwang	1940	(1988)	1998	
17	冯永生	Feng Yongsheng	1942	1990	1998	8
18	孙俊哲	Sun Junzhe	1944	1999		
19	朱永清	Zhu Yongqing	1943	1999		
20	邓昌友	Deng Changyou	1947	1992	1999	7
21	李永金	Li Yongjin	1941	1990	1999	9
22	马晓天	Ma Xiaotian	1949	1995	2000	5
23	汪超群	Wang Chaoqun	1942	2002		
24	尹庆立	Yin Qingli	1945	2003		
25	方殿荣	Fang Dianrong	1949	2004		
26	何为荣	He Weirong	1949	2004		
27	李买富	Li Maifu	1946	2004		
28	刘忠兴	Liu Zhongxing	1947	2004		
29	王伟	Wang Wei	1949	2004		
30	高守维	Gao Shouwei	1948	2005		
31	贾永生	Jia Yongsheng	1947	2005		
32	王金相	Wang Jinxiang	1947	2005		
33	周来强	Zhou Laiqiang	1949	2005		
34	王玉发	Wang Yufa	1948	1998	2005	7
35	芮清凯	Rui Qingkai	1945	1996	2005	9
36	刘振来	Liu Zhenlai	1949	1995	2005	10
37	景文春	Jing Wenchun	1949	2006		

38	丛日刚	Cong Rigang	1947	2007		
39	贾延明	Jia Yanming	1948	2007		
40	江建曾	Jiang Jianzeng	1949	2007		
41	朱清益	Zhu Qingyi	1948	2007		
42	房建国	Fang Jianguo	1955	2008		
43	陈小工	Chen Xiaogong	1949	1999	2008	9
44	王祥富	Wang Xiangfu	1951	2010		
45	赵以良	Zhao Yiliang	1954	2010		
46	刘绍亮	Liu Shaoliang	1953	2011		
47	郑群良	Zheng Qunliang	1954	2005	2012	7
48	张建平	Zhang Jianping	1956	2003	2012	9
49	乙晓光	Yi Xiaoguang	1958	2001	2012	11
50	白文奇	Bai Wenqi	1955	2013		
51	刘健	Liu Jian	Unk	2013		
52	宋琨	Song Kun	1955	1999	2013	4
53	麻振军	Ma Zhenjun	1962	2008	2013	5
54	庄可柱	Zhuang Kezhu	1955	2002	2013	9
55	丁来杭	Ding Laihang	1957	2003	2013	10
56	陈东	Chen Dong	1956	2014		
57	黄国显	Huang Guoxian	1962	2014		
58	舒清友	Shu Qingyou	1955	2014		
59	孙和荣	Sun Herong	1957	2014		
60	张洪贺	Zhang Honghe	1954	2009	2014	5
61	张义瑚	Zhang Yihu	1962	2009	2014	5
62	胡秀堂	Hu Xiutang	1955	2008	2014	6
63	徐安祥	Xu Anxiang	1956	2007	2014	7
64	于忠福	Yu Zhongfu	1956	2007	2014	7
65	战厚顺	Zhan Houshun	1957	2002	2014	12
66	范骁骏	Fan Xiaojun	1956	2006	2015	9
67	安兆庆	An Zhaoqing	1957	2009	2016	7
68	刘德伟	Liu Dewei	1958	2009	2016	7
69	陈学斌	Chen Xuebin	1959	2010	2017	7
70	韩胜延	Han Shengyan	1963	2009	2017	8
71	堵远放	Du Yuanfang	Unk	2018		
72	王伟	Wang Wei	1957	2018		
73	徐西盛	Xu Xisheng	1964	2018		
74	贾志刚	Jia Zhigang	Unk	2013	2018	5
75	常丁求	Chang Dingqiu	1967	2012	2018	6
76	郭普校	Guo Puxiao	1964	2012	2018	6
77	李勇	Li Yong	1960	2019		
78	姜平	Jiang Ping	1961	2014	2019	5
79	王强	Wang Qiang	1963	2014	2019	5
80	许学强	Xu Xueqiang	1962	2013	2019	6
81	钟卫国	Zhong Weiguo	1961	2012	2019	7
82	俞庆江	Yu Qingjiang	1963	2010	2019	9
83	周利	Zhou Li	2009	2019	10	

Appendix C: Academic Institutions

Current PLA Academic Institutions

Table C-1 provides a list of the current 37 PLA officer and NCO academic institutions that were reorganized in June 2017, which are listed in protocol order.¹⁹⁰⁴ As of 2017, the PLA subordinated its academic institutions to the following organizations: CMC, Army (PLAA), Navy (PLAN), PLAAF, Rocket Force (PLARF), and Strategic Support Force (PLASSF). The table includes the Headquarters (HQ) they are subordinate to, the English and Chinese name, and the location of the main campus (校本部) and the branch campuses (分校区). Overall, they are organized into two categories: 1) directly subordinate to the CMC (军委直属院校) and 2) service and branch/arm academic institutions (兵种院校). Note: Each officer university and *xueyuan* has several subordinate *xueyuan*, and some have an NCO school.

Table C-1: The PLA's 37 Academic Institutions, 2017-Present

HQ	Institution	Main Campus	Branch Campuses
CMC	National Defense University (国防大学)	Beijing	Xi'an, Shanghai, Shijiazhuang
	National University of Defense Technology (国防科技大学)	Changsha	Nanjing, Wuhan, Hefei
PLAA	Army Command College (陆军指挥学院)	Nanjing	
	Army Engineering University (陆军工程大学)	Nanjing	Shijiazhuang, Chongqing, Wuhan, Xuzhou
	Army Infantry College (陆军步兵学院)	Nanchang	Shijiazhuang
	Army Armored Force Academy (陆军装甲兵学院)	Beijing	Bengbu, Changchun
	Army Artillery & Air Defense Academy (陆军炮兵防空兵学院)	Hefei	Nanjing, Zhengzhou, Shenyang
	Army Aviation Academy (陆军航空兵学院)	Beijing	
	Army Special Operations Academy (陆军特种作战学院)	Guilin	Guangzhou
	Army Border and Coastal Defense Academy (陆军边海防学院)	Xi'an	Urumqi, Kunming
	Army NBC Defense Academy (陆军防化学院)	Beijing	
	Army (Third) Medical University (陆军军医大学(第三军医大学))	Chongqing	
	Army Logistics University (陆军勤务学院)	Chongqing	Wuhan
	Army Military Transportation University (陆军军事交通学院)	Tianjin	Zhenjiang, Bengbu

PLAN	Naval Command College (海军指挥学院)	Nanjing	
	Naval Engineering University (海军工程大学)	Wuhan	Tianjin
	Dalian Naval Academy (海军大连舰艇学院)	Dalian	
	Naval Submarine Academy (海军潜艇学院)	Qingdao	
	Naval Aviation University (海军航空大学)	Yantai	Qingdao
	Naval (Second) Medical University (海军军医大学(第二军医大学))	Shanghai	
	Naval Service Academy (海军勤务学院)	Tianjin	
	Naval NCO School (海军士官学校)	Bengbu	
	Air Force Command College (空军指挥学院)	Beijing	
	Air Force Engineering University (空军工程大学)	Xi'an	
	Air Force Aviation University (空军航空大学)	Changchun	Qingdao
	PLAAF	Air Force Early Warning Academy (空军预警学院)	Wuhan
Air Force Harbin Flight Academy (空军哈尔滨飞行学院)		Harbin	
Air Force Shijiazhuang Flight Academy (空军石家庄飞行学院)		Shijiazhuang	
Air Force Xi'an Flight Academy (空军西安飞行学院)		Xi'an	
Air Force (Fourth) Medical University (空军军医大学(第四军医大学))		Xi'an	
Air Force Logistics College (空军勤务学院)		Xuzhou	
Air Force Communications NCO Academy (空军通信士官学校)		Dalian	
Rocket Force Command College (火箭军指挥学院)		Wuhan	
Rocket Force Engineering University (火箭军工程大学)		Xi'an	
Rocket Force NCO School (火箭军士官学校)		Qingzhou	
PLASSF	Strategic Support Force Space Engineering University (战略支援部队航天工程大学)	Beijing	
	Strategic Support Force Information Engineering University (战略支援部队信息工程大学)	Zhengzhou	Luoyang

The PLAAF's Original Academic Institutions

Between 1949 and 1959, the PLAAF created 16 numbered aviation *Xuexiao* (e.g., 1st Aviation *Xuexiao* / 第一航空学校), which responsible for training fighter, attack, bomber, and transport pilots and crews, as well as ground maintenance and logistics crews. Table C-2 below shows the 16 numbered aviation schools, their location, mission, and when they were created.¹⁹⁰⁵

Table C-2: Original 17 PLAAF Aviation Schools

Aviation School Number	Location	Mission	Year
1st	Changchun, Jilin	Bomber pilots	1949
2nd	Changchun, Jilin	Bomber pilots	
3rd	Qinzhou, Liaoning	Fighters, attack aircraft	
4th	Shenyang, Liaoning		
5th	Jinan, Shandong		
6th	Beijing Nanyuan		
7th	Mudanjiang, Heilongjiang		
8th	Shenyang, Liaoning	Fighter support personnel	1951
9th	Changchun, Liaoning	Bomber maintenance personnel	1952
10th	Taiyuan, Shanxi	Maintenance personnel	
11th	Yanliang, Shaanxi	Fighter pilots	
12th	Linfen, Shaanxi	Fighter pilots	
13th	Chengdu, Sichuan		1956
14th	No information found		
15th	Sanyuan, Shaanxi	Aircraft missile engineering	1958
16th	Huxian, Shaanxi	Bomber pilots, navigators, and communications personnel	
17th	Jilin	Enlisted ground crew personnel	1959

The PLAAF also created eight numbered flight preparatory *Xuexiao* (e.g. 1st Flight Preparatory *Xuexiao* / 第一航空预备学校), which were responsible for providing basic training for pilots, communicators, and aircraft maintenance personnel. The training lasted 12-18 months. The students came primarily from personnel around the age of 15. They then attended one of the numbered aviation *Xuexiao* for about two years before being assigned to their operational unit. As such, none of them received a bachelor's degree, which was not available until 1982. For example, the current CMC Vice Chairman since 2012 and former Commander of the PLAAF from 2007-2012, General Xu Qiliang, was born in 1950 and joined the 1st Aviation Preparatory *Xuexiao* at age 16.¹⁹⁰⁶ He then attended the 8th Aviation *Xuexiao* from 1967 to 1969 for fighter pilot training before being assigned to his operational unit as a pilot. Some of the numbered institutions were abolished and the number was reassigned to a new institution several years later.

As shown in Table C-3, the PLAAF created 11 non-aviation-related academic institutions in the 1950s and early 1960s. Several of them, including anti-aircraft artillery and radar, were the result of merging organizations that began under the Air Defense Force, which was merged with the PLAAF in 1957. As noted elsewhere in this book, the PLAAF began creating surface-to-air missile units and academic institutions in the late 1950s, but it tried to hide their existence by calling them 2nd anti-aircraft artillery (第二高射炮兵) or simply 2nd artillery (二炮).

Each academic institution has always been assigned one of the PLA's grades. Based on the information found in *A Brief History of China People's Liberation Army Academic Institutions*, the following four grades were assigned to PLAAF institutions when they were established (See Chapter 1 for background information on the grade system):¹⁹⁰⁷

- *Bingtuan* leader: Air Force College (future Air Force Command College).
- Corps leader: Air Force Engineering *Xueyuan* (future Air Force Engineering University); Air Force Advanced Specialty (missile engineering) *Xuexiao*; Air Force Missile School.
- Division leader: The majority of the institutions, including all of the numbered aviation *Xuexiao*, numbered preparatory schools, and numbered specialty *Xuexiao*; Air Force Antiaircraft Artillery School; Air Force Medical School.
- Brigade leader (i.e., division deputy leader): Air Force Dalian NCO School.

Based on the same book, each PLAAF academic institution was also subordinated to either PLAAF HQ or their relevant MRAF.¹⁹⁰⁸ For example, the Air Force College, Air Force Engineering *Xueyuan*, and specialty institutions, such as those for radar, communications, missiles, and antiaircraft artillery institutions, were directly subordinate to PLAAF HQ, while each numbered aviation *Xuexiao* and preparatory school was subordinated to their relevant MRAF.

Table C-3 identifies each aviation-related institution's original Chinese name and translated English name in brackets, followed by the date it was created, location, and the history, including any changes in the name and when it was abolished, reestablished, merged, and/or moved to a new location.¹⁹⁰⁹

Table C-3: PLAAF Aviation-related Academic Institutions since 1949

Original Name	Created	Location	History
[1st Aviation <i>Xuexiao</i>] (第一航空学校)	1949	Harbin, Heilongjiang	Bomber crews. 1986 renamed [1st Flight <i>Xueyuan</i>] (第一飞行学院)
[2nd Aviation <i>Xuexiao</i>] (第二航空学校)	1949	Changchun, Jilin	Bomber crews. 1966 moved to Laijiang, Sichuan. 1986 renamed [2nd Flight <i>Xueyuan</i>] (第二飞行学院). 1992 renamed [16th Flight <i>Xueyuan</i> Branch Campus] (第十六飞行学院分院). 1992 renamed [2nd Flight <i>Xueyuan</i>] (第二飞行学院)
[3rd Aviation <i>Xuexiao</i>] (第三航空学校)	1949	Jinzhou, Liaoning	Fighter, attack pilots. 1986 renamed [3rd Flight <i>Xueyuan</i>] (第三飞行学院)
[4th Aviation <i>Xuexiao</i>] (第四飞行学校)	1949	Shenyang, Liaoning	Aircraft unknown. 1950 moved to Taiyuan, Shanxi. 1952 moved to Shijiazhuang, Hebei. 1986 renamed [4th Flight <i>Xueyuan</i>] (第四飞行学院).
[5th Aviation <i>Xuexiao</i>] (第五航空学校)	1949	Jianan, Shandong	Aircraft unknown. 1966 moved to Wuwei, Gansu. 1986 renamed [5th Flight <i>Xueyuan</i>] (第五飞行学院)
[6th Aviation <i>Xuexiao</i>] (第六航空学校)	1949	Beijing	Aircraft unknown (probable transport) 1952 moved to Hebei. 1986 renamed [6th Flight <i>Xueyuan</i>] (第六飞行学院)
[7th Aviation <i>Xuexiao</i>] (第七航空学校)	1949	Mudanjiang, Heilongjiang	Attack aircraft pilots, then fighter pilots in 1957. 1968 moved to Changchun, Jilin. 1986 renamed [7th Flight <i>Xueyuan</i>] (第七飞行学院)
[8th Aviation <i>Xuexiao</i>] (第八航空学校) #1	1951	Shenyang, Liaoning	Fighter aircraft maintenance. 1967 renamed [Air Force 1st Aviation Maintenance <i>Xuexiao</i>] (空军第一航空机务学校). 1986 renamed as the [Air Force 1st Aviation Maintenance Specialty <i>Xuexiao</i>] (空军第一航空机务专科学校). 1992 renamed as the [Air Force 1st Aviation <i>Xueyuan</i>] (空军第一航空学院).
[8th Aviation <i>Xuexiao</i>] (第八航空学校) #2	1967	Liushu, Xinjiang	1967 created from components of the [3rd Aviation <i>Xuexiao</i>] (第三航空学校) and named the [PLA 14th Aviation <i>Xuexiao</i>] (解放军第十八航空学校). The CMC also gave it the alternate name of the [PLA 8th Aviation <i>Xuexiao</i>] (第八航空学校). 1976 it was renamed as the [Air Force 8th Aviation <i>Xuexiao</i>] (空军第八航空学校). 1986 it was renamed as the [Air Force 8th Flight <i>Xueyuan</i>] (空军第八飞行学院). 1992 abolished.
[9th Aviation <i>Xuexiao</i>] (第九航空学校) #1	1952	Changchun, Jilin	Bomber crews. 1967 the name changed to [PLA 2nd Aviation Maintenance <i>Xuexiao</i>] (解放军第二航空机务学校). 1976 name changed to [Air Force 2nd Aviation Maintenance <i>Xuexiao</i>] (空军第二航空机务学校). 1986 the name changed to the [Air Force 2nd Aviation Maintenance Specialty <i>Xuexiao</i>] (空军第二航空机务专科学校). 1992 renamed as the [Air Force 2nd Aviation <i>Xueyuan</i>] (空军第二航空学院).
[9th Aviation <i>Xuexiao</i>] (第九航空学校) #2	1967	Laohekou, Hubei	1967 created with the name of the [15th Aviation <i>Xuexiao</i>] (第十五航空学校) but the name changed immediately to the [PLA 9th Aviation <i>Xuexiao</i>] (解放军第九航空学校). 1976 the name changed to the [Air Force 9th Aviation <i>Xuexiao</i>] (空军第九航空学校). 1986 abolished.

[10th Aviation Maintenance <i>Xuexiao</i>] (第十航空机械学校)	1953	Taiyuan, Shanxi	1967 name was changed to the [PLA 3rd Aviation Maintenance <i>Xuexiao</i>] (解放军第三航空机务学校). In 1968 the name changed to the [PLA 10th Aviation <i>Xuexiao</i>] (解放军第十航空学校) and the mission was to train fighter and attack pilots. In 1969, it moved to Qujing, Yunnan. In 1976, the name changed to [Air Force 10th Aviation <i>Xuexiao</i>] (空军第十航空学校). 1986 abolished.
[11th Aviation <i>Xuexiao</i>] (第十一航空学校)	1952	Yanliang, Shaanxi	Fighter pilots and ground crews. 1976 renamed as the [Air Force 11th Aviation <i>Xuexiao</i>] (空军第十一航空学校). 1986 abolished.
[12th Aviation <i>Xuexiao</i>] (第十二航空学校)	1952	Linfen, Shaanxi	Fighter pilots. 1968 abolished. 1974 reestablished. 1986 renamed [Air Force 12th Aviation <i>Xuexiao</i>] (空军第十二航空学校). 1992 abolished.
[13th Aviation <i>Xuexiao</i>] (第十三航空学校) #1	1956	Chengdu, Sichuan	In 1951 created as the [4th Aviation Preparatory <i>Xuexiao</i>] (第四预备学校). Renamed in 1956 as the [13th Aviation <i>Xuexiao</i>] (第十三航空学校). 1967 renamed as the [PLA 4th Aviation Service <i>Xuexiao</i>] (解放军第四勤务学校). 1969 abolished.
[13th Aviation <i>Xuexiao</i>] (第十三航空学校) #2	1968	Beijing	1968 the [Air Force 1st Advanced Specialty <i>Xuexiao</i>] (空军第一高级专科学校) began training fighter pilots and was renamed as the [PLA 13th Aviation <i>Xuexiao</i>] (解放军第十三航空学校). 1969 moved to Jinan, Shandong. 1976 the name changed to the [Air Force 13th Aviation <i>Xuexiao</i>] (空军第十三航空学校). 1986 the name changed to the [Air Force 13th Flight <i>Xueyuan</i>] (空军第十三飞行学院).
[15th Aviation <i>Xuexiao</i>] (第十五航空学校)	1958	Sanyuan, Shaanxi	1958 the [Air Force 8th Preparatory <i>Xuexiao</i>] (空军第八预备学校), which was in Baoding, Hebei, was moved to Sanyuan, Shaanxi and renamed the [Air Force 15th Aviation <i>Xuexiao</i>] (空军第十五航空学校) with the responsibility of missile engineering specialty officers. In 1960 the name changed to [Air Force Advanced Specialty <i>Xuexiao</i>] (空军高级专科学校).
[Air Force Advanced Specialty <i>Xuexiao</i>] (空军高级专科学校).	1960	Sanyuan, Shaanxi	Created in 1958 as the [Air Force 8th Preparatory <i>Xuexiao</i>] (空军第八预备学校), which was in Baoding, Hebei, was moved to Sanyuan, Shaanxi and renamed the [Air Force 15th Aviation <i>Xuexiao</i>] (空军第十五航空学校) with the responsibility of missile engineering specialty officers. In 1960 the name changed to [Air Force Advanced Specialty <i>Xuexiao</i>] (空军高级专科学校). In 1963 the name changed to the [Air Force 4th Advanced Specialty <i>Xuexiao</i>] (空军第四高级专科学校).
[16th Aviation <i>Xuexiao</i>] (第十八航空学校)	1958	Huxian, Shaanxi	1958 created to train bomber navigators and communications crew members (领航). 1971 the name changed to [Air Force Navigation <i>Xuexiao</i>] (空军领航学校). In 1976 the name changed to the [Air Force 16th Aviation <i>Xuexiao</i>] (空军第十六航空学校). 1986 the name changed to [Air Force Navigation <i>Xueyuan</i>] (空军航空学院). 1992 the name changed back to [Air Force 16th Aviation <i>Xuexiao</i>] (空军第十六航空学校). ^{jt}
[17th Aviation <i>Xuexiao</i>] (第十七航空学校)	1959	Jilin City, Jilin	1959 created to train enlisted aircraft service personnel. 1969 abolished.
1st Flight Preparatory School (第一航空预备学校) ^{juo}	1951	Changchun, Jilin	12-18 months of study. 1959 divided into two institutions. 1969 both were abolished. 1974 both were reestablished. 1986 renamed as the [1st and 2nd Flight Basic <i>Xuexiao</i>] (第一and 第二飞行基础学校). The [1st Flight Basic <i>Xuexiao</i>] was responsible for training pilots and navigators. 1992 merged into the 7th Flight <i>Xueyuan</i> .
2nd Flight Preparatory School (第二航空预备学校)	1951	Nanchang, Jiangxi	Began as the 6th Preparatory Scientific <i>Zongdui</i> (第六预科总队) ^{ju} , ^{juo} and was renamed as the 2nd Flight Preparatory School in 1951. 1959 moved to Baoding, Hebei. 1969 abolished. 1973 reestablished. 1986 renamed [Air Force 2nd Flight Basic <i>Xuexiao</i>] (空军第二飞行基础学校). 1992 renamed as the [Baoding Campus of the Air Force Changchun Flight <i>Xueyuan</i>] (空军长春飞行学院保定分院).
3rd Flight Preparatory School (第三航空预备学校)	1951	Xi'an, Shaanxi (Northwest MR)	Began as the Xi'an Communications <i>Zongdui</i> (西安通信总队) and renamed as the 3rd Preparatory School in 1954.
4th Flight Preparatory School (第四航空预备学校)	1951	Nanchang, Jiangxi (Southwest MR)	Began as the 4th Preparatory Scientific <i>Zongdui</i> (第四预科总队) and renamed as the 4th Preparatory School in 1954. In 1958 renamed as the [13th Aviation <i>Xuexiao</i>] (第十三航空学校).
5th Flight Preparatory School (第五航空预备学校)	1951	Xuzhou, Jiangsu (East China MR)	Began as the 2nd Preparatory Scientific <i>Zongdui</i> (第二预科总队) and renamed as the [5th Aviation Preparatory Scientific <i>Zongdui</i>] (第五预科总队). 1954 renamed as the 5th Preparatory School. 1957 reorganized as the [Air Force 3rd Training Base] (空军第三训练基地).
6th Flight Preparatory School (第六航空预备学校)	1951	Hangzhou, Zhejiang (East China MR)	Began as the 4th Preparatory Scientific <i>Zongdui</i> (第四预科总队) and renamed as the [6th Aviation Preparatory Scientific <i>Zongdui</i>] (第六预科总队). 1957 reorganized as the [Air Force 1st Training Base] (空军第一训练基地).

jt This is likely inaccurate. It most likely was changed to the 16th Aviation *Xueyuan*, since the PLAAF ceased using *Xuexiao* in 1986 for all academic institutions except for NCO institutions.

ju *Zongdui* (总队) is translated as “general corps.”

7th Flight Preparatory School (第七航空预备学校)	1951	Xiaogan, Hubei (Central South MR)	Began as the [Central South MR Preparatory Scientific <i>Zongdui</i>] (中南军区预科总队) and renamed as the [[Air Force 7th Aviation Preparatory Scientific <i>Zongdui</i>] (空军第七航空预科总队). 1954 renamed as the [Air Force 2nd Training Base] (空军第二训练基地).
8th Flight Preparatory School (第八航空预备学校)	1954	Baoding, Hebei (North China MR)	Predecessor was the [8th Flight Preparatory Scientific <i>Zongdui</i>] (第八航空预科总队). 1958 renamed the [PLA 15th Aviation <i>Xuexiao</i>] (解放军第十五航空学校).
[Air Force Engineering <i>Xueyuan</i>] (空军工程学院)	1959	Xi'an, Shaanxi (Lanzhou MR)	1958 created from the [PLA 15th Aviation <i>Xuexiao</i>] (解放军第十五航空学校). 1969 name changed to [Air Force 1st Specialty <i>Xuexiao</i>] (空军第一专科学校). 1975 the original name [Air Force Engineering <i>Xueyuan</i>] was retained.
Air Force Engineering University (空军工程大学) ¹⁹¹²	1999	Xi'an, Shaanxi (Lanzhou MR)	Created by merging three former <i>xueyuan</i> : 1) [Air Force Engineering <i>Xueyuan</i>] (空军工程学院) that was created in 1959; 2) the [Air Force Missile <i>Xueyuan</i>] (空军导弹学院) that was created in 1958 as the [15th Aviation <i>Xuexiao</i>]; and 3) the [Air Force Telecommunication Engineering <i>Xueyuan</i>] (空军通讯工程学院) that was created in 1958.
[Air Force Maintenance <i>Xuexiao</i>] (空军机械学校)	1951	Unknown	Aircraft maintenance. No further information was found.
[Aircraft Maintenance <i>Xuexiao</i>] (空军机务学校)	1951	Shenyang, Liaoning (Northeast MR)	1958 merged with the [Air Force 8th Aviation <i>Xuexiao</i>] (空军第八航空学校)
[Air Force 2nd Advanced Specialty <i>Xuexiao</i>] (空军第二高级专科学校)	1969	Zhejiang (Nanjing MR)	1969 the [Air Force Technology <i>Xuexiao</i>] (空军技术学校) was renamed the Air Force Middle School (空军第二高级专科学校). 1975 it was renamed the Air Force Missile School (空军第二高射炮兵学校). ¹⁹¹³ 1978 renamed as the [Air Force Missile <i>Xueyuan</i>] (空军第二高射炮兵学院). 1983 renamed as the Air Force Ground-to-Air Missile College (空军地空导弹学院). 1986 renamed as the Air Force Missile College (空军导弹学院). In 1999 it was subordinated to the Air Force Engineering University as the [Air Defense Missile <i>Xueyuan</i>] (防空反导学院).
[Air Force 4th Advanced Specialty <i>Xuexiao</i>] (空军第四高级专科学校)	1963	Sanyuan, Shaanxi (Lanzhou MR)	Created in 1958 as the [Air Force 8th Preparatory <i>Xuexiao</i>] (空军第八预备学校), which was in Baoding, Hebei, was moved to Sanyuan, Shaanxi and renamed the [Air Force 15th Aviation <i>Xuexiao</i>] (空军第十五航空学校) with the responsibility of missile engineering specialty officers. In 1960 the name changed to [Air Force Advanced Specialty <i>Xuexiao</i>] (空军高级专科学校). In 1963 the name changed to the [Air Force 4th Advanced Specialty <i>Xuexiao</i>] (空军第四高级专科学校). In 1965 it was renamed the [Air Force Technology <i>Xuexiao</i>] (空军技术学校). In 1969 it was renamed as the [Air Force 2nd Technology <i>Xuexiao</i>] (空军第二技术学校).

Table C-4 identifies the PLAAF's non-aviation-related institutions, including each institution's original Chinese name and translated English name in brackets, followed by the date it was created, location, and the history, including any changes in the name, when it was abolished, reestablished, merged, and/or moved to a new location.¹⁹¹⁴

Table C-4: PLAAF Non-Aviation Academic Institutions since 1949

Original Name	Created	Location	History
Air Force College (军学院) ¹⁹¹⁵	1958	Beijing	1958 established as the Air Force College (军学院). 1986 renamed Air Force Command College (空军指挥学院).
[Air Force Meteorology School] (空军气象学校)	1951	Beijing	1951 subordinate to CMC Meteorology Bureau as Meteorology Cadre Training Course. 1960 renamed [PLA Meteorology School] (中国人民解放军气象学校). 1963 renamed [Air Force 3rd Advanced Specialty <i>Xuexiao</i>] (空军第三高级专科学校). 1975 renamed Air Force Meteorology <i>Xuexiao</i> (空军气象学校). 1979 renamed as the Air Force Meteorology College (空军气象学院). 1999 it was merged with [PLA Communications Engineering <i>Xueyuan</i>] (解放军通信工程学) and the [PLA Engineering Troop Engineering <i>Xueyuan</i>] (解放军工程兵工程学院) to become the PLA University of Science and Technology aka PLA Technology University (解放军理工大学). ¹⁹¹⁶
[Air Force 3rd Advanced Specialty <i>Xuexiao</i>] (空军第三高级专科学校)	1963	Beijing	1963 created from the [Air Force Meteorology School] (空军气象学校). 1969 renamed as the [Air Force 3rd Advanced Specialty <i>Xuexiao</i>] (空军第三高级专科学校) and then as the [Air Force 3rd Specialty <i>Xuexiao</i>] (空军第三专科学校). 1975 renamed as the [Air Force Meteorology <i>Xuexiao</i>] (空军气象学校). 1979 renamed as the [Air Force Meteorology <i>Xueyuan</i>] (空军气象学院).
[Air Force Cadre <i>Xuexiao</i>] (空军干部学校) to the Air Force Politics College (空军政治学院)	1951	Luoyang, Henan	1952 the name was changed to [Air Force Politics Cadre <i>Xuexiao</i>] (空军政治干部学校). 1954 the name was changed to [Air Force Politics <i>Xuexiao</i>] (空军政治学校) and it was moved to Nanchang, Jiangxi. In 1962 it moved to Shanghai. ¹⁹¹⁷ In 1974 it was abolished. In 1978 it was reopened. In 1986 it was renamed as the Air Force Politics College (空军政治学院). In 1992 it was merged under the Air Force Command College (空军指挥学院) as a separate campus. In 1993 it again became a separate campus as the Air Force Politics College. In 1999, it was merged under the PLA Nanjing Political Institute (解放军政治学院). ¹⁹¹⁸
[Air Force Intermediate Commander Training Course] (空军中级指挥员训练班) ¹⁹¹⁹	1952	Beijing	To train flight group and regiment commanding officers. 1958 the name changed to [PLA Advanced Aviation <i>Xuexiao</i>] (解放军高级航空学校). 1963 the name changed to [Air Force 1st Advanced Specialty <i>Xuexiao</i>] (空军第一高级专科学校). 1968 the name changed to the [PLA 13th Aviation <i>Xuexiao</i>] (解放军第十三航空学校) and took responsibility for training fighter pilots.
[Air Force Logistics <i>Xuexiao</i>] (空军后勤学校) ¹⁹²⁰	1954	Taiyuan, Shaanxi	Created as the [Air Force Rear Area Service <i>Xuexiao</i>] (空军后方勤务学校). 1958 moved to Xuzhou, Jiangsu, and renamed [Air Force Logistics <i>Xuexiao</i>]. 1969 abolished. 1977 reestablished. 1986 renamed [Air Force Service College] (空军勤务学院). 1992 renamed as the [Air Force Logistics Management Technology <i>Xueyuan</i>] (空军后勤管理技术学院) and was resubordinated under the General Logistics Department. In 1993 it was returned to the PLAAF and renamed the Air Force Service College (空军后勤学院). 1998 renamed as the [Air Force Service College] (空军后勤学院). 2004 renamed as the Xuzhou Air Force College (徐州空军学院). 2011 the name was changed to the Air Force Logistics College (空军勤务学院) ¹⁹²¹
[Advanced Air Defense <i>Xuexiao</i>] (高级防空学校)	1957	Hankou, Hubei	Originally subordinate to the Air Defense Force until PLAAF and ADF merged in 1957 and named [Air Force Advanced Air Defense <i>Xuexiao</i>] (空军高级防空学校). 1963 renamed [Air Force 2nd Advanced Specialty <i>Xuexiao</i>] (空军第二高级专科学校). 1969 abolished.
[Radar <i>Xuexiao</i> ; Air Force Radar <i>Xuexiao</i>] (雷达学校/空军雷达兵学校)	1957	Wuhan, Hubei	Originally subordinate to the Air Defense Force until PLAAF and ADF merged in 1957 in Nanjing, Jiangsu, and named [Air Force Radar <i>Xuexiao</i>] (空军雷达兵学校). 1957 renamed [Air Force Radar Technical Specialty <i>Xuexiao</i>] (空军雷达技术专科学校). 1958 renamed [PLA Radar Troop <i>Xuexiao</i>] (解放军雷达兵学校), merged with the [Air Force Air Defense <i>Xuexiao</i>] (空军防空), and moved to Wuhan. 1969 renamed as the [Air Force 4th Specialty <i>Xuexiao</i>] (空军第四专科学校). 1975 renamed as the [Air Force Radar <i>Xuexiao</i>] (空军雷达学校). 1983 renamed Air Force Radar College (空军雷达学院). ¹⁹²² In August 2011, the name changed to its current name of Air Force Early Warning Academy (空军预警学院). ¹⁹²³

¹⁹¹⁴ Although the PLA normally translates *qinwu* (勤务) as service, the PLAAF has chosen to translate it as logistics for the name of this institution. Based on multiple CNKI articles, it appears that the official English name is Air Force Logistics College even though the name best translates as Air Force Service College.

[Air Defense <i>Xuexiao</i>] (防空学校)	1957	Unknown	Originally subordinate to the Air Defense Force until PLAAF and ADF merged in 1957 and renamed [Air Force Air Defense <i>Xuexiao</i>] (空军防空学校). 1958 merged into the [Air Force Radar Troop <i>Xuexiao</i>] (空军雷达兵学校).
Air Force Antiaircraft Artillery School (空军高射炮兵学校) ¹⁹²⁴	1957	Shanghai	In 1952 the Air Defense Force had its own [Air Defense Force Antiaircraft Artillery <i>Xuexiao</i>] (防空兵高射炮兵学校). When the PLAAF and ADF merged in 1957, it was subordinated to the PLAAF and renamed [Air Force Antiaircraft Artillery <i>Xuexiao</i>] (空军高射炮兵学校) and moved to Xinyang, Henan. 1969 abolished. 1978 reestablished in Guilin, Guangxi Zhuang. 1986 renamed [Air Force Antiaircraft Artillery <i>Xueyuan</i>] (空军高射炮学院). 1992 abolished again. 1993 reestablished again as the [Air Force Antiaircraft Artillery <i>Xueyuan</i>]. 1999 renamed Guilin Air Force College (桂林高射炮学院). 2017 abolished yet again.
[Air Force Technology <i>Xuexiao</i>] (空军技术学校)	1957	Shanghai	In 1952 the Air Defense Force had its own [Air Defense Technical <i>Xuexiao</i>] (防空兵技术学校). When the PLAAF and ADF merged in 1957, it was subordinated to the PLAAF and renamed [Air Force Technology <i>Xuexiao</i>] (空军技术学校).
[Air Force Technology <i>Xueyuan</i>] (空军技术学院)	1965	Unknown	1965 the [Air Force 4th Advanced Specialty <i>Xuexiao</i>] (空军第四高级专科学校) was renamed the [Air Force Technology <i>Xueyuan</i>] (空军技术学院). In 1969 it was renamed as the [Air Force 2nd Specialty <i>Xuexiao</i>] (空军第二专科学校).
[Air Force Telecommunications <i>Xuexiao</i>] (空军通信学校) ¹⁹²⁵	1957	Xi'an, Shaanxi	1957 created as the Air Force Telecommunication School (空军通信学校). 1986 renamed as the Air Force Telecommunication Engineering College (空军电讯工程学院). In 1992 it was merged into the General Staff Department's [Xi'an Communications <i>Xueyuan</i>] (总参西安通信学院). In 1993 it was removed and resubordinated under the PLAAF as the Air Force Telecommunication Engineering College (空军电讯工程学院). In 1999 it was subordinated under the Air Force Engineering University (空军工程大学) as a separate <i>xueyuan</i> and retained the same name.
Air Force Medical School (空军军医学校) ¹⁹²⁶	1975	Jilin City, Jilin	1986 name changed to Air Force Medical Professional School (空军医学专科学校). 1993 name changed to Air Force Medical Academy (空军医学高等专科学校). 1998 name changed to the PLA 4th Medical University (解放军第四军医大学). In 2017, the name changed to the Air Force Medical University (空军军医大学). ¹⁹²⁷
[Air Force Dalian Noncommissioned Officer <i>Xuexiao</i>] (空军大连士官学校)	1986	Dalian, Liaoning	Created in 1986 as the [Air Force Dalian NCO <i>Xuexiao</i>] (空军大连士官学校). In 1992 the name changed to the [Air Force Dalian Communication NCO <i>Xuexiao</i>] (空军大连通信士官学校). 2017 the name was changed to the Air Force Communication NCO Academy (空军通信士官学校).

Appendix D: Citation Formatting

Given that most of the citations for Chinese sources in this book do not have an official English translation, the book uses the following formatting:

- For books:
 - o All titles that have an official English title are italicized followed by the Chinese title in brackets, such as *The Introduction on Air Force Academies Education* [空军院校教育概论].
 - o If there is no official English title, then the translated title is italicized and placed in brackets followed by the Chinese title in brackets, such as [*PLA Military Terminology*] [中国人民解放军军语]. The reason that the English title is in brackets is because not everyone necessarily translates the title the same, so it is not an official English translation.
- For newspaper, periodical, dictionary, encyclopedia, and website articles:
 - o All entries that have an official English title or translation are in brackets and the Chinese term/title is placed in brackets followed by the source, such as “Bengbu Naval Petty Officer Academy of the CPLA” [中国人民解放军蚌埠士官学校], in [*PLA Military History*] [中国人民解放军军史] Second Edition, Volume 3 (Beijing: Encyclopedia of China Publishing House, December 2007).
 - o All entries that do not have an official English title or translation are formatted in one of the ways shown below:
 - The unofficial translation of the article title is in brackets, such as [“Red Sword Aircraft Maintenance”]; however, only a few of the citations for these sources are followed by the actual Chinese title, which is then placed in brackets, such as [“The First Plenary Session of the 12th Air Force Party Committee Held in Beijing”] [空军党委十二届一次全体会议在京召开].
 - Only a few of the citations from newspapers and periodicals, such as the PLAAF’s official newspaper, *Air Force News*, include the title of the article in English and/or Chinese. Therefore, the citations only have the newspaper title, the date, and the page number, as in *Air Force News*, 5 December 2017, 2.
 - o Depending on the type of link, some internet sources in Chinese include the full English translation in brackets and the Chinese entry in brackets, such as [“CMC Soldier and Civilian Bureau: Civilian Personnel System Restructuring”] [军委政治工作部兵员和文职人员局: 文职人员制度体系性重塑], 10 November 2017, http://www.thepaper.cn/newsDetail_forward_1859723; however, many of them do not necessarily have a title, so the citation only includes the link, such as information accessed at http://blog.sina.com.cn/s/blog_a3f74a990101fi67.html. Furthermore, some of the links no longer exist.

Concerning the overall use of citations, much of this book builds on previous reports the lead author wrote. When those reports were written, there was not a requirement to provide the full citation for newspaper articles or internet items. As such, the simple citation for newspaper articles merely include the newspaper title, date, and page number. It was not possible to go back and find the original articles and provide a full citation. In addition, many of the websites noted no longer exist.

The citations are divided into footnotes, which include any additional information relevant to the text, and endnotes, which include source citations. In addition, all dates are formatted as day month year as in 6 June 2019.

Finally, although most of the information in the citations that were taken from the internet has the original website that was used, many of the websites no longer exist.

Appendix E: English Source Bibliography

Allen, Jana and Kenneth W. Allen. *The PLA Air Force's Four Key Training Brands*. Montgomery, AL: China Aerospace Studies Institute, March 2019.

Allen, Kenneth W. "Air Activity over the Taiwan Strait." Washington, D.C.: Henry L. Stimson Center Op-ed, August 1999.

_____. *China's Air Force Male Pilot cadet Recruitment, Education and Training*. Washington, D.C.: Jamestown Foundation *China Brief*, Volume 12, Issue 5, 2 March 2012.

_____. *China's Foreign Military Relations in the Asia-Pacific Region*. Presented at the Conference on PRC and the Asia-Pacific Region: Evolving Interactions and Emerging Trends, National Sun Yat-Sen University, Kaohsiung, Taiwan, 3-4 June 2000.

_____. "Air Force Deterrence and Escalation Calculations for a Taiwan Strait Conflict: China, Taiwan, and the United States," paper presented at The International Conference on the PLA Affairs, Taipei, Taiwan, October 2004 hosted by CAPS-RAND-CEIP. The conference theme was "Escalation Control in the Taiwan Strait." The article was published in Michael D. Swaine, Andrew N.D. Yang, and Evan S. Medeiros, eds. *Assessing the Threat: The Chinese Military and Taiwan's Security* Washington, D.C.: Carnegie Endowment for International Peace (CEIP), July 2007.

_____. "Assessing the Future of China-Japan Relations: The Military/Security Dimension." Paper presented at a conference sponsored by the Bureau of Intelligence and Research, U.S. State Department and the National Intelligence Council, 22 March 2002.

_____. "Assessing the PLA Air Force's Ten Pillars." Washington, D.C.: Jamestown Foundation *China Brief*, Volume 11, Issue 3, 10 February 2011.

_____. "Assessing the PLA's Promotion Ladder to CMC Member Based on Grades vs. Ranks." Washington, D.C.: Jamestown Foundation *China Brief*, Part 1, Volume 10, Issue 15, 22 July 2010, and Part 2, Volume 10, Issue 16, 5 August 2010.

_____. "China Announces Reform of Military Ranks." Washington, D.C.: Jamestown Foundation *China Brief*, Volume 17, Issue 2, 30 January 2017.

_____. "China's Air Force Foreign Relations Program and Implications for Interaction with the U.S. Air Force." Mt Vernon, VA: *Foreign Area Officer Association Journal of international Affairs*, Volume XVII, Number 3, Winter 2014.

_____. "China's Air Force Male Aviation Cadet Recruitment, Education and Training." Washington, D.C.: Jamestown Foundation *China Brief*, Volume 12, Issue 5, 12 March 2012.

_____. "China's Approach to Confidence-Building Measures." During 1999, versions of this paper were published in *Global Confidence Building: New Tools for Troubled Regions* by Saint Martins Press and in *Investigating Confidence-Building Measures in the Asia-Pacific Region* by the Henry L. Stimson Center.

_____. "China's Changing Military: The Organizational Dimension, Strategic Comments." London: Institute for International Strategic Studies (IISS), Volume 11, Issue 6, August 2005.

_____. "China's Foreign Military Relations 2003-2004." London: *Chinese Military Update*, RUSI, February 2005.

_____. "China's Foreign Military Relations" London: Taylor and Francis Group, *Journal of Contemporary China*, January 2001.

_____. "Chinese Air Force Officer Recruitment, Education and Training." Washington D.C.: Jamestown Foundation's *China Brief*, volume 11, issue 22, 30 November 2011.

- _____. “Confidence-Building Measures and the People’s Liberation Army.” Presented at the Conference on the PRC’s Reform: A Reappraisal after Twenty Years, Taipei, Taiwan: National Chengchi University, 8–9 April 1999.
- _____. “Establishing Cross-Strait Military CBMs.” Washington, D.C.: Henry L. Stimson Center, April 1999.
- _____. “History of the PLA’s Ground Forces Organizational Structure and Military Regions.” (London: *Chinese Military Update*, RUSI, May 2004.
- _____. “Introduction to the PLA’s Administrative and Operational Structure.” In James Mulvenon and Andrew Yang, eds. *The People’s Liberation Army as Organization*. Santa Monica, CA: RAND Corporation, 2002.
- _____. “Introduction to the PLA’s Organizational Reforms: 2000-2012” and “PLA Air Force Organizational Reforms: 2000-2012.” In Kevin Pollpeter and Kenneth W. Allen, eds. *The PLA as Organization v2.0*. Vienna, VA: Defense Group Inc., 2015.
- _____. “Logistics Support for PLA Air Force Campaigns.” In Andrew Scobell and Larry M. Wortzel, eds. *China’s Growing Military Power: Perspectives on Security, Ballistic Missiles, and Conventional Capabilities*. Carlisle, PA: U.S. Army War College Press, September 2002.
- _____. “Military Relations Between the United States and China.” Paper presented at the Seminar between The CNA Corporation and the Shanghai Institute for International Studies, 26-27 April 2004.
- _____. “PLA Air Force Foreign Relations.” London: *Chinese Military Update*, RUSI, December 2005.
- _____. “PLA Air Force Logistics and Maintenance—What has Changed?” In James Mulvenon and Andrew Yang, eds. *The People’s Liberation Army in the Information Age*. Santa Monica, CA: RAND Corporation, 1999.
- _____. “PLA Air Force Modernization: An Assessment.” In James R. Lilley and Chuck Down, eds. *Crisis in the Taiwan Strait*. Washington, D.C.: National Defense University Press, 1997. Presented at the PLA conference in Coolfont, WV, in 1996.
- _____. “PLA Air Force Operations and Modernization.” In Susan M. Puska, ed. *The People’s Liberation Army After Next*. Carlisle, PA: Strategic Studies Institute, 2000.
- _____. “PLA Air Force Organization.” In James C. Mulvenon and Andrew N.D. Yang, eds. *The People’s Liberation Army as Organization*. Santa Monica, CA: RAND Corporation, 2002.
- _____. “PLA Air Force Overview.” London: *Chinese Military Update*, RUSI, September 2003.
- _____. “PLA Air Force: 2006-2010.” Paper presented at the International Conference on PLA Affairs, Taipei, Taiwan, November 2005 hosted by CAPS-RAND-CEIP. The conference theme was “Back to Basics: Assessing Advances in PLA Capabilities.”
- _____. “PLA Air Force: Lessons Learned 1949-2002.” In Laurie Burkitt, Dr. Andrew Scobell, and Dr. Larry Wortzel, eds. *The Lessons of History: The Chinese People’s Liberation Army at 75*. Carlisle, PA: Strategic Studies Institute, 2003.
- _____. “PLA Diplomacy in Asia: Content and Consequences.” Presented at the 18th annual PLA conference in Taipei, Taiwan, from 8-10 December 2006 and co-hosted by the Chinese Council for Advanced Policy Studies (CAPS), RAND and the Carnegie Endowment for International Peace (CEIP). The conference theme was “The PLA in the Asia-Pacific Region: Implications for the Evolving Regional Security Order.” This paper was not published.
- _____. “PLA Officer and Enlisted Corps Recruitment, Grades, and Ranks.” London: *Chinese Military Update*, RUSI, May 2003.
- _____. “PLA Organization: Operational and Administrative Structure.” In *The PLA as Organization: Reference Volume v1.0*. James C. Mulvenon and Andrew N.D. Yang, eds. Santa Monica, CA: RAND, 2002.
- _____. “Reforms in China’s Air Force.” Washington, D.C.: Jamestown Foundation *China Brief*, Volume 5, Issue 15, 5 July 2005.
- _____. “Sunzi and the Enlisted Force.” Paper presented to the 6th International Symposium on Sun Tzu’s Art of War, in Shenzhen, China, 3-5 November 2004.

- _____. “The Organizational Structure of the PLAAF.” In Richard P. Halloran, Roger Cliff, and Phillip C. Saunders, eds. *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*. Washington, D.C.: Center for the Study of Chinese Military Affairs, Institute for National Defense Studies, National Defense University, 2012.
- _____. “The PLA Air Force’s Mobile Offensive Operations.” In *Taiwan’s Security and Air Power: Taiwan’s Defence against the Air Threat from Mainland China*. London: Routledge Curzen Press, December 2003.
- _____. “The Road to Becoming an Air Force China IAS and Attaché.” Mt Vernon, VA: *Foreign Area Officer Association Journal of International Affairs*, June 2012.
- _____. “The United States’ Military Relations with Taiwan and China.” Paper presented in June 2002 at the 31st Annual Sino-American Conference in Taipei, Taiwan, hosted by the National Chengchi University Institute of International Relations.
- _____. “Trends in China’s Airpower.” Presented at PACAF, 2000.
- _____. “Trends in China’s Military Airpower.” Presented at the Conference on China’s Military Modernization: Strategic and Regional Implications, Sponsored by Jane’s Information Group, Washington D.C., 5-15 May 2000.
- _____. “Trends in People’s Liberation Army International Initiatives under Hu Jintao.” In Roy Kamphausen, David Lai, and Travis Tanner, eds. *Assessing the People’s Liberation Army in the Hu Jintao Era*. Carlisle, PA: United States Army War College Press, April 2014.
- _____. “US-China Military Relations.” Presentation to the US-China Economic and Security Review Commission (USCC), 2 February 2007.
- _____. “US-China Military Relations: Not a One-Way Street.” Washington, D.C.: Henry L. Stimson Center News Advisory, 8 December 1999.
- _____. *Chinese Air Force Officer Cadet Recruitment, Education, and Training*. Washington, D.C.: Jamestown Foundation *China Brief*, 30 November 2011.
- _____. *Overview of the PLA Air Force’s Kongtian Yiti Strategy*. Montgomery, AL: China Aerospace Studies Institute, June 2020.
- _____. *People’s Republic of China People’s Liberation Air Force*. Washington, D.C.: Defense Intelligence Agency, May 1991.
- _____. *PLA Air Force, Naval Aviation, and Army Aviation Aviator Recruitment, Education, and Training*. Washington, D.C.: Jamestown Foundation, 8 April 2016.
- _____. *The Ten Pillars of the People’s Liberation Army Air Force: An Assessment*. Washington, D.C.: Jamestown Foundation special report, 25 April 2011.
- Allen, Kenneth W. and Brendan S. Mulvaney. “Changes in the PLA’s Military Education.” In Roy D. Kamphausen, ed. *The People in the PLA 2.0*. Carlisle, PA: U.S. Army War College Press, October 2020.
- Allen, Kenneth W. and Emma Kelly, “China’s Air Force Female Aviators: Sixty Years of Excellence (1952-2012).” Washington, D.C.: Jamestown Foundation *China Brief*, Volume 12, Number 12, 22 June 2012.
- Allen, Kenneth W. and Emma Kelly. “Assessing the Growing PLA Air Force Foreign Relations Program.” Washington, D.C.: Jamestown Foundation *China Brief*, Volume 12, Issue 9, 26 April 2012.
- Allen, Kenneth W. and Eric A. McVadon. *China’s Foreign Military Relations*. Washington, D.C.: The Henry L. Stimson Center, October 1999.
- Allen, Kenneth W. and Jana Allen. “Assessing China’s Response to U.S Reconnaissance Flights.” Washington, D.C.: Jamestown Foundation *China Brief*, Volume 11, Issue 16, 2 September 2011.
- Allen, Kenneth W. and Jana Allen. “Chinese Air Force and China Security.” In Lowell Dittmer and Maochun Yu, eds. *Routledge Handbook of Chinese Security*. London: Routledge Press, May 2015.
- Allen, Kenneth W. and Jeffrey Allen. “Controlling the Airspace Over the Taiwan Strait.” In Steve Tsang, ed. *If China Attacks Taiwan: Military Strategy, Politics and Economics*. London: Routledge Press, December 2005, Chapter 6, 94-121.

Allen, Kenneth W. and John Corbett. "Predicting PLA Leader Promotions." In Andrew Scobell and Larry Wortzel, ed. *Civil-Military Change in China: Elites, Institutes, and Ideas After the 16th Party Congress*. Carlisle, PA: U.S. Army War College Press, October 2004.

Allen, Kenneth W. and Mingzhi Chen. *The People's Liberation Army's 37 Academic Institutions*. Montgomery, AL: China Aerospace Studies Institute, 2020.

Allen, Kenneth W., Brendan S. Mulvaney, and James Char. "Ongoing Organizational Reforms of the People's Liberation Army Air Force." *Journal of Strategic Studies*. London: Taylor and Francis Group. DOI: 10.1080/01402390.2020.1730818.

Allen, Kenneth W., Brian Chao, and Ryan Kinsella. "China's Military Political Commissar System in Comparative Perspective." Washington, D.C.: Jamestown Foundation *China Brief*, Volume 13, Issue 5, 4 March 2013.

Allen, Kenneth W., Christopher Clarke, John Corbett, and Lonnie Henley. "China's Defense Minister and Ministry of National Defense." In Kevin Pollpeter and Kenneth W. Allen, eds. *The PLA as Organization v2.0*. Vienna, VA: Defense Group Inc., 2013.

Allen, Kenneth W., Dennis J. Blasko, and John F. Corbett, Jr. "The PLA's New Organizational Structure: What is Known, Unknown and Speculation." Washington, D.C.: Jamestown Foundation *China Brief*, Part 1, Volume 16, Issue 3, 4 February 2016; and Part 2, Volume 16, Issue 4, 23 February 2016.

Allen, Kenneth W., Glenn Krumel, and Jonathan D. Pollack. *China's Air Force Enters the 21st Century*. Santa Monica, CA: RAND Corporation, 1995.

Allen, Kenneth W., Morgan Clemens, Steven Glinert, and Daniel Yoon. "Assessing PLA Navy and Air Force Political Commissar Career Paths," Washington, D.C.: Jamestown Foundation *China Brief*, Volume 13, Issue 5, 4 March 2013.

Allen, Kenneth W., Phillip C. Saunders, and John Chen. *Chinese Military Diplomacy, 2003-2016*, Washington, D.C.: National Defense University, Institute for National Strategic Studies (INSS), China Strategic Perspectives 11, July 2017.

Beauchamp-Mustafaga, Nathan. "'The Four Key Training Brands' Framework: Aligning PLAAF Training to the 2014 Military Strategic Guideline," paper presented to the Fifth Global International Studies Conference of the World International Studies Committee (WISC) in Taipei, Taiwan, April 2017.

Blasko, Dennis J. *The Chinese Army Today: Tradition and Transformation for the 21st Century*, First Edition. London and New York: Routledge, 2006.

Blasko, Dennis J. *The Chinese Army Today: Tradition and Transformation for the 21st Century*, Second Edition. London and New York: Routledge, 2012.

Bjorge, Gary J. "Moving the Enemy: Operational Art in the Chinese PLA's Huai Hai Campaign," *Leavenworth Paper*, Number 22. Fort Leavenworth, KS: Combat Studies Institute Press, 2003.

Bueschel, Richard M. *Communist Chinese Air Power*. New York, NY: Frederick A. Praeger, Inc., Publishers, 1968.

Burke, Edmund and Astrid Cevallos. *In Line or Out of Order? China's Approach to ADIZ in Theory and Practice*. Santa Monica, CA: RAND Corporation, 2017.

Burke, Edmund J., Timothy R. Heath, Jeffrey W. Hornung, Logan Ma, Lyle J. Morris, and Michael S. Chase. *China's Military Activities in the East China Sea: Implications for Japan's Air Self-Defense Force*. Santa Monica, CA: RAND Corporation, 2018.

Burke, Edmund J. and Astrid Stuth Cevallos. "PRC Leadership Dynamics Shaping the Future of the PLA Air Force: Examining the Party's Military Reform Efforts." In Edmund J. Burke, Astrid Stuth Cevallos, Mark R. Cozad, and Timothy R. Heath, *Assessing the Training and Operational Proficiency of China's Aerospace Forces: Selections from the Inaugural Conference of the China Aerospace Studies Institute (CASI)*. Santa Monica, CA: RAND Corporation, 2016.

Chase, Michael S. and Cristina L. Garafola. "China's Search for a 'Strategic Air Force.'" London: Taylor and Francis Group *Journal of Strategic Studies*, 2015.

Chase, Michael S., Cristina L. Garafola, and Nathan Beauchamp-Mustafaga. "Chinese Perceptions of and Responses to US Conventional Military Power," *Asian Security*, Volume 14, Issue 2, 2018.

Chase, Michael S., Kenneth W. Allen, and Benjamin S. Purser III. *Overview of People's Liberation Army Air Force "Elite Pilots."* Santa Monica, CA: RAND Corporation, 2016.

Chen, Jian. "China's Involvement in the Vietnam War, 1964-69." *The China Quarterly*, No. 142 (1995).

Cheng Sijin, "Conscription: From the Masses." In David M. Finkelstein and Kristen Gunness, eds. *Swimming in a New Sea: Civil-Military Affairs in a Changing China.* New York: Routledge, 2006.

Cheung, Tai Ming. *Forging China's Military Might: A New Framework for Assessing Innovation.* Baltimore: Johns Hopkins University Press, 2014.

Cheung, Tai Ming. *Fortifying China: The Struggle to Build a Modern Defense Economy.* Ithaca, NY: Cornell University Press, 2009.

Clay, Marcus. *China's "Little Eagles": People's Liberation Army Developing Its Next-Generation Pilots.* Montgomery, AL: China Aerospace Studies Institute, 2019.

----- . "Flying Twice" No More: Assessing the Aerospace Component of the PLA Military Parade. Montgomery, AL, China Aerospace Studies Institute, October 2019.

----- . *Supporting the Infinite Battlefield: A Preliminary Study of the Chinese Strategic Support Force Through 2018 PLA Civilian Personnel Recruitment Database.* Montgomery, AL: China Aerospace Studies Institute, 2019.

----- . *Understanding the "People" of the People's Liberation Army: A Study of Marriage, Family, Housing, and Benefits.* Montgomery, AL: China Aerospace Studies Institute, 30 March 2019.

Cliff, Roger, John Fei, Jeff Hagen, Elizabeth Hague, Eric Heginbotham, and John Stillion. *Shaking the Heavens and Splitting the Earth: Chinese Air Force Employment Concepts in the 21st Century.* Santa Monica, CA: RAND Corporation, 2011.

Cliff, Roger. *China's Military Power: Assessing Current and Future Capabilities.* Cambridge University Press, 2015.

Cole, Bernard D. *The Great Wall at Sea: China's Navy in the Twenty-First Century*, Second Edition. U.S. Naval Institute Press, 2010.

Costello, John and Joe McReynolds, *China's Strategic Support Force: A Force for a New Era.* Center for the Study of Chinese Military Affairs Institute for National Strategic Studies, China Strategic Perspectives, No. 13, National Defense University Press, Washington, D.C., October 2018.

Cozad, Mark R. and Nathan Beauchamp-Mustafaga. *People's Liberation Army Air Force Operations over Water: Maintaining Relevance in China's Changing Security Environment.* Santa Monica, CA: RAND Corporation, 2017.

Cozad, Mark R. and Astrid Stuth Cevallos. "Trends in PLA Air Force Joint Training: Assessing Progress in Integrated Joint Operations." In Edmund J. Burke, Astrid Stuth Cevallos, Mark R. Cozad, and Timothy R. Heath. *Assessing the Training and Operational Proficiency of China's Aerospace Forces: Selections from the Inaugural Conference of the China Aerospace Studies Institute.* Santa Monica, CA: RAND Corporation, 2016.

Cozad, Mark R. "Chinese Contingency Planning for Regional Hotspots," testimony presented before the U.S.-China Economic and Security Review Commission on 13 April 2017.

Curtis E. LeMay Center for Doctrine Development and Education, *Air Force Doctrine Volume 1*, Maxwell AFB, AL: 27 February 2015.

Defense Intelligence Agency. *China Military Power: Modernizing A Force to Fight and Win, 2019.* Washington, DC: Defense Intelligence Agency, November 2018.

Engstrom, Jeffrey. *Systems Confrontation and System Destruction Warfare: How the Chinese People's Liberation Army Seeks to Wage Modern Warfare.* Santa Monica, CA: RAND Corporation, 2018.

Erickson Andrew S. and Joel Wuthnow. "Barriers, Springboards and Benchmarks: China Conceptualizes the Pacific "Island Chains." *The China Quarterly*, March 2016, 1-22. doi:10.1017/S0305741016000011.

Finkelstein, David M. “China’s National Military Strategy: An Overview of the ‘Military Strategic Guidelines.’” In Roy Kamphausen and Andrew Scobell, eds. *Right Sizing the People’s Liberation Army: Exploring the Contours of China’s Military*. Carlisle, PA: U.S. Army War College Press, September 2007.

Finkelstein, David M. and Michael McDevitt. *Engaging DOD: Chinese Perspectives on Military Relations with the United States*. Alexandria, VA: The CNA Corporation, 1999.

Finkelstein, David M. *Evolving Operational Concepts of the Chinese People’s Liberation Army: A Preliminary Exploration*. Alexandria, VA: The CNA Corporation, 2001.

Fravel, M. Taylor. *Active Defense: China’s Military Strategy since 1949*. Princeton, NJ: Princeton University Press, 2019.

Garafola, Cristina L. and Timothy R. Heath. *The Chinese Air Force’s First Steps Toward Becoming an Expeditionary Air Force*. Santa Monica, CA: RAND Corporation, 2017.

Grossman, Derek, Nathan Beauchamp-Mustafaga, Logan Ma, and Michael S. Chase. *China’s Long-Range Bomber Flights: Drivers and Implications*. Santa Monica, CA: RAND Corporation, 2018.

Halloran, Richard P., Roger Cliff, and Phillip C. Saunders, eds. *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*. Washington, D.C.: Center for the Study of Chinese Military Affairs, Institute for National Defense Studies, National Defense University, 2012.

Heath, Timothy R. “New Type Support: Developments in PLAAF Air Station Logistics and Maintenance.” In Edmund J. Burke, Astrid Stuth Cevallos, Mark R. Cozad, and Timothy R. Heath. *Assessing the Training and Operational Proficiency of China’s Aerospace Forces: Selections from the Inaugural Conference of the China Aerospace Studies Institute (CASI)*. Santa Monica, CA: RAND Corporation, 2016.

Heginbotham, Eric, Michael Nixon, Forrest E. Morgan, Jacob L. Heim, Jeff Hagen, Sheng Li, Jeffrey Engstrom, Martin C. Libicki, Paul DeLuca, David A. Shlapak, David R. Frelinger, Burgess Laird, Kyle Brady, and Lyle J. Morris. *The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power*. Santa Monica, CA: RAND, 2015.

Holz, Heidi and Kenneth W. Allen. “Military Exchanges with Chinese Characteristics: The People’s Liberation Army Experience with Military Relations.” In Roy Kamphausen, David Lai, and Andrew Scobell, eds. *The PLA at Home and Abroad: Assessing the Operational Capabilities of China’s Military*. Carlisle, PA: U.S. Army War College Press, June 2010.

Hsu, Kimberly with Craig Murray, Jeremy Cook, and Amalia Feld, “China’s Military Unmanned Aerial Vehicle Industry,” U.S.-China Economic and Security Review Commission Staff Research Backgrounder, 13 June 2013.

Jencks, Harlan W. *From Muskets to Missiles: Politics and Professionalism in the Chinese Army 1945-1981*. Boulder, CO: Westview Press, 1 January 1982.

Joint Chiefs of Staff. *Doctrine for the Armed Forces of the United States*. Department of Defense Joint Publication 1, 12 July 2017.

Joint Chiefs of Staff. *DOD Dictionary of Military and Associated Terms*. Department of Defense, June 2020.

Kania, Elsa. “Holding Up Half the Sky? (Part 1)—The Evolution of Women’s Roles in the PLA.” Washington, D.C.: Jamestown Foundation *China Brief*, Volume 16, Issue 15, 4 October 2016.

Kania, Elsa and Kenneth W. Allen. “Holding Up Half the Sky? (Part 2)—The Evolution of Women’s Roles in the PLA.” Washington, D.C.: Jamestown Foundation *China Brief*, Volume 16, Issue 16, 26 October 2016.

Kania, Elsa B. “Battlefield Singularity: Artificial Intelligence, Military Revolution, and China’s Future Military Power,” Center for a New American Security, 28 November 2017.

Kania, Elsa B. and John Costello. “Seizing the Commanding Heights: the PLA Strategic Support Force in Chinese Military Power.” *Journal of Strategic Studies*, May 2020).

Lanzit, Kevin M. and Kenneth W. Allen, “Right-Sizing the PLA Air Force: New Operational Concepts Define A Smaller, More Capable Force.” In Roy Kamphausen and Andrew Scobell, eds. *Right Sizing the People’s Liberation Army: Exploring the Contours of China’s Military*. Carlisle, PA: Strategic Studies Institute, 2007.

- Lanzit, Kevin, "Education and Training in the PLAAF," in Richard Hallion, Roger Cliff, and Philipp C. Saunders, eds., *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*. Washington, D.C.: National Defense University, 2012.
- Latham, Richard and Kenneth W. Allen. "Chinese Defense Reform: The Air Force as a Case Study," *Problems of Communism*, Washington, D.C.: State Department, May-June 1991.
- Lawrence "Sid" Trevethan, *"Brigadization" of the PLA Air Force*. Montgomery, AL: China Aerospace Studies Institute, 17 June 2018.
- Lewis, John Wilson and Xue Litai. "China's Search for a Modern Air Force." *International Security*, MIT Press, Vol 24, No. 1, 1999.
- Li, Danhua and Yafeng Xia. *Mao and the Sino-Soviet Split, 1959-1973: A New History*. Lanham, Maryland: The Rowman and Littlefield Publishing Group, 2018.
- Lin, Bonny and Cristina L. Garafola. *Training the People's Liberation Army Air Force Surface-to-Air Missile (SAM) Forces*. Santa Monica, CA: RAND Corporation, 2016.
- Lu Xiaoping, ed. *The PLA Air Force*. Beijing: China Intercontinental Press, 2012. There is a Chinese version of this book.
- Mann, James. *About Face: A History of America's Curious Relationship with China, From Nixon to Clinton*. New York: Vantage Books, 1998.
- McCaslin, Ian Burns and Andrew S. Erickson. *Selling a Maritime Air Force: The PLA Air Force Campaign for a Bigger Piece of the Maritime Domain*. Montgomery, AL: China Aerospace Studies Institute, February 2019.
- McDevitt, Michael A. *China as a Twenty-First-Century Naval Power: Theory, Practice, and Implications*. Annapolis, MD: Naval Institute Press, 2020.
- McReynolds, Joe, ed. *China's Evolving Military Strategy*. Washington, D.C.: The Jamestown Foundation, April 2016.
- Medeiros, Evan S. and M. Taylor Fravel. "China's New Diplomacy," *Foreign Affairs*. New York: Nov/Dec 2003, Volume 82, Issue 6.
- Meyskens, Covell F. *Mao's Third Front: The Militarization of Cold War China*. Cambridge: Cambridge University Press, 2020.
- Morris, Lyle J. and Eric Heginbotham. *From Theory to Practice: People's Liberation Army Air Force Aviation Training at the Operational Unit*. Santa Monica, CA: RAND Corporation, 2016.
- Mulvaney, Brendan S., ed. *PLA Aerospace Power: A Primer on Trends in China's Military Air, Space, and Missile Forces*, 2nd Edition. Montgomery, AL: China Aerospace Studies Institute, 29 July 2019.
- Mulvenon, James. "Chairman Hu and the PLA's 'New Historic Missions.'" *China Leadership Monitor*, No. 27, 9 January 2009.
- National Air and Space Intelligence Agency. *People's Liberation Army Air Force 2010*. Dayton, OH: National Air and Space Intelligence Agency, 1 August 2010.
- Nethercut, Richard D. "Deng and the Gun: Party-Military Relations in the People's Republic of China." *Asian Survey*, Vol. 22, No. 8 (August 1982).
- O'Dowd, Edward C. *Chinese Military Strategy in the Third Indochina War: The Last Maoist War*. Routledge, New York, 2007.
- Peng Guangqian and Yao Youzhi, eds. *The Science of Military Strategy* [战略学]. Beijing: Academy of Military Science Press, December 2005. This is an English translation of the 2001 Science of Military Strategy.
- PRC State Council Information Office. *China: Arms Control and Disarmament*. Beijing, November 1995.
- PRC State Council Information Office, *China's National Defense* (中国的国防), Beijing: China, which is usually identified as the *Defense White Paper*. Published in Chinese and English. The first *Defense White Paper* was published in 1998 and was published every two years through 2012. The next version was not published until 2015 and then again until 2019. The 2015 version is identified as *China's Military Strategy* (中国的军事战略). Although the publication does not identify it as a *Defense White Paper*, it is considered a version of this series.

- Rupprecht, Andreas. *Chinese Air Power in the 20th Century: Rise of the Red Dragon*. Houston, TX: Harpia Publishing, 2019.
- _____. *Dragon's Wings: Chinese Fighter and Bomber Aircraft Development*. Manchester, UK: Crecy Publishing, 2013.
- _____. *Flashpoint China: Chinese Air Power and Regional Security*. Houston, TX: Harpia Publishing, 2013.
- _____. *Modern Chinese Warplanes: Chinese Air Force – Aircraft and Units*. Houston, TX: Harpia Publishing, 2018.
- _____ and Tom Cooper. *Modern Chinese Warplanes: Combat Aircraft and Units of the Chinese Air Force and Naval Aviation*. Harpia Publishing, 2012.
- Saunders, Phillip C. *Beyond Borders: PLA Command and Control of Overseas Operations*. Washington, D.C.: Center for the Study of Chinese Military Affairs, Institute for National Defense Studies, National Defense University, July 2020.
- Saunders, Phillip C. Saunders. *China's Global Activism: Strategy, Drivers, and Tools*. Washington, D.C.: Institute for National Strategic Studies, National Defense University, October 2006.
- Scobell, Andrew, David Lai, and Roy Kamphausen, eds. *Chinese Lessons from Other Peoples' Wars*. Carlisle, PA: U.S. Army War College, November 2011.
- Scramble website located at <https://www.scramble.nl/orbats/china/airforce>. Stokes, Mark A. "China's Quest for Joint Aerospace Power: Concepts and Future Aspirations." In Richard Hallion, Roger Cliff, and Phillip C. Saunders, eds., *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*. Washington, D.C.: National Defense University, 2012.
- Stokes, Mark A. "The Chinese Joint Aerospace Campaign: Strategy, Doctrine, and Force Modernization." In Mulvenon and Finkelstein, eds., *China's Revolution in Doctrinal Affairs*.
- Tanner, Murray Scot. "The Missions of the People's Liberation Army Air Force." In Richard P. Halloran, Roger Cliff, and Phillip C. Saunders, eds. *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*. Washington, D.C.: Center for the Study of Chinese Military Affairs, Institute for National Defense Studies, National Defense University, 2012.
- The Military Balance 2018, 2019, and 2020*. London: International Institute for Strategic Studies (IISS), March 2018, March 2019, and March 2020.
- United States Air Force. *Global Vigilance, Global Reach, Global Power for America*, 2017. https://www.af.mil/Portals/1/documents/newGV_GR_GP_PRINT.pdf.
- United States Air Force. *USAF Role in Joint All-Domain Operations*, Air Force Doctrine Note 1-20, 5 March 2020, 1-3. <https://www.doctrine.af.mil/Portals/61/documents/Notes/Joint%20All-Domain%20Operations%20Doctrine--CSAF%20signed.pdf>.
- United States Department of Defense, Defense Intelligence Agency. *Directory of PRC Military Personalities*. Washington, D.C., Defense Intelligence Agency, 1997, 1999, 2018, and 2019.
- Woo, Jess. *Understanding Shuangxue: The PLA's Learning Organization Initiative*. Montgomery, AL: China Aerospace Studies Institute, December 2018.
- Zhang, Xiaoming, "Air Combat for the People's Republic: The People's Liberation Army Air Force in Action, 1949–1969." In Mark A. Ryan, David Michael Finkelstein, and Michael McDevitt, eds., *Chinese Warfighting: The PLA Experience Since 1949*, Armonk, N.Y.: M. E. Sharpe, 2003.

Appendix F: Chinese Source Bibliography

[*People's Liberation Army Air Force Enlisted Force Handbook*] [中国人民解放军空军士兵手册]. Beijing: Lantian Press, 2006.

[*Research on New Century New Period Air Force Academic Institution Transformation Building and Personnel Education and Culture*] [新世纪阶段空军院校转型建设与人才培养研究], First Edition, Volume 1. Beijing: Lantian Press, 2009.

Academy of Military Science Research Department. [*People's Liberation Army Chronicle 1927-1982*] [中国人民解放军大事记1927-1982]. Beijing: PLA Academy of Military Science, November 1983.

Air Force News (空军报). In 1958, the PLAAF created its own newspaper, *Air Force News* (空军报), which has been published five times per week (Monday through Friday) for several decades.^{jw} Although it had always been published for internal use only, those restrictions were removed in 2009 and the newspaper became available to the public through a post office subscription. However, general access ceased to exist in 2018 and it is not clear if citizens can still subscribe to it through the post office. It is published by the PLAAF Political Work Department.

AMS All-Army Military Terminology Management Committee. [*People's Liberation Army Military Terminology*] [中国人民解放军军语] Second Edition. Beijing: Academy of Military Science Press, December 2011. Referred to as *PLA Military Terminology* dictionary, 2nd ed., 2011.^{jx} This dictionary has English translations for every term; however, the translations are not always consistent with how the terms are translated in other PLA publications.

AMS Military Strategy Research Department. *The Science of Military Strategy* [战略学]. Beijing: Academy of Military Science Press, December 2001. This book was translated into English in 2005 and is identified as the *Science of Military Strategy 2005*.

AMS Military Strategy Research Department. *The Science of Military Strategy* [战略学]. Beijing: Academy of Military Science Press, December 2013.

AMS World Military Yearbook Editorial Department. [*World Military Yearbook*] [世界军事年鉴]. Beijing: PLA Press. This book was published at the end of the year in the following years: 1985, 1991, 1993-1994, 1995-1996, and annually 1997-2015. Some of them covered more than one year. No yearbooks have apparently been published for the years starting in 2016 when the reorganization began.

Bai Chongming and Ji Changguo, eds. [*Air Force Strategy Transformation and Flight Personnel Education Innovation*] [空军战略转型与飞行人才教育创新]. Beijing: Lantian Press, May 2010.

Cai Fengzhen and Tian Anping. [*The Science of Integrated Air and Space Operations*] [空天一体作战学]. Beijing: PLA Publishers, August 2006.

Cheng Baoshan. [*Fundamental Laws and Regulations of Military Political Work in the New Century and New Era*] [新世纪新阶段军队政治工作的根本法规]. Beijing: Academy of Military Science Press, May 2004.

China Air Force [中国空军] magazine. First published in 1986 as a bimonthly magazine (50 pages) and then became a monthly magazine in 2010 (80 pages). It is produced by the PLAAF Political Work Department.

China Armed Forces [中国军队] bimonthly magazine in Chinese and English. Beijing: Military Department of Xinhua News Agency.

China Military Online has both a Chinese version (中国军网/ www.81.cn) and an English version (<http://english.chinamil.com.cn/>).

jw Prior to 2005, the newspaper did not have an official English name. The name *Air Force News* was added in 2005.

jx Most Chinese linguists just refer to this as the *Junyu* (军语).

China's National Defense [中国的国防], PRC State Council Information Office, which is usually identified as the *Defense White Paper*. Published in Chinese and English. PRC State Council Information Office, *China's National Defense* (中国的国防), Beijing: China, which is usually identified as the *Defense White Paper*. Published in Chinese and English. The first *Defense White Paper* was published in 1998 and was published every two years through 2012. The next version was not published until 2015 and then again until 2019. The 2015 version is identified as *China's Military Strategy* (中国的军事战略). Although the publication does not identify it as a *Defense White Paper*, it is considered a version of this series.

Conscription/Recruitment Dynamics (征兵动态) tab on the University/college Student Conscription (Recruitment) Information Network (大学生征兵信息网) (www.0730hao.cn/index.html).

Cui Yafeng, ed. *Military Training* [军事训练], Second Edition, Volume 32. Beijing: Encyclopedia of China Publishing House, 2007. Each term has an English translation.

Dai Jinyu, ed. [*Science of Air Force Strategy*] [空军战略学]. Beijing: National Defense University Press, July 1995.

Deng Liqun and Ma Hong, eds. *China Today: Aviation Industry* [当代中国的航空工业]. Beijing: China Academy of Social Science Press, 1988.

Deng Xiaoping. *Selected Works of Deng Xiaoping*, Volume III, 1982-1992. Beijing: Foreign Language Press, 1994.

Dong Huiyu and Mou Xianming, eds. *Dictionary of Modern Military Education* (sic) [现代军校教育辞典], Second Edition. Beijing: National Defense University Press, 2011. Each term is translated into English.

Du Jingchen. *Handbook for Officers and Enlisted of the Chinese PLA Navy*. Beijing: Haichao Press, 2012.

Feng Changsong, ed. [*PLA Management History*] [中国人民解放军管理史]. Beijing: National Defense University Press, June 2013.

Fu Guoqiang, ed. *Comparison of Chinese and Foreign Military Flight Education* [中外军事飞行教育比较研究]. Beijing: Military Science Press, January 2013.

Gao Rui, ed. [*Science of Military Strategy*] [战略学]. Beijing: Academy of Military Science Press, 1987.

General Political Department Cadre Department's Cultivation and Training Bureau and Shijiazhuang Army Command College, eds. [*A Guide for Applicants to Military Academic Institutions and Civilian College National Defense Student Program*] [军队院校及普通高校国防生班报考指南]. Beijing: PLA Press, January 2005.

Guo Dajun and Geng Xiangdong, eds. [*Chinese Contemporary History*] [中国当代史], Fourth Edition. Beijing: Beijing Normal University Press, 2016.

Guo Xilin, ed. [*Science of Air Force Radar Troop Tactics*] [空军雷达兵战术学]. (Beijing: Academy of Military Science Press, August 2002).

He Guoqiang, ed. [*Dictionary of China's Communist Party Central Committee Members for 1921-2003*] [中国共产党历届中央委员大辞典1921-2003]. Beijing: Chinese Communist Party History Press, 2004.

He Weirong, ed. [*Science of Air Force Training*] [空军军事训练学]. Beijing: Academy of Military Science Press, 2006.

Hu Guangzheng, ed. [*Modern Military Organizational Reform Research*] [当代军事体制变革研究]. (Beijing: Military Science Press, October 2007).

Hu Guangzheng, ed. [*The Science of Military Organizational Structure*] [军队组织编制学教程]. Beijing: Academy of Military Science Press, 2008.

Hu Guangzheng, ed. *Teaching Material for Comparing Chinese and Foreign Military Organizational Structure* (中外军事组织体制比较教程). Beijing: Academy of Military Science Publishers, July 1997.

Hua Qiang, Xi Jirong, Meng Qinglong, eds. [*China's Air Force: One Hundred Years of History*] [中国空军百年史]. Shanghai: People's Press, January 2006.

Hua Renjie, Cao Yifeng, and Chen Huixiu, ed. [*Air Force Academic Thought History*] [空军学术思想史]. Beijing: Liberation Army Publishers, 1992.

Hua Renjie, Cao Yifeng, and Chen Huixiu, ed. [*Air Force Academic Thought History*] [空军学术思想史]. Beijing: Liberation Army Publishers, 2007. Jiang Siyi, ed. [*Political Work Dictionary*] [整治工作词典]. Beijing: Military Sciences Publishing House, April 1991.

Jin Peng and Dong Ming, eds. [*An Overview of Chinese Military Academic Institutions*] [中国军事院校通览]. Beijing: Academy of Military Science Press, 2002.

Li Baozhong, ed. [*Comparison of Chinese and Foreign Military Systems*] [中外军事制度比较]. Beijing: Shangwu Yinshuguan Press, May 2003.

Li Cheng'an, ed. [*Education Reform in Military Academies in the New Situation*] [新形势下军队院校教育改革]. Beijing: National Defense University Press, 2015.

Li Chunzhao, ed. *The Introduction on Air Force Academies Education* [空军院校教育概论]. Beijing: Academy of Military Science Press, September 2017.

Lin Hu, ed. [*History of the Air Force*] [空军史]. Beijing: PLAAF Headquarters Education and Research Office, PLA Press, November 1989.

Liu Daoqin, ed. [*The Science of Air Force Tactical Logistics*] [空军战术后勤学]. Beijing: Air Force Command College, September 2002.)

Liu Xiaolian and Wang Qingliang, eds. [*People's Liberation Army AF Female Pilots*] [中国人民解放军空军女飞行员]. Lantian Press, September 2012.

Lu Wen. [*Strategic Logistics Support in Joint Operations*] [联合战役战略后勤支援]. Beijing: National Defense University Press, April 2000. Hereafter referred to as Lu, [*Strategic Logistics Support in Joint Operations*].

Lu Xiaoping, ed. [*The PLA Air Force*] [中国人民解放军空军]. Beijing: China Intercontinental Press, 2012. There is an English version of this book.

Ma Tianbao, ed., Jin Yu, Chen Xiaoliang, and Jin Peng asst eds. *Chinese Academic Canon in the 20th Century* [20世纪中国学术大典], [*Military Science*] [军事科学] volume. Fujian: Fujian Education Press [福建教育出版社], 2002.

Pan Xiangting, ed. *A New English-Chinese Chinese-English Dictionary of Military Terms* [新编英汉汉英军事词典]. (Beijing: National Defense Industry Press, October 1999.

PLA Daily (Jiefangjun Bao / 解放军报) online in English and Chinese.

PLAAF Committee. PLAAF Committee. [*People's Liberation Army Air Force Officer's Handbook*] [中国人民解放军空军军官手册]. Beijing: Lantian Press, November 2006.

PLAAF Committee. [*Science of Air Force Campaigns*] [空军战役学]. Beijing: PLA Press, November 1988.

Renmin Haijun [人民海军]. No official English name but translated as People's Navy. Published by the PLA Navy Political Work Department.

Shan Xiufa, ed. [*Research on Jiang Zemin Thought on National Defense and Army Building*] [江泽民国防和军队建设思想研究]. Beijing: Academy of Military Science Press, March 2004.

Song Shilun and Xiao Ke, eds. [*China Military Encyclopedia*] [中国军事百科全书]. Beijing: Academy of Military Science Press, July 1997. Each term has an English translation. Each of the following volumes were edited by a committee.

- Volume 1, [*Military Thought*] [军事思想]
- Volumes 2-3, [*Military Geography, Mapping, and Weather*] [军事地理测绘气象]
- Volume 4, [*Political Work, Military Logistics*] [政治工作, 军事后勤]
- Volumes 5-6, [*Military Technology*] [军事技术]
- Volumes 7-9, [*Military History*] [军事历史]

Su Shubo, Yang Qi, Yu Zhiyong, and Lin Cheng, eds. [*Military Cadre Work Handbook*] [军队干部工作手册]. Beijing: National Defense University Press, May 2011. Each term has an English translation.

Sun Ruling, ed. [*Basic Introduction to Operations Command*] [作战指挥基础概论]. Beijing: National Defense University Press, May 2011.

- Sun Yougui, ed. [*A Brief History of China People's Liberation Army Academic Institutions*] [中国人民解放军院校发展简史]. Beijing: Lantian Press, March 1996.
- Teng Lianfu and Jiang Fusheng, eds. [*Air Force Operations Research*] [空军作战研究]. Beijing: National Defense University Publishers, May 1990.
- The Military Training Department of the General Staff Department. [*Research into the Kosovo War*], PLA General Staff Department Military Training Department. Beijing: PLA Press, 2000.
- Wang An. [*Military Regularization Building*] [军事正规化建设]. Beijing: China: National Defense University Press, 2001.
- Wang Dinglie, ed. *China Today: Air Force* [当代中国空军]. Beijing: China Social Sciences Press, 1989.
- Wang Hai. [*General Wang Hai: My Combat Career*] [王海上将:我的战斗生涯]. Beijing: Zhongyang Wenxian Press, February 2000.
- Wang Houqing and Zhang Xingye, eds. [*Science of Campaigns 2006*] [战役学]. Beijing: National Defense University, 2006.
- Wang Wenrong, ed. *The Science of Military Strategy* [战略学]. Beijing: National Defense University Press, December 1999.
- Wang Yongming, ed. [*Research into the Iraq War*]. Beijing: PLA Press, March 2003.
- Wen Guangchun, ed. [*Logistics Support for Mobile Operations*] [机动作战后勤保障]. Beijing: PLA General Logistics Department Headquarters Department, Liberation Army Publishers, January 1997.
- Wu Quanshu. [*Science of Military Training*] [军事训练学]. Beijing: Academy of Military Science Press, 2003.
- Xin Ming, ed. [*Chinese People's Liberation Army Officers Handbook: Air Force Volume*] [中国人民解放军军官手册:空军分册]. Qingdao: Qingdao Publishing, 1991.
- Xing Zhenhong. [*NCO Building Theory and Practice*] [士官队伍建设理论与实践]. Beijing: National Defense University Press, December 2012.
- Xinhua News Agency* has both a Chinese and an English version.
- Xu Yaoyuan, Lin Xianghai, and Mu Song, eds. [*Military Cadre Work*] [军队干部工作], Second Edition, Volume 39. Beijing: Encyclopedia of China Publishing House, 2006. Each term has an English translation.
- Yao Jun, ed. [*A History of China's Aviation*] [中国航空史]. Zhengzhou: Dajia Publishers, September 1998.
- Yao Wei, ed. [*China Air Force Encyclopedia*] [中国空军百科全书]. Beijing: Aviation Industry Press, November 2005, Volume 1 and 2. Each term has an English translation.
- Yao Yanjing, Lai Mingchuan, and Wang Yamin, eds. [*Military Organization System Research*] [军事组织体制研究]. Beijing: National Defense University Press, June 1997.
- Yu Daqing, ed. [*PLA Officer Handbook*] [中国人民解放军军官手册]. Beijing: PLA General Political Department Cadre Department, December 2011.
- Yuan Wei and Zhang Zhuo, eds. [*History of the Development of China's Military Academic Institutions*] [中国军校发展史]. Beijing: National Defense University Press, July 2001.
- Yuan Wenxian. [*The Science of Military Command*] [军队指挥学]. Beijing: National Defense University Press, May 2008.
- Zhang Jian, ed. [*New Three Attacks Three Defenses Training Knowledge*] [新三打三防训练知识]. Beijing: Academy of Military Science Press, August 2003.
- Zhang Qiliang, ed. *A Chinese-English Dictionary of Military Terms* [汉英军事词典]. Beijing: Naval Press, December 2001.
- Zhao Yiping et al., eds. [*PLA Military History*] [中国人民解放军军史], Second Edition, Volume 3. Beijing: Encyclopedia of China Publishing House, December 2007. Each term has an English translation.
- Zhu Hui, ed. [*Strategic Air Force*] [战略空军论]. Beijing: Lantian Press, July 2009.
- Zhu Rongchang, ed. [*Air Force Dictionary*] [空军大辞典]. Shanghai: Shanghai Dictionary Press, September 1996. Each term has an English translation.

Appendix G: PLAAF Commanders: 1949-2019

This appendix provides a list of the PLAAF's 12 Commanders since 1949 through 2019, which includes the following information in each profile: date of birth, date passed away, place of birth, when they joined the PLA, their career path, when they received their rank promotions, and when they served as a Member on the National People's Congress (NPC). Of note: No profiles found anywhere for the Commanders who served as pilots includes any information about the aircraft they flew or their number of flying hours. See Table 3-23 in Chapter 3 to see how they fit into the structure during the PLAAF's Party Congresses. Table G-1 also provides information about the key billets they held before becoming the Commander. This is followed by a brief analysis of their overall career paths. The primary sources for Appendices G and H are as follows:

- *Dictionary of China's Communist Party Central Committee Members for 1921-2003*, (《中国共产党历届中央委员大辞典》), Beijing: Chinese Communist Party History Press, 2004. Identified in the footnotes as *CCP Dictionary*.
 - Zhu Rongchang, ed., *Air Force Dictionary* (《空军大辞典》), Shanghai: Shanghai Dictionary Publishing House, September 1996. Identified in the footnotes as *Air Force Dictionary*.
1. **Liu Yalou** (刘亚楼): 1910–1965; Wuping, Fujian Province. He joined the Red Army in 1929; served in various Army command and political officer positions; studied at Soviet Frunze Military Academy in 1939; joined the Soviet Army in 1942 following the German attack on Russia; returned to China in 1945 and served in the northeast; October 1947 served as commandant of Northeast Democratic Joint Aviation School; and became Commander of 14th *bingtuan* in April 1949, which became the core of the PLAAF in November 1949. November 1949 to May 1965, he served as the PLAAF Commander. November 1956 to May 1965, he was concurrently a CMC Member. In 1959, he was concurrently assigned as a Deputy Minister of Defense, a Deputy Chairman of National Defense Science and Technology Commission (NDSTC), and Director of MND's 5th Research Institute, which was responsible for missile development. He received the rank of general in 1955. He was a representative at the 1st NPC (1954) and a Member of 1st, 2nd, 3rd National Defense Committee. He was a representative at the 8th Party Congress (1956), where he was selected as a CMC Member.¹⁹²⁸
 2. **Wu Faxian** (吴发宪): 1915-2004; Yongfeng, Jiangxi Province. He joined the Red Army in 1930; served as a political officer in the Eighth Route Army and New Fourth Army; participated in Long March; served as a Deputy PC and Director of the Political Department in the 14th *bingtuan*, which became the core of the PLAAF in November 1949. In May 1950, Wu became a PLAAF Deputy PC and concurrently Director of the Political Department. For all practical purposes, he served as the PC, since Xiao Hua was transferred to the General Political Department (GPD) in April 1950. Wu officially became the PLAAF PC in February 1957. In May 1965, he became the Commander and, in December 1967, was simultaneously assigned as a Deputy Chief of the General Staff and Deputy Director of the CMC's General Office. In April 1969, he became a Member of the CCP Politburo. He was a member of Defense Minister Lin Biao's clique during the Cultural Revolution and was arrested the day Defense Minister Lin Biao's aircraft crashed in Mongolia in September 1971. He was kicked out of the Party in August 1973 and was sentenced to 17 years in prison in January 1981. He received the rank of lieutenant general in 1955. He was a representative at the 2nd and 3rd NPC (1959 and 1964) and a Member of the 9th Party Congress' Politburo (1969).¹⁹²⁹

Note: The PLAAF did not have a Commander following Wu Faxian's arrest in September 1971 until Ma Ning became Commander in May 1973.

3. **Ma Ning (马宁)**: 1922–2010; Qinyang, Henan Province. He joined the Red Army's Eighth Route Army in 1938 and served in various Operations Department, regiment Chief of Staff, Regiment Deputy Commander, and Regiment Commander positions. July 1950 to January 1952, he was a student at the PLAAF's 1st Aviation School in Harbin. January 1952 until April 1959, he served as a Deputy Commander and Commander in 21st air division in Shanghai. April 1959 to April 1970, he served as a Deputy Commander and then Commander of the 1st Air Corps in Changchun. April 1970 to May 1973, he was a Deputy Commander in the Lanzhou MRAF. May 1973 until April 1977, he was the PLAAF Commander. He received the rank of major general in 1964. He was a Member of 10th Party Congress (1973), 10th Party Central Committee, and the 4th NPC (1975).¹⁹³⁰
4. **Zhang Tingfa (张廷发)**: 1918–2010; Shaxian, Fujian Province. He joined the Red Army in 1933; he participated in the Long March. During the 1930s and 1940s, he served as a platoon Commander, Director of a communications regiment, Chief of Staff in a brigade, and the Director of communications and operations departments in various headquarters. After the PRC was established, he served as a Deputy Army Commander before being transferred to the PLAAF in 1951. After transferring to the PLAAF, he served as a Deputy Chief of Staff (1953 to 1958), Chief of Staff (November 1958 to March 1962), Deputy Commander and concurrently Chief of Staff (March 1962 to September 1966), Deputy Commander (September 1966 to October 1975), PC (November 1975 to April 1977), and then became the Commander from April 1977 until July 1985. As PLAAF Commander, he was also a CMC Member from August 1977 to September 1982, and was a Member of the CCP Politburo from August 1977 until September 1985. He received the rank of major general in 1955. He was a representative at the 10th, 11th, and 12th Party Congresses (1973, 1977, and 1982), a Member of the 11th and 12th Party Central Committee and Politburo, and a representative at the 5th NPC (1978).¹⁹³¹
5. **Wang Hai (王海)**: 1925–2020; Weihai, Shandong Province. He joined anti-Japanese youth team in 1944. 1944 to 1946, he studied at the Shandong Revolutionary University. He joined the PLA in June 1946. 1946 to 1950, he was a student in the Northeast Aviation in Mudanjiang. 1950 to 1951, he completed his flight training at the PLAAF 4th Aviation School in Shenyang and served as a squadron Commander in the 4th Combined Brigade's 10th Air Regiment. 1951 to 1952, he was a flight group Commander in the 3rd Air Division's 9th Air Regiment's 1st Air Group. 1952 to 1965, he moved up through the 9th Air Division as a regiment Deputy Commander, Regiment Commander, division Deputy Commander, and Division Commander. During the Korean War, he shot down four aircraft and damaged five aircraft. 1965 to 1969, he was a Deputy Commander of the 5th Air Corps in Hangzhou. 1969–1975, he was the Director of the PLAAF HQ's Training Department's 2nd Department. July 1975 to November 1982, he was the Commander of the Guangzhou MRAF. November 1982 to July 1985, he was a PLAAF Deputy Commander. July 1985 to November 1992, he was the PLAAF Commander and the Deputy Secretary of the PLAAF Party Committee. He received the rank of general in September 1988. He was a representative at the CPC 12th, 13th, and 14th Party Congress (1985, 1987, and 1992), a Member of the 12th, 13th, and 14th Party Central Committee, and a Member of the 3rd and 5th NPC (1964 and 1978).¹⁹³²

6. **Cao Shuangming** (曹双明): 1929–2019; Linchuan, Henan Province. He joined the PLA in 1946; served in the 2nd Field Army; 1951 to 1952 was a pilot cadet in the PLAAF 4th Aviation School in Shenyang. 1952 to 1965, he served in an air division as a pilot, squadron Commander, flight group Deputy Commander and Commander, air regiment Deputy Commander and Commander. During 1958, he shot down one Nationalist aircraft. 1965 to 1970, he served as 16th Air Division's 48th Regiment Commander and then the Division Commander. 1970 to 1974, he was an unidentified Air Corps Deputy Commander. 1974 to 1983, he was a Deputy Commander in the Shenyang MRAF (during 1982, he spend one-half year as a student in the Central Party School). 1983 to 1987, he was the Shenyang MRAF Commander and concurrently a Shenyang MR Deputy Commander. He became the PLAAF Commander from November 1992 to October 1994. He received the rank of lieutenant general in 1988 and general in May 1993. He was a representative at the 12th and 14th Party Congress (1982 and 1992), was a Member of the 14th Party Central Committee, and was a representative at the 6th and 7th NPC (1983 and 1987).¹⁹³³
7. **Yu Zhenwu** (于振武): 1931; Kuandian, Liaoning Province. He joined the PLA in 1947; served in the ground forces until 1950. 1950 to 1951, he attended three PLAAF's 2nd, 1st, and 4th aviation schools. 1951 to 1954, he served as a pilot and regiment navigation Director. 1954 to 1957, he was a flight group Commander and air division's flight skills inspection Director. 1957 to 1959, he was the firing training Director in an unidentified Air Corps. 1959 to 1964, he served in the Shenyang MRAF Headquarters Department's Military Training Department as a flight skills inspection Director and Flight Training Division Deputy Director. 1964 to 1965, he was an Air Regiment Commander and flight group Commander. 1965 to 1969, he was the Deputy Director in the Shenyang MRAF Headquarter Department's Flight Training Division. 1969 to 1973, he was an air division Deputy Commander. 1973 to 1979, he was a Deputy Director and then Director of the PLAAF Headquarters Department's Military Training Department. 1979 to 1983, he was Commander of the 7th Air Corps in Nanning. 1983 to 1985, he was the Guangzhou MRAF Commander. July 1985 to October 1994, he was a PLAAF Deputy Commander. October 1994 to November 1996, he served as the PLAAF Commander and Deputy Secretary of the PLAAF Party Committee. He received the rank of lieutenant general in 1988 and general in January 1996. He was a representative at the 12th and 14th Party Congress (1982 and 1992), and was an Alternate Member of the 13th and 14th Party Congress Central Committee (1987 and 1992).¹⁹³⁴
8. **Liu Shun Yao** (刘顺尧): 1939–2002; Zhaoyuan, Shandong Province. He joined the PLA in 1958; served as enlisted member before attending the PLAAF 1st Aviation Preparatory School from January 1959 to February 1960. February 1960 to August 1964, he was a pilot cadet at the PLAAF 5th Flying School in Jinan. August 1964 to November 1981, he served as an air division pilot, squadron Deputy Commander, group Commander, Regiment Commander and division Deputy Commander. October 1977 to October 1978, he was a student at the PLAAF Command College. November 1981 to May 1983, he served as an Air Division Commander. May 1983 to August 1985, he was a Deputy Commander of the Wulumuqi Command Post. He then served as the Wulumuqi Command Post Commander from August 1985 to June 1990. June 1990 to April 1994, he was a Deputy Commander of the Lanzhou MRAF. During this period, he attended the National Defense University from September to December 1992. April to October 1994, he was the Lanzhou MRAF Commander and concurrently a Lanzhou MR Deputy Commander. October 1994 to November 1996, he was a Deputy PLAAF Commander. November 1996 to May 2002, he was the PLAAF Commander and Deputy Secretary of the PLAAF Party Committee. He received the rank of major general in September 1988, lieutenant general in May 1995, and general in June 2000. He was a Member of the 13th Party Congress (1987) and 15th Party Central Committee (1997).

9. **Qiao Qingchen** (乔清晨): 1939; Zhengzhou, Henan Province. He joined the PLAAF in July 1956 and attended the 2nd Aviation Preparatory School until June 1958. He was a cadet at the 1st Aviation Preparatory School from July 1956 to February 1959 and joined the Communist Party in May 1960. February 1959 to June 1962, he was a cadet at the 6th Aviation School. June 1962 to December 1965, he was a regimental pilot. December 1965 to June 1970, he was a pilot in an independent flight squadron. June 1970 to May 1971, he was a Deputy PC in an independent flight group. May 1971 to July 1978, he served as the PC in an independent flight group. July 1978 to September 1979, he was an aviation division Deputy Commander. September 1979 to May 1983, he was an Air Division Commander. May 1983 to October 1985, he was the Director of the Deputy PC of the 4th Air Corps in Shanghai. October 1985 to January 1990, he was the Director of the Political Department in the 8th Air Corps in Fuzhou; January to June 1990, he was the Deputy PC of the 8th Air Corps. June 1990 to January 1993, he was the PC of the Xi'an Command Post (from March to July 1990, he attended a course at the Central Party School). January 1993 to January 1996, he was a Deputy PC in the Jinan MRAF. January 1996 to October 1997, he was the Beijing MRAF Commander, concurrently a Beijing MR Deputy Commander, a Member of the Beijing MR Party Committee's Standing Committee, and Deputy Secretary of the Beijing MRAF Party committee. October 1997 to January 1999, he was a PLAAF Deputy Commander and Member of the PLAAF Party committee's Standing Committee. January 1999 to May 2002, he was the PLAAF PC and Secretary of the PLAAF Party committee. May 2002 to October 2007, he was Commander of the PLAAF and Secretary of the PLAAF Party committee. During the 4th Plenum of the 16th Party Congress in September 2004, he also became a CMC Member. He was promoted to major general in September 1988, lieutenant general in July 1997, and general in May 2002.¹⁹³⁵
10. **Xu Qiliang** (许其亮): 1950; Linqiu, Shandong Province. He joined the PLAAF in July 1966. July 1966 to December 1967, he attended the PLAAF 1st Aviation Preparatory School. December 1967 to August 1969, he was a pilot cadet at the PLAAF 8th Aviation School and 5th Aviation School. August 1969 to May 1983, he served as an air division pilot, flight group Deputy Commander and Commander, and air division Deputy Commander. March to October 1982, he was a student at the PLAAF Command College. May 1983 to August 1984, he was an Air Division Commander. August 1984 to August 1984, he was an Air Corps Deputy Commander. August 1985 to July 1988, he was the Chief of Staff in the PLAAF Shanghai Command Post (While still assigned in Shanghai, he was a student in the National Defense University's Basic Course from September 1986 to July 1988). July 1988 to July 1989, he was an acting Deputy Commander in an Air Corps. July 1989 to January 1993, he was the Chief of Staff before being promoted as the Commander of an Air Corps. January 1993 to October 1994, he was a Deputy Chief of Staff at PLAAF HQ. October 1994 to February 1999, he moved up to become Chief of Staff at PLAAF HQ and a Member of the PLAAF Party Committee's Standing Committee. February 1999 to July 2004, he was Commander of the Shenyang MRAF and concurrently a Deputy Commander of the Shenyang MR. July 2004 to October 2007, he was a Deputy Chief of the General Staff. In October 2007, he became the PLAAF Commander and concurrently a CMC Member. In 2012, he became a vice chairman of the CMC. He was promoted to major general in June 1991, lieutenant general in July 1996, and general in July 2007. He was selected as an Alternate Member of the 14th and 15th Party Congress (1992 and 1997), and was selected as a Member of the 16th Party Central Committee (2002) and the 17th Party Central Committee (2007).¹⁹³⁶ In October 2012, he became a vice chairman of the CMC and a concurrent Politburo Member and will serve until the 20th Party Congress in 2022.¹⁹³⁷ He has been a Member of the 18th (2012) and 19th CCP Central Committee (2017).

11. **Ma Xiaotian** (马晓天): 1949; Gongyi, Henan Province. He joined the PLAAF in July 1965. July 1965-December 1966, he attended the PLAAF 2nd Aviation Preparatory School in Xi'an, Shaanxi Province. December 1966-May 1968, he served as a cadet in the PLAAF 12th Aviation School, in Linfen, Shanxi Province. May 1968-December 1970, he served as a flight instructor in the 12th Aviation School. In July 1969, he joined the CCP. December 1970-January 1972, he served as a cadet in the PLAAF 5th Flight School in Jinan, Shandong Province. From January 1972-May 1983, he transitioned up the career ladder from a pilot, to a flight squadron Commander, to a flight group Deputy Commander, to a regiment Deputy Commander and a Regiment Commander. From May 1983-May 1993, he served in an unidentified air division as a Deputy Commander and Commander. From April 1994-Mar 1997, he served as the Chief of Staff (e.g., Director of the Headquarters Department) and Commander of the 10th Air Corps in Datong, Shanxi Province. From Mar 1997-August 1998, he was a Deputy Chief of Staff in the PLAAF HQ's Headquarters Department. From August 1998-June 1999, he served as the Chief of Staff in the Guangzhou MRAF HQ. From June 1966-January 2001, he served as a Deputy Commander of the Lanzhou MR and concurrent Commander of the Lanzhou MRAF, as well as being a Member of the Lanzhou MR Party Committee Standing Committee and Deputy Secretary of the Lanzhou MRAF Party Committee. From January 2001-July 2003, he served as a Deputy Commander of the Nanjing MR and concurrent Commander of the Nanjing MRAF, as well as a Member of the Nanjing MR Party Committee Standing Committee and Deputy Secretary of the Nanjing MRAF Party Committee. He was a Member of the 16th CCP Central Committee. From July 2003-August 2006, he served as a PLAAF Deputy Commander. From August 2006-September 2007, he served as the commandant of the PLA National Defense University. From September 2007-December 2012, he served as a Deputy chief of the CMC General Staff with responsibilities for foreign relations. He was a Member of the 17th and 18th CCP Central Committee. From December 2012 to August 2017, he served as the PLAAF Commander and a concurrent CMC Member, as well as being the Deputy Secretary of the PLAAF Party Committee. He was promoted to major general in December 1995, lieutenant general in July 2000, and general in July 2009.
12. **Ding Laihang** (丁来杭): 1957; Zhejiang Province. After joining the PLAAF and attending an unidentified flight school, he worked his way up his career ladder as a pilot and Deputy Commander and Commander of a flight squadron and flight group. He then served in the Beijing MRAF as a Deputy Commander and Commander of the 24th Air Division's 71st Air Regiment and Deputy Commander of the 24th Air Division, and Commander of the Beijing MRAF Transition Training Base. He then transferred to the Nanjing MRAF where he served as Chief of Staff of the 8th Air Corps and Commander of the Air Force Fuzhou Command Post, which was the 8th Air Corps successor, and then became the Commandant of the Air Force Command College in Beijing. In 2009, he became the Chief of Staff of the Chengdu MRAF. In 2012, he became the Commander of the Shenyang MRAF and concurrent Deputy Commander of the Shenyang MR. In February 2016, when the Shenyang MR and MRAF became the Northern TC and TCAF, respectively, he continued as the Theater Air Force Commander and concurrent TC Deputy Commander. He received rank promotions in July 2003 (Major General) and July 2013 (Lieutenant General) and July 2019 (General). In August 2017, he became the 12th Commander of PLA Air Force and serves concurrently as the Deputy Secretary of the Party Committee.

PLAAF Commanders' Career Paths

As shown in the following bullets and in Table G-1, there is no clear path to becoming the PLAAF Commander:

- The PLAAF's first four Commanders (1949-1985), were all ground force officers who moved into various command positions after the PLAAF was formed.
- Of the 12 Commanders, three served first as the PLAAF Political Commissar.
- Only five Commanders served as a Deputy Commander.
- All eight Commanders from Wang Hai to Ding Laihang served as an MRAF/TCAF Commander.
- Two of the Commanders served as a Deputy Chief of the General Staff.
- One of them served as the Commandant of the PLA NDU.
- In 1973, Ma Ning became the first Commander with any pilot experience; however, the next Commander was a Political Commissar.
- Even though each Commander from Wang Hai to Liu Shunyao were pilots, the PLAAF reverted to a Political Commissar as the Commander in 2002.

Table G-1 provides a snapshot of the key leadership positions each Commander served in before assuming the command position.

Table G-1: PLAAF Commanders' Career Path

Commanders	PC	Deputy Commander	MRAF/TCAF Commander	Deputy Chief of the General Staff	Commandant, NDU
Liu Yalou					
Wu Faxian	X				
Ma Ning					
Zhang Tingfa	X	X			
Wang Hai		X	X		
Cao Shuangming			X		
Yu Zhenwu		X	X		
Liu Shunyao		X	X		
Qiao Qingchen	X	X	X		
Xu Qiliang		X	X		
Ma Xiaotian		X	X	X	
Ding Laihang		X			

Appendix H: PLAAF Political Commissars: 1949-2019

This appendix provides a list of the PLAAF's 13 Political Commissars (PC) since 1949 through 2019, which includes the following information in each profile: date of birth, date passed away, place of birth, when they joined the PLA, their career path, when they received their rank promotions, and when they served as a Member on the National People's Congress (NPC). This is followed by a brief analysis of their overall career paths. See Table 3-23 in Chapter 3 to see how they fit into the structure during the PLAAF's Party Congresses. As a result of inconsistent career paths, it is difficult to predict in advance who future PLAAF PCs will be.

1. **Xiao Hua** (萧华): 1916-1985; Xingguo, Jiangxi Province. He joined the Red Army in 1930. He served in various political officer positions in Red Army and PLA units until the PRC was formed in October 1949. He then served as the PLAAF's first PC for only six months from October 1949 to April 1950. From 1950 until he retired in September 1983, he served as an Army officer in various positions in the General Political Department, Academy of Military Science (AMS), and CMC. He was a CMC Member from 1956 to 1967. He received the rank of general in 1955. He was a representative at the 8th Party congress (1956), and a Member of the 8th, 11th, and 12th Party Central Committee (1956, 1977, and 1982).¹⁹³⁸
2. **Wu Faxian** (吴法宪): See biography in Appendix G.
3. **Yu Lijin** (余立金): 1913-1978; Daye, Hubei Province. He joined the Red Army in 1928; Besides participating in the Long March, he served in various Red Army and PLA political officer positions through the late 1950s or early 1960s, when he was selected as the Nanjing MRAF PC. He then became a PLAAF Deputy PC while concurrently serving as the Nanjing MRAF PC. In May 1965, he replaced Wu Faxian as the PLAAF's PC. In 1968, he became the PC of the Civil Aviation Administration of China. He received the rank of lieutenant general in 1955. He was a representative at the 8th and 11th Party Congress (1956 and 1977), and a representative at the 4th and 5th NPC (1975 and 1978).¹⁹³⁹
4. **Wang Huiqiu** (王辉球): 1911-1994; Wanan, Jiangxi Province. He joined the Red Army in 1928. Besides participating in the Long March, he served in various Red Army and PLA political officer positions through 1952. January 1953 to March 1960, he was the Director of the PLAAF Political Department and a Member of the PLAAF Party Committee's Standing Committee. March 1960 to September 1968, he was one of the PLAAF's Deputy PCs and was concurrently the Director of the Political Department until July 1964. September 1968 to May 1973, he was the PLAAF PC and Deputy Secretary of the PLAAF Party Committee. In May 1973, he became the Shenyang MR PC. He received the rank of lieutenant general in 1955. He was an alternate representative at 7th Party congress (1945), a representative at 9th Party Congress (1969), and a Member of 9th Party Central Committee.¹⁹⁴⁰
5. **Fu Chuanzuo** (傅传作): 1914-1982; Shishou, Hubei Province; He joined the Red Army in 1930; Besides participating in the Long March, he served in various Red Army and PLA political officer positions until 1950. September 1950 to September 1955, he was the Commander of the Southwest (Xinan) MRAF. August 1958

to September 1955, he also served concurrently as a Deputy Commander of the South Central (Zhongnan) MRAF and Commander of the Guangzhou command post. September 1955 to May 1973, he was the Wuhan MRAF Commander. May 1973 to October 1975, he was the PLAAF PC and first Secretary of the PLAAF Party Committee. He received the rank of major general in 1955. He was an alternate Member of 9th Party Central Committee (1969), a representative at the 10th Party congress (1973), a Member of 10th Party Central Committee, and a representative at the 4th NPC (1975).¹⁹⁴¹

6. **Zhang Tingfa** (张廷发): See biography in Appendix G.
7. **Gao Houliang** (高厚良): 1915-2006; Xinxian, Henan Province. He joined the Red Army in 1932. He served in various Red Army and PLA political officer positions until 1950. In 1950, he became the PC of the PLAAF's 3rd Pursuit Brigade and then the PC of the 3rd Air Division. 1952 to 1959, he served as a Deputy Commander and Commander of an Air Corps and concurrently as a Deputy Commander of an East China (Huadong) PLA Air Defense Force unit. 1959 to 1966, he was a Deputy Commander of the Nanjing MRAF. 1966 to 1973, he was the Commander of the Chengdu MRAF command post. May 1973 to April 1977, he was a PLAAF Deputy PC and, until October 1975, he was simultaneously Director of the Political Department. April 1977 to July 1985, he was the PLAAF PC. He received the rank of major general in 1955. He was a representative at the 11th and 12th Party Congress (1977 and 1982), an alternate Member of the 12th Party Central Committee, a Member of the 11th CMC (1977), and a representative at the 4th and 5th NPC (1978 and 1983).¹⁹⁴²
8. **Zhu Guang** (朱光): 1922; Changqing, Shandong Province. He joined the Eighth Route Army in 1939. He served in various Red Army and PLA political officer positions until 1970. 1970 to 1974, he was a Deputy Director of the Shenyang MRAF Political Department. 1974 to 1978, he was the PC of an Air Corps. 1978 to 1980, he was a Deputy PC in the Shenyang MRAF and simultaneously Director of the Political Department. 1980 to July 1985, he changed his uniform back to an Army officer and was a Member of the CMC's Discipline Inspection Commission and concurrently Director of the General Political Department's Cadre Department. July 1985 to November 1992, he again became an Air Force officer and was the PLAAF PC and Secretary of the PLAAF Party Committee. He received the rank of lieutenant general in 1988. He was a representative at the 12th and 14th Party Congress (1982 and 1992), an Member 12th Party Central Committee, and a representative at the 8th NPC (1993).¹⁹⁴³
9. **Ding Wenchang** (丁文昌): 1933; Suzhou, Anhui Province. He joined the PLA in July 1951. July 1951 to January 1954, he was a cadet at the 16th Infantry School, PLAAF 5th Preparatory *Zongdui*, and PLAAF 10th Aviation School. January 1954 to March 1966, he served as a mechanic in an air division, an inspector in an air division's Political Department's Organization Office, and a Deputy PC in a flight group. March 1966 to October 1970, he was a Secretary in the PLAAF Political Department's Secretary Division. October 1970 to May 1980, he served in an Air Corps as a Deputy Director and then the Director of the Political Department's Cadre Division, and then as a Deputy Director of the Cadre Department in the Shenyang MRAF's Political Department. May 1980 to July 1981, he was a Deputy PC in an air division. July 1981 to May 1983, he was the Director of the Shenyang MRAF Political Departments Cadre Department. May 1983 to November 1985, he served as a Deputy PC in an Air Corps (from September 1983 to January 1984, he was TDY as a student at the Central Party School). October 1985 to April 1988, he was a Deputy Director of the PLAAF Political Department. April 1988 to November 1992, he was the Director of the PLAAF Political Department and a Member of the PLAAF Party Committee's Standing Committee (March to May 1989, he was a student at the National Defense University).

November 1992 to January 1999, he was the PLAAF PC and Secretary of the PLAAF Party Committee. He received the rank of major general in September 1988; he was promoted to lieutenant general in July 1990 and general in January 1996. He was a Member of the 14th and 15th Party Central Committee (1992 and 1997) and a representative at the 7th NPC (1987).¹⁹⁴⁴

10. **Qiao Qingchen** (乔清晨): See biography in Appendix G.
11. **Deng Changyou** (邓昌友): 1947; Pengxi, Sichuan Province. He joined the PLAAF in March 1968. March 1968 to December 1972, he was an enlisted force engineer and was then commissioned as an officer and a platoon leader. December 1972 to March 1974, he was a staff officer in the Propaganda Office of a PLAAF Engineering *Zongdui*'s Political Department. March 1974 to May 1976, he was the Political Instructor in an engineering company. May 1976 to March 1979, he was the PC for an engineering group. March 1979 to May 1983, he was the Director of the Political Department in an Engineering *Zongdui*. May 1983 to August 1986, he was a Deputy PC in a command post in the Kunming MRAF (from September 1981 to July 1983, he was TDY as a student at the PLA Political Academy). August 1986 to June 1990, he served as the Deputy Secretary in the Wulumuqi Command Post's Discipline Inspection Commission. June 1990 to January 1993, he was the Director of the Wulumuqi Command Post's Political Department. January 1993 to July 1996, he was the PC of an Air Corps (from August 1993 to February 1996, he completed a correspondence course from the Central Party School). July 1996 to March 1997, he was a Deputy PC and concurrently the Secretary of the Discipline Inspection Commission in the Lanzhou MRAF. March to November 1997, he was a Deputy Director of the PLAAF Political Department. November 1997 to May 2002, he was Director of the PLAAF Political Department and concurrently a Member of the PLAAF Party Committee's Standing Committee. In May 2002, he became the PLAAF PC. While Qiao Qingchen was the Commander, Qiao was the PLAAF Party Committee Secretary and Deng was the Deputy. When Xu Qiliang became Commander, Deng became the Secretary and Xu the Deputy Secretary. He was promoted to major general in July 1992, lieutenant general in July 1999, and general in June 2006.¹⁹⁴⁵
12. **Tian Xiusi** (田修思): 1950; Mengzhou, Henan Province. Joined the PLA in 1968 as an enlisted Member. After becoming an officer and company Commander, he shifted to the political track. Spent his career in the Xinjiang Military District and then the Lanzhou MR HQ until becoming the Chengdu MR PC in 2009. He transferred to the PLAAF as the PC in 2012. He attended the NDU Basic Course for a year (1994–1995) and a Political Work Course at the Xi'an Political College for almost two years (2002–2004). Tian assumed his position in October 2012 and will have to retire at age 65 in 2015. He was promoted to major general in July 1997, lieutenant general in July 2006, and general in July 2012.
13. **Yu Zhongfu** (于忠福): 1956; Laiyang, Shandong Province. Joined the PLAAF in 1974 as an enlisted Member before becoming an officer and worked his way up the career ladder as a political officer with various leadership positions in subordinate functional and administrative organizations within the Political Department starting at the regiment level. He then became a PC in various units, including the 19th Fighter Division (Jinan MRAF) and 24th Fighter Division (Beijing MRAF), before becoming a Deputy Director of the Nanjing MRAF's Political Department. He then became the PC of the Air Force Shanghai Command Post (Nanjing MRAF), PC of the Jinan MRAF, and PC of the Nanjing MRAF. Yu became the PLAAF PC in July 2015. He received rank promotions in March 1994 (Senior Colonel), July 2007 (MGEN), July 2014 (LGEN), and July 2017 (General).

PLAAF Political Commissar's Career Paths

A review of the above PLAAF PCs found the following similarities, differences, and patterns:

- None of them began their career as a pilot.
- Once they became a PLAAF officer, only one (Zhu Guang) shifted back and forth between the Army and PLAAF.
- Only two of them served as an MRAF PC.
- None of them served as a PLAAF Deputy PC.
- Some of them shifted between Commander and PC billets at different levels.
- Three of them served as the PLAAF PC and then became the Commander.
- Once they served in any political officer billet, they always served as the Secretary of the Party Standing Committee while serving as the Commander.

Appendix I: PLAAF Deputy Commanders: 1949-2019

Appendix I provides the names and dates served for all of the PLAAF's 49 PLAAF Deputy Commanders since 1949.¹⁹⁴⁶ Note: There are always two or more Deputy Commanders for every organization down to the company level. Each one of them has a specific portfolio covering certain responsibilities.

Table I-1: PLAAF Deputy Commanders: 1949-2019

English Name	Dates
Chang Haokun (常乾坤)	Nov 1949 - May 1973
Wang Bi (王弼)	Dec 1950 - May 1951
Wang Bingzhen (王秉璋)	Feb 1953 - Sep 1971
Liu Zhen (刘震)	Feb 1954 - Sep 1966
Xu Shenji (徐深吉)	May 1955 - Oct 1967
Cao Lihuai (曹里怀)	Jun 1956 - Nov 1982
Cheng Jun (成钧)	Aug 1957 - Jan 1967
	May 1973 - Nov 1982
Tan Jiashu (谭家述)	Aug 1957 - May 1973
Shao Shaoqing (薛少卿)	Nov 1960 - Apr 1963
	Apr 1970 - Aug 1975
Zhang Tingfa (张廷发)	Mar 1962 - Sep 1966
	May 1973 - Oct 1975
Kuang Rennong (邝任农)	Jun 1962 - Aug 1975
Luo Yuanfa (罗元发)	Sep 1968 - May 1973
Zeng Guohua (曾国华)	Dec 1968 - Sep 1971
Zou Yan (邹炎)	May 1973 - Feb 1977
Zhang Jihui (张积慧)	May 1973 - Jul 1978
Wu Fushan (吴富善)	Oct 1975 - Nov 1982
He Tingyi (何廷一)	Oct 1975 - Jul 1985
Wang Dinglie (王定烈)	Nov 1982 - Jul 1985
Wang Hai (王海)	Nov 1982 - Jul 1985
Li Yongtai (李永泰)	Dec 1982 - Dec 1993
Yu Zhenwu (于振武)	Jul 1985 - Oct 1994
Lin Hu (林虎)	Sep 1985 - Oct 1994
Liu Zhitian (刘志田)	Sep 1987 - Nov 1992
Yang Zhenyu (杨振玉)	Jan 1993 - Oct 1994
Jing Xueqin (景学勤)	Dec 1993 - Jul 2003
Liu Shunqi (刘顺尧)	Oct 1994 - Nov 1996
Xin Dianfeng (辛殿枫)	Oct 1994 - Dec 1996
Wu Guangyu (吴光宇)	Oct 1994 - Jul 2003
Wang Liangwang (王良旺)	Nov 1996 - Jul 2003
Qiao Qingchen (乔清晨)	Nov 1997 - Jan 1999
Li Yongde (李永德)	Jan 1999 - Dec 2004
Ma Diansheng (马殿圣)	Jan - Dec 1999

Ma Xiaotian (马晓天)	Jul 2003 - Aug 2006
Wang Chaoqun (汪超群)	Jul 2003 - Dec 2005
Li Buyfu (李买富)	Jul 2003 - Dec 2005
Liu Chengjun (刘成军)	Dec 2004 - Sep 2007
He Rongrong (何为荣)	Dec 2005 - Dec 2012
Yang Dongming (杨东明)	Dec 2005 - Dec 2012
Jing Wenchun (景文春)	Aug 2006 - Jun 2012
Zhao Zhongxin (赵忠新)	Oct 2007 - Dec 2012
Chen Xiaogong (陈小工)	Jan 2009 - Dec 2012
Zhou Laiqiang (周来强)	Jun - Dec 2012
Zhang Jianping (张建平)	Dec 2012 - Dec 2017
Zhang Honghe (张洪贺)	Dec 2012 - Dec 2017
Chen Dong (陈东)	Dec 2012 - Dec 2018
Zheng Qunliang (郑群良)	Jul 2013 - Dec 2017
Ma Zhenjun (麻振军)	Dec 2017 - Present
Xu Anxiang (徐安祥)	Feb 2018 - Present
Zheng Yuanlin (郑元林)	Dec 2018 - Present

About the Authors

Kenneth W. Allen



In November 2019, Ken Allen (USAF Major – Ret.) retired as the Research Director for the U.S. Air Force’s China Aerospace Studies Institute (CASI), where he served since May 2017. After retiring, he became an independent consultant. During 21 years in the U.S. Air Force (1971-1992), he served as an enlisted Chinese and Russian linguist and intelligence officer with tours in Taiwan (Shulinkou Air Station and special project at the U.S. Embassy Defense Attaché Office), Berlin, Japan (5th Air Force), PACAF Headquarters, China, and Washington DC (Instructor in the Defense Intelligence Agency’s Joint Military Attaché School). From 1987-1989, he served as the Assistant Air Attaché in the U.S. Embassy in Beijing, where he received the Director of Central Intelligence’s Individual Exceptional Collector of the Year Award for 1988 and the Unit Exceptional Collector of the Year Award for 1989 (Tiananmen). He was inducted into DIA’s Defense Attaché System Hall of Fame in 1997. From 1992-2017, he worked for the US-Taiwan Business Council, the Henry L. Stimson Center, Litton TASC, the Center for Naval Analysis (CNA), Defense Group Inc. (DGI), and the Long Term Strategy Group (LTSG), as well as a consultant for RAND Corporations Project Air Force. During those 25 years, his primary focus was on China’s military organizational structure, personnel, education, training, and foreign relations with particular emphasis on the PLA Air Force. He has B.A. degrees from the University of California at Davis and the University of Maryland and an M.A. degree from Boston University. He has written multiple books, monographs, chapters, journal articles, and online articles on the PLA.

Cristina L. Garafola



Cristina Garafola is a Senior Policy Analyst at the RAND Corporation, where her research focuses on the ramifications of China’s rise for its global status, particularly with respect to defense issues, China’s influence on regional actors, and implications for the United States. Garafola served in the Office of the Secretary of Defense from 2017 to 2019, where she focused on National Defense Strategy and Indo-Pacific strategy implementation. She has also worked at the Department of the Treasury, the Center for Strategic and International Studies, and the Department of State. Her work has been published by RAND and in *Asian Security*, the *Journal of Strategic Studies*, *War on the Rocks*, and the Jamestown Foundation’s *China Brief*. Garafola holds an M.A. in China studies from the Johns Hopkins School of Advanced International Studies (SAIS), a graduate certificate from the Hopkins-Nanjing Center for Chinese and American Studies, and a B.A. in international relations and Chinese from Hamilton College. She has experience living and working in China and speaks Mandarin Chinese.

Lead Author's Reflections

How and Why Did I Get to This Point?

By Ken Allen

Advice for China Military Analysts

There are several reasons I wanted to write this lengthy section. For the past 20 years I have had the opportunity to be a guest lecturer for graduate students at various universities, including presenting my PLA 101 briefing 60 times to 35 different institutions, and have worked with many young civilian and military China analysts. I usually give them the following pieces of advice:

- 1) If you don't publish any articles, then no one will know you exist.
- 2) If all you do is copy and paste material from other Western authors, then you will not necessarily get credit for doing research on original Chinese sources.
- 3) You need to use Chinese sources as the primary material for your analysis.
- 4) You need to research and write about issues other than what everyone else is writing about (such as strategy and policy at the 30,000 foot level) but are not so esoteric that no one cares about your topic.
- 5) Although people can cordially disagree about analytical findings and judgmental issues, if your paper has factual data errors (e.g., you say X number and there are actually Y number) that are clearly inaccurate, people will question the rest of the information and you will not be asked to write any future articles.
- 6) Military officers or enlisted members need to think about what they are going to do the day they leave the military and how they can use what they learned while in the military.

Finally, as shown below, a single event or discussion can completely take your life in a different direction. I also recommend that everyone, especially military personnel, think about where they are going to be in five, ten, fifteen, and twenty years down the road and how do they want to get there.

Personal Background

Sports played a big role in my life as a kid and as a high school and college student, where I learned how to win, lose, and manage my time between sports and studying. As a kid, I played Little League from age 5-12 with a record of 55 wins and five losses and a batting average of .750 at 12. I then played two years of Babe Ruth baseball. During high school in Alturas, California, at Modoc Union High School (MUHS), I played junior varsity and varsity football as the quarterback and safety and basketball as the point guard. As a junior, we won the Northern California Basketball Championship Tournament, which resulted in an offer to play basketball in college. I was also on the track team. There was no baseball team. During my senior year, I was selected as the Outstanding Athlete of the Year. While in high school, I took two years of Spanish with straight As.

In 1967, I graduated from MUHS and attended the University of California at Davis (UCD) as a physical education (PE) major and psychology minor with the goal of becoming a high school coach. While at UCD, I played football as a defensive back as a freshman, redshirted my second year, missed the third year because of poor grades in English (poetry), and played as a senior, but was never very good. During my junior year, I helped coach the Davis High School freshman football team, which went undefeated and unscored upon. I was on the JV basketball team as a sophomore and junior (team captain), and was an assistant coach for the women's varsity basketball team my

senior year and helped them go to the nationals, where they won the first round out of 16 teams but lost in the Elite 8. I was also on the track team for my first two years and helped coach track at Davis High School for the last two years. I was in Delta Sigma Phi my last three years and played just about every intramural sport or coached the teams. We won the overall basketball championship as a junior, when I was the coach, and as a senior when I was the point guard. During my summers, I worked for the U.S. Forest Service as a surveyor. I also took two years of German, where I received straight As that helped when I was stationed in Berlin. While at UCD, I wrote only one lengthy report, which was on sprains for one of my physical education classes. I also received two Cs in political science because it wasn't something I cared about.

The single event that changed everything for me was during my sophomore year (1968), when the U.S. Department of Defense, which was deeply involved in the Vietnam War since 1961, began to shift from pure conscription to a volunteer system for the enlisted force. As such, the first draft lottery was implemented in 1968, and my draft number was 9, which I now consider my lucky number. I received a student deferment until I graduated. Upon graduation from UCD in 1971 with a 2.9 GPA, I received my draft notice from the Army in July and joined the USAF as an enlisted airman the next day, but I didn't start my basic training until September. I followed in my parents' shoes who both served in World War II. My father had served as an enlisted Marine Corps corporal building runways across the Pacific and was wounded by a Japanese mortar in Guam and my mother served in the Navy's Women Accepted for Voluntary Emergency Service (WAVES) as a court clerk. She was born in 1923 at the U.S. Army's Fort Mills on Corregidor Island in the Philippines to a father who was a coastal artillery sergeant from Oklahoma. As part of the enlistment process, I took the Defense Language Aptitude Battery test, where I received a score of 36 out of 60, which was an A+. Because 20 was the required score, I was selected to become a Chinese language student at the Defense Language Institute (DLI) in Monterey, California, after finishing basic training, where I was the flight leader for my 60-member flight. Altogether, between 1971 and 1977, I took the basic, intermediate, and advanced Chinese courses, as well as basic Russian. I was married in June 1972 and my sons were born in May 1984 and April 1986.

My tour in Taipei, Taiwan, from April 1974 to April 1976 (at Shulinkou Air Station for 10 months and at the U.S. Embassy's Defense Attaché Office (DAO) for 14 months) laid the foundation for my future career as an analyst of the PLAAF and a future attaché. One of the key things I remember is that we were told that, at any time, the PLAAF could attack Taiwan, which was under martial law at the time, with just 10 minutes notice. It wasn't until I wrote my first book on the PLAAF while teaching our military attachés at the Defense Intelligence Agency (DIA) from 1989-1992 that I realized that it was simply not possible.¹⁹⁴⁷ Specifically, the People's Republic of China's (PRC) Cultural Revolution (1966-1976) had devastated the PLAAF's capability to do just about everything at that time, including that its aircraft were barely flying due to massive political, training, and maintenance issues. As a matter of fact, the PLAAF did not begin flying over the Taiwan Strait until 1996 and to the centerline of the Taiwan Strait until 1998. Having worked at DAO in Taipei for 14 months, however, helped give me a goal to become an Assistant Air Attaché (A/AIRA) in Beijing from April 1987 through June 1989.

After leaving Taipei, I returned to DLI to study Russian. While taking my basic Russian course for 37 weeks and graduating #3 out of 100 students, I also completed the 37-week advanced Chinese course during the last 18 weeks of my Russian course. As a result, I received DLI's Martin J. Kellogg Award as the outstanding student of the year. I then served in Berlin, Germany (6912th Electronic Security Group), for 18 months as a Russian linguist before being selected for officer training halfway through my tour. After completing my officer basic training and specialty training in 1979, I served as an intelligence analyst at Headquarters 5th Air Force (Yokota Airbase, Japan) from October 1979 to April 1982 with a focus on the Soviet Air Force and the PLAAF. While at Yokota, I also completed a master's degree in international relations from Boston University (3.8 GPA) that I had started in Berlin and a second bachelors' degree in Asian Studies from the University of Maryland (4.0 GPA), which included a year of Japanese

language. Although I barely passed my political science classes at UCD, I did well with my Boston University and University of Maryland classes because what I was learning was relevant to my job.

From April 1982 to May 1985, I served as a Soviet Air Force and PLAAF analyst at Pacific Air Force (PACAF) Headquarters, where I was selected as the Directorate of Operations and Intelligence Junior Officer of the Year (1984). In 1984, the USAF gave me money to travel around China for a month. Although my job title at Yokota and PACAF was “senior China analyst,” China was basically not on anyone’s radar scope at that time. As one of my bosses told me, “Because China is still recovering from the Cultural Revolution and the PLAAF is not a threat and does not have relevant weapon systems or training, no one cares about China today, so we need to focus on the Soviet Union.” In May 1985, I was selected as an A/AIRA for Beijing’s DAO and spent two years in Washington, D.C., preparing for my assignment, which included one-on-one language training and attending the three-month Joint Military Attaché School (JMAS). In September 1986, I also had the opportunity to escort the PLAAF’s 55-member Song and Dance Troupe around the U.S. for over two weeks, where they performed in Washington, D.C. (National Theatre) and several USAF bases, including Langley AFB, Scott AFB, Offutt AFB, Randolph AFB, Air Force Academy, and Hickam AFB.¹⁹⁴⁸ The troupe, which included singers, dancers, and musicians, performed for over 16,000 people. A USAF KC-135 Stratotanker flew from California to Beijing with the USAF escorts to pick up the troupe and then flew directly to Anderson AFB. While flying along the U.S. and Canadian border, the tanker refueled a couple of USAF aircraft. Another USAF aircraft flew the delegation and escorts to each location and then back to Beijing. Shortly after I arrived in Beijing in April 1987, several members of the USAF Band made a reciprocal visit to Beijing, Shanghai, and Guangzhou, including performing at the U.S. Embassy over the Fourth of July. In addition, I had the opportunity to participate in several meetings with visiting PLAAF delegations that were negotiating the J-8-2 Peace Pearl foreign military sales (FMS) program for \$550 million. That said, however, there was virtually nothing available for me to use to study about the PLAAF. As such, when I arrived in Beijing in April 1987 as only the third A/AIRA since the U.S. established diplomatic relations with the PRC in 1979, I had almost no basic knowledge of the PLAAF, so I was starting from scratch.

During my 26 months in Beijing as a captain, I had the opportunity to escort an average of one delegation per month around China, including almost every province, autonomous region, and municipality. I also escorted two PLAAF delegations to the U.S., including the PLAAF’s PC, General Zhu Guang. Besides USAF delegations, I also got to escort a Congressional Foreign Relations Committee delegation in 1988 to Lhasa, Tibet, and Lieutenant General James Clapper to Liaoning Province in January 1989, where the two of us took a boat trip on the Yalu River and visited the Shenyang Aircraft Factory.¹⁹⁴⁹ I was also the in-country manager of the J-8-2 Peace Pearl foreign military sales program, so I got to visit the Shenyang Aircraft Factory about 10 times and to understand how the whole soup-to-nuts aircraft research, development, production, and acquisition process worked. Grumman Corporation was the prime contractor for the program.¹⁹⁵⁰ In January 1989, Colonel Larry Mitchell and I arranged for a USAF C-5 transport aircraft to take two J-8-2 prototypes and a mock-up directly from the Shenyang Aircraft Factory to Grumman’s facility in Bethpage on Long Island, NY. (See photo section in this book.) In February 1989, two USAF logistics officers were deployed to Beijing for one year to help with the program. They lived in a PLAAF hotel next to a regional logistics storage facility near the Great Wall, where all of the fire control system spare parts would be stored. Following the 4 June 1989 Tiananmen crackdown on civilians, the U.S. suspended arms sales to China; however, Chinese technicians in the U.S. were allowed to resume work on the program a few months later until Beijing decided in May 1990 not to proceed beyond the development stage and sent almost all the technicians

¹⁹⁴⁸ At that time, General Clapper was the Director of Intelligence at PACOM.

¹⁹⁴⁹ From its outset in 1985 until its cancellation in May 1990, the Chinese J-8-2 development project actually consisted of two programs. One program was the integration of an American fire control system acquired through the “Peace Pearl” program. The second program involved the installation of a Chinese fire control system. The Peace Pearl program originally called for modernizing 50 basic J-8-2 aircraft with a modified Westinghouse AN/APG 66 radar and fire control computer, a Litton LN-39 inertial navigation system, and a head-up display.

home.¹⁹⁴⁹ President George H.W. Bush ordered all four FMS contracts to be terminated and all equipment returned to China prior to the inauguration of his successor, Bill Clinton, on 20 January 1992.¹⁹⁵⁰ The two J-8-2 prototypes and the mock-up were subsequently shipped back to China in January 1993, along with four shipsets of avionics-upgrade kits and the remaining technicians.¹⁹⁵¹

During my tour, I learned a tremendous amount about how the PLAAF was organized from top to bottom based on discussions with PLAAF officers on the side while escorting the delegations. I also had the opportunity for a one-on-one conversation for an hour with the PLAAF's Commander, General Wang Hai, while flying from Guangzhou to Beijing after escorting the USAF's chief of Staff, General Larry Welch, around China for about a week in April 1989. At that time, General Welch and his delegation were flying from Guangzhou to Hong Kong to prepare for their trip home. At that time, very few publications were available concerning the PLAAF. From the time Martial Law was declared on 20 May 1989 until I departed Beijing at the end of my tour on 20 June, I spent most of my time monitoring PLA activities in Beijing that led up to and involved the Tiananmen military crackdown on civilians on 4 June and its aftermath. All embassy family members, as well as the two USAF logistics officers involved with the Peace Pearl Program, were evacuated from Beijing on 8 June and my successor arrived on 14 June.

While stationed in Beijing, I was able to begin purchasing the PLAAF's official magazine, *China Air Force*, which began in 1986 as a bimonthly magazine (50 pages) and then became a monthly magazine in 2010 (80 pages). A review of every issue of this magazine since 1986 has provided a wealth of knowledge about the topics in this book. In addition, in October 1989, China published a 730-page book entitled *China Today: Air Force*, which is one of the best books published about the PLAAF's history, including its organizational structure, combat history, and personnel.¹⁹⁵² Although it was difficult finding and purchasing publications about the PLAAF during the 1980s and early 1990s, the PLA, as a whole, became much more transparent starting in the late 1990s. This included various military dictionaries and an 11-volume encyclopedia, as well as the PRC's first biennial *China Defense White Paper* (1998). Starting in the early 2000s, the PLA began publishing multiple books (course materials, dictionaries, and encyclopedias), newspapers, and magazines that were available to the public; however, the PLA began limiting access to these sources in 2018 likely due to the tightening of political control under Xi Jinping.

While teaching at the JMAS from July 1989 until I retired from the Air Force in September 1992 as a major, I wrote my first book on the PLAAF and co-authored an article for the State Department's *Problem of Communism* journal.¹⁹⁵³ From 1992 until May 2017, I worked for several for-profit and non-profit companies as a China military analyst. In 1995, I was the lead author for *China's Air Force Enters the 21st Century* for RAND.¹⁹⁵⁴ In 1999, while working for the Henry L. Stimson Center, I wrote a major report with Eric McVadon (RDML-retired), who had served as the U.S. Defense Attaché in Beijing from July 1990-July 1992, on *China's Foreign Military Relations*. During May, which was shortly after U.S. Air Force B-2 bombers bombed the PRC Embassy in Belgrade, we visited Beijing to conduct interviews with Chinese and non-Chinese military, government, and non-government officials about their views of China's foreign military relations program. In conjunction with the Beijing visit, I traveled to six other cities (Tokyo, Singapore, Kuala Lumpur, Hanoi, and New Delhi) and he traveled to Ulan Bator to conduct further interviews.

Since 1989, there have been several organizations that have either sponsored annual conferences examining the PLA across the board or held individual workshops on key issues.^{ka} I have participated in over 70 of them and have written three full books and over 130 chapters and on-line articles on the PLA and PLAAF. From 2003 through 2019, I chaired a monthly evening training session on my own time for every U.S. military attaché designate to Beijing, Hong Kong, and Taiwan, which included over 100 personnel as well as multiple China analysts in the intelligence community.

ka These organizations include the U.S. National Defense University (NDU), the RAND Corporation, the U.S. Army War College's Strategic Studies Institute (SSI), the Carnegie Institute for International Peace (CEIP), Taiwan's CAPS (Council for Advanced Policy Studies), the Jamestown Foundation, China Maritime Studies Institute (CMSI), The Heritage Foundation, the American Enterprise Institute (AEI), U.S. Pacific Command (PACOM), and China Aerospace Studies Institute (CASI).

In November 2004, I attended the 6th International Symposium on Sun Tzu's Art of War in Shenzhen, Guangdong Province, which was hosted by the China Research Society of Sun Tzu's Art of War (CRSSTAW), and presented a briefing entitled "Sun Tzu and the Enlisted Force" that laid the foundation for future projects I did on the PLA's NCO program. In June 2006, I attended the 7th International Symposium in Hangzhou, Zhejiang Province, which included a group photo with Xi Jinping, who, at that time, was the Governor and provincial Party Secretary. During the trip, I also attended a conference at Fudan University in Shanghai and presented a briefing on US-China military diplomacy at Fudan. I did not give a presentation at Hangzhou.

In March 2006, I was part of a small delegation led by Admiral (USN-Ret.) Dennis Blair that visited the PLA's China Institute for International Strategic Studies (CIISS) in Beijing to discuss PLA personnel issues. At that time, Admiral Blair who was the former PACOM Commander, was the President of the Institute for Defense Analysis (IDA) in Vienna, VA. In November 2006, I was part of a Center for Naval Analysis (CNA) delegation that had meetings with the China Institutes of Contemporary International Relations (CICIR) in Beijing and the Tianjin Academy of Social Science. In June 2007, I also participated in a reciprocal visit by CIISS to IDA. In February 2007, I testified before the United States-China Economic and Security Review Commission (USCC) about US-China military diplomacy, which included recommendations about future engagements.¹⁹⁵⁵

In April 2008, I attended a space conference in Beijing as well as meetings in Taipei and Beijing concerning cross strait confidence building measures. In November 2009, I also participated as a member of a small delegation led by the Defense Group Inc. (DGI) that visited CIISS in Beijing to discuss PLA defense budgeting issues. From 2014-2019, I had the opportunity to help escort a delegation from the PLAAF's Command College during their visit to Washington, D.C., and to participate in meetings with a visiting delegation from the PLA's National Defense University. During each of the above meetings, I had the opportunity to have detailed side discussions with various delegation members, students, faculty, and retired PLA flag officers about personnel and organizational structure issues.

From May 2017 to November 2019, I served as the Research Director for the USAF's China Aerospace Studies Institute (CASI), where I helped oversee and write several reports on the PLAAF and received the Department of the Air Force's Award for Meritorious Civilian Service upon my retirement. This book takes the key information from all of those publications and merges them together into the six categories. Since I left CASI, it has continued to publish outstanding reports relevant to understanding how the PLA's aerospace entity works.

Challenges and Pet Rocks

One of the biggest challenges in writing this book was that the PLA as a whole and the PLAAF in particular are not consistent in how they translate various terms and concepts. For example, two separate official PLA dictionaries and encyclopedias translate the name of the same academic institution differently. Specifically, although the characters are all the same (空军大连通信士官学校), the *China Air Force Encyclopedia* uses Dalian Air Force Communication Noncommissioned Officer School, while the PLA's *Dictionary of Modern Military Education* uses Dalian Communication Sergeant School of the Air Force, and the name on the school itself uses Air Force Communication NCO Academy. As a result, it is sometimes difficult to make sure the "correct/official" name is used. Therefore, several of the chapters have a section on terms and concepts.

One of my many pet rocks is understanding and explaining the PLA's grade and rank system. Specifically, the PLA implemented a 10-rank officer system in 1955 but abolished it in 1965 at the beginning of the Cultural Revolution. Although the National People's Congress approved a new rank system in 1982, it was not implemented until 1988, when I was serving as an A/AIRA. We were excited that we could actually call someone by their rank. One of the most memorable and important discussions I had was in 2000 with a visiting PLA officer, who, for the first time, discussed the PLA's 15-grade structure and how it links with the 10-rank structure. I still have the original list

of grades and ranks that he wrote for me. I had never heard about this grade system, so I started doing some research on it and providing the information to the entire community who was watching the PLA. Fortunately, in 2007, PLA officers began wearing ribbons that identify their grade. This book provides considerable information about how the grade system is the foundation for the PLA's organizational and personnel structure and why it is important for the USAF to understand both the grade and the rank systems.

Finally, during my first eight months in Beijing, Brigadier General Jon Reynolds, who was the Defense Attaché and concurrent Air Attaché, drove home that I needed to write my reports for the full spectrum of people who would read them from the E-1 (new enlisted airman) to the O-10 (4-star general). I used that model while teaching at JMAS and for writing this book.

Endnotes

- 1 “Nuclear Gravity Bombs,” GlobalSecurity.org, undated, accessed at <https://www.globalsecurity.org/wmd/world/china/nuke-gravity.htm>; “Nuclear Weapon Tests,” GlobalSecurity.org, undated, accessed at <https://www.globalsecurity.org/wmd/world/china/tests.htm>.
- 2 Kenneth W. Allen, Dennis J. Blasko, John F. Corbett, Jr., “The PLA’s New Organizational Structure: What is Known, Unknown and Speculation,” (Washington, D.C.: Jamestown Foundation *China Brief*, Part 1 (Volume 16, Issue 3) 4 February 2016); and Part 2 (Volume 16, Issue 4) 23 February 2016).
- 3 Guo Dajun and Geng Xiangdong, eds., [*Chinese Contemporary History*] [中国当代史], 4th Edition, (Beijing: Beijing Normal University Press, 2016).
- 4 Feng Changsong, ed., [*PLA Management History*] [中国人民解放军管理史], (Beijing: National Defense University Press, June 2013), 1-7. Qiao Qingchen, “Air Force of the CPLA” [中国人民解放军空军] in Yao Wei, ed., [*China Air Force Encyclopedia*] [中国空军百科全书], (Beijing: Aviation Industry Press, November 2005, Volume 2, 1231-1235). Hereafter referred to as Yao, ed., [*China Air Force Encyclopedia*].
- 5 Wang An, [*Military Regularization Building*] [军事正规化建设], (Beijing, China: National Defense University Press, 2001), 14. *2015 Defense White Paper*.
- 6 The following information is excerpted from Kenneth W. Allen, Glenn Krumel, and Jonathan D. Pollack, *China’s Air Force Enters the 21st Century*, (Santa Monica, CA: RAND Corporation, MR-580-AF, 1995), 18–67. Used with permission. Accessed at: https://www.rand.org/pubs/monograph_reports/MR580.html. Hereafter referred to as Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century. People’s Liberation Army Air Force 2010*, Chapter 1, (Dayton, OH: National Air and Space Intelligence Agency, 1 August 2010). Hereafter referred to as *PLAAF 2010*. One of the primary Chinese sources is Wang Dingle, ed., *China Today: Air Force* [当代中国空军], (Beijing: China Social Sciences Press, 1989). Hereafter referred to as Wang, ed., *China Today: Air Force*.
- 7 Zhao Yiping et al., eds. [*PLA Military History*] [中国人民解放军军史], Second Edition, Volumes 1, 2, and 3. Beijing: Encyclopedia of China Publishing House, December 2007. Hereafter referred to as Zhao et al., eds., [*PLA Military History*], Second Edition.
- 8 “China Vows Military Reform by 2020, with Plans for New Anti-Corruption Watchdog in PLA,” *South China Morning Post*, 26 November 2015, accessed at <https://www.scmp.com/news/china/diplomacy-defence/article/1883606/china-vows-breakthrough-long-awaited-military-reform>.
- 9 United States Department of Defense, Defense Intelligence Agency. *Directory of PRC Military Personalities*. Washington, D.C., Defense Intelligence Agency, 2020.
- 10 Ibid.
- 11 Republic of China Ministry of National Defence, *2019 National Defense Report, Ministry of National Defense, R.O.C.*, 2020, accessed at <https://www.ustaiwandefense.com/tidnswp/wp-content/uploads/2020/02/Taiwan-National-Defense-Report-2019.pdf>.
- 12 *China Military Power: Modernizing a Force to Fight and Win*, 2019, (Defense Intelligence Agency, November 2018), 62. Hereafter referred to *China Military Power 2019*.
- 13 Kenneth W. Allen, “Introduction to the PLA’s Administrative and Operational Structure,” and “PLA Air Force Organization,” in James Mulvenon and Andrew N.D. Yang, eds, *The People’s Liberation Army as Organization*, Chapter 1, (Santa Monica, CA: RAND Corporation, October 2002). Hereafter referred to as Allen, “Introduction to the PLA’s Administrative and Operational Structure” and Allen, “PLA Air Force Organization.”
- 14 Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1231-1235.
- 15 According to Yang Aihua, the Soviets had supplied a total of 5,000 aircraft to the PLA by 1955, to include 4,400 for the PLAAF and about 500 to Naval Aviation. Zhang Aihua, [“The Soviet Union’s Technical Assistance to the Chinese Air Force, Features and Influences (1949-1960)”] [苏联对中国空军实施技术援助的方式, 特点及影响(1949-1960)], (Beijing: *Studies in Dialectics of Nature* [自然辩证法研究], Vol. 28, No. 8, August 2012).
- 16 The information in this section comes from Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century*, Chapter 3. One of the primary sources for the information in the book came from Wang, ed., *China Today: Air Force*.
- 17 “Korean War,” *Wikipedia*, last edited on 3 January 2021, accessed at https://en.wikipedia.org/wiki/Korean_War.
- 18 As part of the “People’s Volunteer Army,” China’s air force was organized and known as the “People’s Volunteer Air Force.”
- 19 These MRAFs are listed in protocol order based on Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3, 548-557. Yao, ed. [*China Air Force Encyclopedia*], 1231-1241.
- 20 The information in the first two paragraphs, including the endnotes, comes from Lizzy Leary, *Strait Talk: United States Containment of Communism in The Taiwan Strait*, Bachelor of Arts Thesis, University of Mississippi, May 2016, accessed at <https://www.google.com/search?q=ROC+Air+Force+response+during+third+taiwan+strait+crisis&aq=chrome.69157.25223j0j7&sourceid=chrome&ie=UTF-8>. Hereafter referred to as Leary, *Strait Talk*.
- 21 The information in this paragraph comes from Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century*, Chapter 3.
- 22 The information in this section comes from Joëlle Charbonneau, Katie Heelis, and Jinelle Piereder, *Putting Air Defense Identification Zones on the Radar*, Centre for International Governance Innovation (CIGI) Graduate Fellows Series, Policy Brief, No. 1, June 2015, accessed at https://www.cigionline.org/sites/default/files/graduate_fellows_pb_no.1.pdf.

- 23 Ibid. "A Primer on M503 and Civil Aviation in Asia," Asia Maritime Transparency Initiative, 14 March 2018, accessed at <https://amti.csis.org/primer-m503-civil-aviation-asia/>.
- 24 "Taiwan Strait Middle Line" *Global Security*, undated, accessed at <https://www.globalsecurity.org/military/world/taiwan/midline.htm>.
- 25 Discussion with retired military officers in Taiwan in June 2020, who chose to remain anonymous.
- 26 "A Primer on M503 and Civil Aviation in Asia."
- 27 Leary, *Strait Talk*. "Milestones: 1953-1960," U.S. Department of State, Office of the Historian. <https://history.state.gov/milestones/1953-1960/taiwan-strait-crises>.
- 28 "Milestones: 1953-1960."
- 29 The information concerning engagements over the Taiwan Strait comes from Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, Chapter 3.
- 30 The information the following eight paragraphs come from Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, Chapter 3.
- 31 "Black Cat Squadron," *Wikipedia*, last edited on 17 October 2020, accessed at https://en.wikipedia.org/wiki/Black_Cat_Squadron.
Lu Xiaoping, ed., *The PLA Air Force*, (Beijing: China Intercontinental Press, 2012), 65-71. Hereafter referred to as Lu, ed., *The PLA Air Force*.
"U-2 Dragon Lady," Lockheed Martin, undated, accessed at <https://www.lockheedmartin.com/en-us/products/u2-dragon-lady.html>.
- 32 The information in the first two paragraphs, including the endnotes, comes from Leary, *Strait Talk*.
- 33 "Clinton Rebuffs Senate on Letting Taiwan President Visit US," *New York Times*, May 11, 1995.
- 34 Sheng, Lijun, *China's Dilemma: The Taiwan Issue* (New York, NY: LB. Taurus & Co., 2001), 24.
- 35 "China Demand US Cancel Visit by Taiwan's President," *New York Times*. May 24, 1995.
- 36 This information comes from various sources, including J. Michael Cole, "The Third Taiwan Strait Crisis: The Forgotten Showdown Between China and America: It made Asia What It Is Today," *The National Interest*, 10 March 2017, accessed at <https://nationalinterest.org/feature/the-third-taiwan-strait-crisis-the-forgotten-showdown-19742>.
Robert S. Ross, "The 1995-96 Taiwan Strait Confrontation: Coercion, Credibility, and Use of Force," *International Security*, Vol. 25, No. 2 (Fall 2000), MIT Press, 87-123. Barton Gellman, "U.S. and China Nearly Came to Blows in '96," *The Washington Post*, 21 June 1998, accessed at <https://www.washingtonpost.com/archive/politics/1998/06/21/us-and-china-nearly-came-to-blows-in-96/926d105f-1fd8-404c-9995-90984f86a613/>.
Third Taiwan Strait Crisis: Central Emergency Commission of the PRC: SSICsim 2017, accessed at <https://static1.squarespace.com/static/573c756e859fdo6a1f830223/t/581c27f620099e1f4ee248dd/1478240246782/PRC-Background-Guide-Third-Draft.pdf>.
- 37 Heather Smith and Stuart Harris, *Economic Relations Across the Strait: Interdependence or Dependence?*, Australia-Japan Research Centre, *Pacific Economic Papers*, No. 264, February 1997, accessed at <https://crawford.anu.edu.au/pdf/pep/pep-264.pdf>. "Taiwan Strait: 21 July 1995 to 23 March 1996," *globalsecurity.com*, accessed at https://www.globalsecurity.org/military/ops/taiwan_strait.htm.
- 38 "Russian Purchases Boost China's Air Strength," *British Broadcasting Corporation*, 28 August 1999, from 'Yazhou Zhoukan,' Hong Kong, in Chinese, 22 August 1999, 34. Text of article by Wang Chien-min, "Beijing Contends for Air superiority over Taiwan Strait," published by the Hong Kong journal *Yazhou Zhoukan*, 25 August 1999.
- 39 Gellman, "U.S. and China Nearly Came to Blows in '96."
- 40 "U.S. Carrier Group Sails Near China as Tensions Over Taiwan Mount," *Los Angeles Times*, 27 January 1996, 5. James Mann, *About Face: A History of America's Curious Relationship with China, From Nixon to Clinton*, (New York: Vantage Books, 1998), 335.
- 41 Gellman, "U.S. and China Nearly Came to Blows in '96."
- 42 Kenneth W. Allen, "PLA Air Force Operations and Modernization" in Susan M. Puska, ed., *The People's Liberation Army after Next*, (Carlisle, PA: U.S. Army War College Strategic Studies Institute, 2000). Hereafter referred to as Allen, "PLA Air Force Operations and Modernization."
- 43 Lo Ping, "It Costs China 3 Billion Yuan to Make a Show of Its Military Strength," *Cheng Ming*, Hong Kong, 15 April 1996. Steven Mufson, "China Masses Troops on Coast Near Taiwan," *The Washington Post*, 14 February 1996.
- 44 "Mainland Fighters Said to Appear Above Taiwan Straits," *Taipei Tzu-Li Wan-Pao*, 26 November 1998.
- 45 *2008 National Security Report*, Taipei, Taiwan, Republic of China National Security Council, 26 March 2008.
- 46 *2008 National Security Report*, Taipei, Taiwan, Republic of China National Security Council, 26 March 2008.
- 47 Yao Jianing, ed., "China's Air Force Conducted Four Drills over the Western Pacific in 2015," *China Radio International* in English, 4 January 2016, accessed at <http://english.cri.cn/12394/2016/01/03/41828911236.htm>. Ian Burns McCaslin and Andrew S. Erickson, *Selling a Maritime Air Force: The PLAAF's Campaign for a Bigger Maritime Role*, (Maxwell AFB, AL: USAF China Aerospace Studies Institute, 29 July 2019). Hereafter referred to as McCaslin and Erickson, *Selling a Maritime Air Force*.
- 48 Matthew Strong, "Taiwan Demands Immediate End to China's M503 Route Over Taiwan Strait Flight Path Threatens Airline Safety and Taiwan's Security: MAC [Mainland Affairs Council]," *Taiwan News*, 4 January 2018, accessed at <https://www.taiwannews.com.tw/en/news/3334026>.
- 49 Michal Thim, "China's Growing Military Activity Around Taiwan Triggers Alarm," *Taiwan Insight*, 16 January 2018, accessed at <https://taiwaninsight.org/2018/01/16/chinas-growing-military-activity-around-taiwan-triggers-alarm/>.
- 50 Jesse Johnson, "Taipei Blasts 'Provocative' Chinese Fighter Jet Incursion Across Taiwan Strait Line," *Japan Times*, 1 April 2019, accessed at <https://www.japantimes.co.jp/news/2019/04/01/asia-pacific/taipei-blasts-provocative-flight-chinese-fighters-taiwan-strait/>.

- 51 Kenneth W. Allen and Jana Allen. “Assessing China’s Response to U.S Reconnaissance Flights,” (Washington, D.C.: Jamestown Foundation *China Brief*, Volume 11, Issue 16, 2 September 2011). J. Michael Cole, “Intrusion by PLA plane more than routine,” *Taipei Times*, 28 July 2011, accessed at www.taipetimes.com/News/taiwan/archives/2011/07/28/2003509332. Lo Chu-tung and Sofia Wu, “MND Rebutts as ‘Fictional’ Report of China’s Jet Fighter Intrusion,” *Focus Taiwan CNA English News*, 22 August 2011 accessed at <https://focustaiwan.tw/politics/201108220040>; John Dotson, “Military Activity and Political Signaling in the Taiwan Strait in Early 2020,” (Washington, D.C.: Jamestown Foundation *China Brief*, 1 April 2020), accessed at <https://jamestown.org/program/military-activity-and-political-signaling-in-the-taiwan-strait-in-early-2020/>.
- 52 Correspondence with several people in Taiwan.
- 53 Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century*, 14.
- 54 M. Taylor Fravel, *Active Defense: China’s Military Strategy since 1949*, (Princeton University Press: 2019), 96-97. Hereafter referred to as Fravel, *Active Defense*.
- 55 *PLAAF 2010*, Chapter 1. Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century*, Chapter 3.
- 56 *Annual Report to Congress: Military Power of the People’s Republic of China.*, 2008, (Washington, D.C.: Office of the Secretary of Defense, June 2008), 53. Hereafter referred to as *Annual Report to Congress 2008*.
- 57 Kenneth W. Allen, *People’s Republic of China People’s Liberation Air Force*, (Washington, D.C.: Defense Intelligence Agency, May 1991), Section 20, 20-8. Hereafter referred to as Allen, PRC PLAAF, 1991.
- 58 *PLAAF 2010*, Chapter 1. The primary sources for this data are Wang, ed., *China Today: Air Force*; Yao, ed., [*China Air Force Encyclopedia*], Volume 2; Zhang Nongke, [“Visit with PLAAF Commander Liu Shun Yao and Political Commissar Qiao Qingchen”], *China Air Force*, (Beijing: PLAAF Political Department, November-December 1999); Lin Hu, ed., *History of the Air Force* [空军史], (Beijing: PLA Press, PLAAF Headquarters Education and Research Office, November 1989); Hereafter referred to as Lin, ed., [*History of the Air Force*]; Hua Qiang, Xi Jirong, Meng Qinglong, eds., *China’s Air Force: One Hundred Years of History* [中国空军百年史], (Shanghai: People’s Press, January 2006).
- 59 Wang Dinglie, ed., *China Today: Air Force*, [当代中国空军], Beijing: China Social Sciences Press, 1989, 1. Zhang Nongke, “Visit with PLAAF Commander Liu Shun Yao and Political Commissar Qiao Qingchen,” *China Air Force* (中国空军) magazine, (Beijing: PLAAF Political Department, November-December 1999, Volume 1999-6), 18-19. This interview was conducted in conjunction with the 50th anniversary of the PLAAF.
- 60 Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1235.
- 61 Academy of Military Science Military History Research Office, eds., *China’s People’s Liberation Army: 80 years of History—1927-2007* [中国人民解放军的八十年], (Beijing: Academy of Military Science Press, December 2007).
- 62 “Air Force Branches” (空军兵种), Zhu Rongchang, ed., [*Air Force Dictionary*] [空军大辞典], (Shanghai: Shanghai Dictionary Press, September 1996), 154. Hereafter referred to as Zhu, ed., [*Air Force Dictionary*]. “Arms” (兵种), *PLA Military Terminology* dictionary, 2nd ed., 2011. 332; *2012 Defense White Paper* uses “arms.” Lu Xiaoping, ed., *The PLA Air Force*, (Beijing: China Intercontinental Press, 2012), Chapter 4, 85-108, uses “arms.” DOD *Reports to Congress* use “arms.”
- 63 Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1287.
- 64 Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1287.
- 65 Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1285-1286.
- 66 Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1287.
- 67 For example, Lu, ed., *The PLA Air Force* does not even mention the 1979 border conflict.
- 68 Zhu, ed., [*Air Force Dictionary*].
- 69 Discussion in June 2020 with Henry Boyd from IISS. *The Military Balance 2010 and 2011* (London: The International Institute for Strategic Studies (IISS), February 2010 and 2011).
- 70 *2012 Defense White Paper*.
- 71 Kenneth W. Allen, Dennis J. Blasko, John F. Corbett, Jr., “The PLA’s New Organizational Structure: What is Known, Unknown and Speculation,” (Washington, D.C.: Jamestown Foundation *China Brief*, Part 1 (Volume 16, Issue 3) 4 February 2016); and Part 2 (Volume 16, Issue 4) 23 February 2016).
- 72 Choi Chi-yuk and Catherine Wong Jun Mai, “China to Appoint New Air Force Commander, Sources Say,” *South China Morning Post*, 23 August 2017, available at: www.scmp.com/news/china/diplomacy-defence/article/2108010/china-appoint-new-air-force-Commander-sources-say.
- 73 Discussion in June 2020 with Henry Boyd from IISS. *The Military Balance 2020*, (London: The International Institute for Strategic Studies (IISS), February 2020), 264.
- 74 The information in this subsection comes from Allen, “Introduction to the PLA’s Administrative and Operational Structure.”; Kenneth W. Allen, “Introduction to the PLA’s Organizational Reforms: 2000-2012,” in Kevin Pollpeter and Kenneth W. Allen, eds., *The PLA as Organization v2.0*, (Vienna, VA: Defense Group Inc., 2015); Hereafter referred to as Allen, “Introduction to the PLA’s Organizational Reform”; and Kenneth W. Allen, “China Announces Reform of Military Ranks,” (Washington, D.C.: Jamestown Foundation *China Brief*, Volume 17, Issue 2, 30 January 2017). Hereafter referred to as Allen, “China Announces Reform of Military Ranks.”
- 75 “China to reform military ranks promotion system,” 9 December 2019, accessed at http://eng.mod.gov.cn/news/2019-12/09/content_4856476.htm.
- 76 Unless specified, information in this section about the history of the CMC and general departments comes from *Chinese Military Encyclopedia* [中国军事百科全书], Beijing, Academy of Military Science Publishers, July 1997, Volume 9-1585 to 1586. It was published in “PLA Organization: Operational and Administrative Structure” in *The PLA as Organization: Reference Volume v1.0*. James C. Mulvenon and Andrew N.D. Yang, eds. Santa Monica, CA: RAND, 2002.

- 77 [People's Liberation Army Chronicle 1927-1982] [中国人民解放军大事记1927-1982], (Beijing: PLA Academy of Military Science, November 1983), 64-65.
- 78 2002 Defense White Paper. Kenneth W. Allen, "Introduction to the PLA's Administrative and Operational Structure" in James Mulvenon and Andrew Yang, eds. *The People's Liberation Army as Organization*. Santa Monica, CA: RAND Corporation, 2002. Alice Miller, "Central Military Commission," in Kevin Pollpeter and Kenneth W. Allen, eds. *The PLA as Organization v2.0* Vienna, VA: Defense Group Inc., 2015.
- 79 Wang Zhenxi, editor, *World Military Yearbook 1987*, (Beijing, PLA Press, 1987), 101.
- 80 Nan Li, "The Central Military Commission," paper presented at the 2000 CAPS-RAND PLA Conference. Zhi Shaozeng and Lei Yuanshen, "Central Military Commission," in Song Shilun and Xiao Ke, eds. *China Military Encyclopedia* (中国军事百科全书), (Beijing: Military Science Publishing House, July 1997), Vol 3, 840-843. This volume covers 1949 to 1995.
- 81 Ibid.
- 82 Kenneth W. Allen, Dennis J. Blasko, and John F. Corbett, Jr., "The PLA's New Organizational Structure: What is Known, Unknown and Speculation," (Washington, D.C.: Jamestown Foundation *China Brief*) Part 1 (Volume 16, Issue 3) 4 February 2016; and Part 2 (Volume 16, Issue 4) 23 February 2016).
- 83 Michael S. Chase and Cristina L. Garafola, "China's Search for a 'Strategic Air Force,'" *Journal of Strategic Studies*, 2015. Michael S. Chase and Cristina L. Garafola, "China's Search for a 'Strategic Air Force,'" (Jamestown Foundation: *China Brief*, Volume 15, Issue 19, 2 October 2015).
- 84 *Annual Report to Congress 2005*.
- 85 Kenneth W. Allen, "PLA Air Force Organizational Reforms: 2000-2012," in Kevin Pollpeter and Kenneth W. Allen, eds., *The PLA as Organization v2.0*, (Vienna, VA: Defense Group Inc., 2015).
- 86 See Allen, "China Announces Reform of Military Ranks" for background on how PLA officers move up their career ladder.
- 87 *Directory of PRC Military Personalities 2018*, (Washington, D.C.: United States Department of Defense, Defense Intelligence Agency, March 2018). Hereafter referred to as *Directory of PRC Military Personalities 2018*.
- 88 Hu Guangzheng, ed. [*Contemporary Military Organizational Reform Research*] [当代军事体制变革研究], (Beijing: Military Science Publishing House, October 2007), 95-97.
- 89 Brendan S. Mulvaney, ed., *PLA Aerospace Power: A Primer on Trends in China's Military Air, Space, and Missile Forces*, 2nd Edition, (Montgomery, AL: China Aerospace Studies Institute, 29 July 2019), accessed at https://www.airuniversity.af.edu/Portals/10/CASI/Books/Primer_2nd_Edition_Web_2019-07-30.pdf?ver=2019-08-05-102017-503. Hereafter referred to as *PLA Aerospace Power*.
- 90 Yan Hui, ["Mao Zedong and People's Air Force Construction"] ["毛泽东与人民空军建设"], *CPC News* [中国共产党新闻网], 11 November 2019, <http://dangshi.people.com.cn/n1/2019/11/11/c85037-31447530.html>. Hereafter referred to as ["Mao Zedong and People's Air Force Construction"].
- 91 ["Xi Jinping Investigates and Researches Air Force Headquarters"] ["习近平在空军机关调研"], *Xinhua*, 14 April 2014, http://www.xinhuanet.com/photo/2014-04/14/c_126389555.htm.
- 92 ["While Attending a Themed Activity in Celebration of the Air Force's 70th Anniversary of Establishment, Xi Jinping Emphasizes Remembering the Original Mission, Making Full Use of Glorious Traditions, Daring to Innovate and Transcend, Comprehensively Building the People's Air Force into a World-Class Air Force"] ["习近平在出席庆祝空军成立70周年主题活动时强调牢记初心使命发扬光荣传统勇于创新超越把人民空军全面建成世界一流空军"], *People's Daily*, 9 November 2019, <http://cpc.people.com.cn/n1/2019/11/09/c64036-31446240.html>. See also "Xi Stresses Building World-Class Air Force," *Xinhua* (English), 8 November 2019, http://www.xinhuanet.com/english/2019-11/08/c_138540365.htm.
- 93 Jiaying Fan, "At the Communist Party Congress, Xi Jinping Plays the Emperor," *New Yorker*, 18 October 2017, <https://www.newyorker.com/news/daily-comment/at-the-communist-party-congress-xi-jinping-plays-the-emperor>.
- 94 SMS 2013, 30; Bernard D. Cole, *The Great Wall at Sea: China's Navy in the Twenty-First Century*, 2nd Edition, (Naval Institute Press, 2010), 1. Hereafter referred to as Cole, *The Great Wall at Sea*.
- 95 For a synopsis of early airpower advocates, see Forrest E. Morgan, "The Concept of Airpower: Its Emergence, Evolution, and Future," in Richard P. Halloran, Roger Cliff, and Phillip C. Saunders, eds, *The Chinese Air Force: Evolving Concepts, Roles, and Capabilities*, (Washington, D.C.: Center for the Study of Chinese Military Affairs, Institute for National Defense Studies, National Defense University, 2012). Book hereafter referred to as Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*.
- 96 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 57-59. See also Michael S. Chase and Cristina L. Garafola, "China's Search for a 'Strategic Air Force,'" *Journal of Strategic Studies*, 14 September 2015, 23. Hereafter referred to as Chase and Garafola, "China's Search for a 'Strategic Air Force.'" PRC State Council Information Office, *China's Military Strategy* (中国的军事战略), May 2015; PRC State Council Information Office, *China's National Defense in the New Era*, July 2019; Zhao Lei, "PLA Air Force Plans Expansion into Space to Modernize Capability," *China Daily*, 13 November 2018, www.chinadaily.com.cn/a/201811/13/WS5bea06aea310eff303288356.html; Chen Zhuo, "China to Create World-Class Air Force," *Global Times*, 12 November 2019, http://eng.chinamil.com.cn/2019special/2019-11/12/content_9673589.htm.
- 97 Rotary-wing aircraft were largely moved from the PLAAF to the ground forces in 1986. The 2020 *IJSS Military Balance* lists roughly 50 helicopters remaining in the PLAAF, with the bulk of the PLA's inventory in the PLAA; the PLAN also has a larger inventory than the PLAAF. International Institute for Strategic Studies, *The Military Balance*, Volume 120, Issue 1 (2020).
- 98 This is the order in which these forces are listed in China's 2019 defense white paper. PRC State Council Information Office, *China's National Defense in the New Era*, July 2019.
- 99 For more information on recent developments within Chinese air defense forces, particularly PLAAF SAM units, please see Bonny Lin and Cristina L. Garafola, *Training the People's Liberation Army Air Force Surface-to-Air Missile (SAM) Forces*, (Santa Monica, CA: RAND Corporation, 2016). Hereafter referred to as Lin and Garafola, *Training the PLAAF SAM Forces*.
- 100 Notable publications on Chinese military UAVs include Dan Gettinger, "Drone Databook Update: March 2020," The Center for Study of the Drone at Bard College, March 2020; Dan Gettinger, "The Drone Databook," The Center for Study of the Drone at Bard College, September 2019; Elsa Kania, *The PLA's Unmanned Aerial System: New Capabilities for a 'New Era' of Chinese Military Power*, China Aerospace Studies Institute, 8 August 2018, <https://>

www.airuniversity.af.edu/Portals/10/CASI/Books/PLAs_Unmanned_Aerial_Systems.pdf; Ian McCaslin, “Red Drones Over Disputed Seas: A Field Guide to Chinese UAVs/UCAVs Operating in the Disputed East and South China Seas,” Project 2049 Institute, 28 August 2017; Kimberly Hsu with Craig Murray, Jeremy Cook, and Amalia Feld, “China’s Military Unmanned Aerial Vehicle Industry,” U.S.-China Economic and Security Review Commission, 13 June 2013. Hereafter Hsu et al., “China’s Military Unmanned Aerial Vehicle Industry”; Ian Easton and L.C. Russell Hsiao, “The Chinese People’s Liberation Army’s Unmanned Aerial Vehicle Project: Organizational Capacities and Operational Capabilities,” Project 2049 Institute, 11 March 2013.

- 101 For an early look at PLAAF force structure, a large portion of Richard Bueschel’s 1968 book is devoted to the wide array of PLA-flown aircraft: Richard M. Bueschel, *Communist Chinese Air Power* (New York, NY: Frederick A. Praeger, Inc., Publishers, 1968). Hereafter referred to as Bueschel, *Communist Chinese Air Power*. Ken Allen examined trends in PLAAF force structure in 1991 and in a separate study in 1995 with co-authors; Allen, PRC PLAAF, 1991; Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century*. A 2010 publication by the National Air and Space Intelligence Center examines PLAAF force structure as well: National Air and Space Intelligence Center, *PLAAF 2010*, (Wright-Patterson Air Force Base, (Ohio: National Air and Space Intelligence Center, 1 August 2010). A 2015 RAND study assessed China’s military as of 1996, subsequent modernization efforts, and projections through 2017, with detailed assessments on select airpower topics vis-à-vis the U.S.-China military balance: Eric Heginbotham, Michael Nixon, Forrest E. Morgan, Jacob L. Heim, Jeff Hagen, Sheng Tao Li, Jeffrey Engstrom, Martin C. Libicki, Paul DeLuca, David A. Shlapak, David R. Frelinger, Burgess Laird, Kyle Brady, Lyle J. Morris, *The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power, 1996-2017* (Santa Monica, CA: RAND, 2015), https://www.rand.org/pubs/research_reports/RR392.html. Hereafter referred to as Heginbotham et al., *The U.S.-China Military Scorecard*. The China Aerospace Studies Institute released a primer on Chinese aerospace forces in 2019 that has a snapshot of PLAAF force structure: Brendan S. Mulvaney, ed., *PLA Aerospace Power: A Primer on Trends in China’s Military Air, Space, and Missile Forces*, 2nd Edition, (Montgomery, AL: China Aerospace Studies Institute, 29 July 2019), https://www.airuniversity.af.edu/Portals/10/CASI/Books/Primer_2nd_Edition_Web_2019-07-30.pdf?ver=2019-08-05-102017-503. Hereafter referred to as *PLA Aerospace Power*. Also, as required by the National Defense Authorization Act, the Office of the Secretary of Defense publishes the *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China*, which annually highlights new systems and platforms entering the PLAAF along with many other topics.
- 102 For more information on China’s defense industry modernization, see Tai Ming Cheung, *Forging China’s Military Might: A New Framework for Assessing Innovation*, (Baltimore: Johns Hopkins University Press, 2014); Tai Ming Cheung, *Fortifying China: The Struggle to Build a Modern Defense Economy*, (Ithaca, NY: Cornell University Press, 2009). On recent developments within China’s aerospace industry, see Andrew W. Hull and David R. Markov with Eric Griffin, “Private” Chinese Aerospace Defense Companies, China Aerospace Studies Institute, 14 June 2020, https://www.airuniversity.af.edu/Portals/10/CASI/Books/CASI_Chinese_Aerospace_Defense_Firms_ALL.pdf?ver=2020-06-14-150148-410; Peter Wood and Robert Stewart, China’s Aviation Industry: Lumbering Forward, China Aerospace Studies Institute, 5 August 2019, https://www.airuniversity.af.edu/Portals/10/CASI/Books/Lumbering_Forward_Aviation_Industry_Web_2019-08-02.pdf?ver=2019-08-05-102041-830; Chad J. R. Ohlandt, “Implications of China’s Aerospace Industrial Policies,” testimony before the U.S.-China Economic and Security Review Commission, 27 April 2016; Roger Cliff, Chad J. R. Ohlandt, David Yang, *Ready for Takeoff: China’s Advancing Aerospace Industry*, (Santa Monica, CA: RAND, 2011), <https://www.rand.org/pubs/monographs/MG1100.html>.
- 103 For more on PLAN Aviation, see Kenneth Allen and Lyle J. Morris, *PLA Naval Aviation Training and Operations: Missions, Organizational Structure, and Training* (2013 – 15), China Aerospace Studies Institute, 20 December 2017, https://www.airuniversity.af.edu/Portals/10/CASI/documents/Research/PLAN_Aviation/PLA%20Naval%20Aviation%20Web%20PDF%20v2.pdf?ver=2017-12-20-093117-563; Andrew S. Erickson and Lyle J. Goldstein, *Chinese Aerospace Power: Evolving Maritime Roles*, (Annapolis, MD: Naval Institute Press, 2011); Cole, *The Great Wall at Sea*.
- 104 *Air Force Doctrine Volume 1* (Maxwell AFB, AL: Curtis E. LeMay Center for Doctrine Development and Education, 27 February 2015). Hereafter referred to as *Air Force Doctrine Volume 1*.
- 105 *PLA Military Terminology* dictionary, 2nd ed., 2011, 50.
- 106 Fravel, *Active Defense*, 28. For other research on the military strategic guidelines, see Joe McReynolds, ed., *China’s Evolving Military Strategy*, (Washington, DC: Jamestown Foundation, April 2016). Hereafter referred to as McReynolds, ed., *China’s Evolving Military Strategy*; David M. Finkelstein, “China’s National Military Strategy: An Overview of the ‘Military Strategic Guidelines,’” in Roy Kamphausen and Andrew Scobell, eds., *Right Sizing the People’s Liberation Army: Exploring the Contours of China’s Military*, (Carlisle: Army War College Press, September 2007), 69-140.
- 107 Fravel, *Active Defense*, 61-63. For more on active defense’s link to operational concepts, see Burke et al., *People’s Liberation Army Operational Concepts. Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2020*, (U.S. Department of Defense, 1 September 2020), 27-28. Hereafter referred to as *Annual Report to Congress 2020*; Edmund J. Burke, Kristen Gunness, Cortez A. Cooper, and Mark Cozad, *People’s Liberation Army Operational Concepts*, (Santa Monica, CA.: RAND Corporation, 2020), 4, https://www.rand.org/pubs/research_reports/RRA394-1.html. Hereafter referred to as Burke et al., *People’s Liberation Army Operational Concepts*.
- 108 Fravel, *Active Defense*, 63.
- 109 [*PLA Military Terminology*] dictionary, 2nd ed., 2011, 960-961.
- 110 Fravel, *Active Defense*, 183; Dennis J. Blasko, *The Chinese Army Today: Tradition and Transformation for the 21st Century*, 2nd Edition, (New York, NY: Routledge, 2012), 1. Hereafter referred to as Blasko, *The Chinese Army Today*, 2nd ed., 2012.
- 111 United States Air Force, *Global Vigilance, Global Reach, Global Power for America*, 2017, https://www.af.mil/Portals/1/documents/newGV_GR_GP_PRINT.pdf. The 2013 vision statement is “The World’s Greatest Air Force—Powered by Airmen, Fueled by Innovation.” United States Air Force, “U.S. Air Force - Vision,” undated, <https://www.airforce.com/mission/vision#:~:text=The%20U.S.%20Air%20Force%20is,by%20Airmen%2C%20Fueled%20by%20Innovation>. For additional USAF documents, see United States Air Force, “Airpower 4 America,” undated, <https://www.af.mil/Airpower-4-America/>. See Zhang Jiexian, [“Chinese Air Force Walks a New Path Different than U.S., Russia; Development Toward Air and Space Integration”] [“中国空军走出不同美俄新路向空天一体化发展”], *People’s Daily*, 13 November 2013. Hereafter referred to as Zhang, [“Chinese Air Force Walks a New Path Different than U.S., Russia”], <https://mil.huanqiu.com/article/9CAKrnJD81R>; [“Our Air Force Strategic Capability is Strong; H-6K Flies Over Bashi Channel, Won’t Easily be Harassed by the Philippines, Japan”], [“我空军谋略能力强轰-6K飞越巴士海峡不易受非日骚扰”] *People’s Daily*, 2 April 2015, <http://military.people.com.cn/n1/2015/0402/c1011-26788175.html>; [“Telling the Air Force’s Story Well is Another Fist for Dealing with ‘Air Noise’ and ‘Sea Noise’”] [“讲好空军故事”是应对“空闹”“海闹”的另一只拳头”], *People’s Daily*, 22 July 2016, <http://military.people.com.cn/n1/2016/0722/c1011-28577225>.

html. Hereafter referred to as ["Telling the Air Force's Story Well"]; ["First Time! Air Force J-20 Fighter 'Seven Airframes Together,' Sets off the Whole Net!"] ["第一次! 空军歼-20战机“七机同框,” 燃爆全网!"], CCTV-7 [央视军事], 3 September 2019, https://k.sina.cn/article_6189120710_v170e67c-c601900jvg2.html. Hereafter referred to as ["First Time!"].

- 112 Fravel, *Active Defense*, 11, footnote 7.
- 113 Systems of systems thinking has been prevalent within the PLA since the late 1990s. For more information, see Jeffrey Engstrom, *Systems Confrontation and System Destruction Warfare: How the Chinese People's Liberation Army Seeks to Wage Modern Warfare*, (Santa Monica, CA: RAND Corporation, 2018), https://www.rand.org/content/dam/rand/pubs/research_reports/RR1700/RR1708/RAND_RR1708.pdf. Hereafter referred to as Engstrom, *Systems Confrontation and System Destruction Warfare*.
- 114 [PLA Military Terminology] dictionary, 2nd ed., 2011, 1.
- 115 [PLA Military Terminology] dictionary, 2nd ed., 2011, 1.
- 116 M. Taylor Fravel, "The Evolution of China's Military Strategy: Comparing the 1987 and 1999 Editions of ZHANLÜEXUE," 83, in James Mulvenon and David M. Finkelstein, eds., *China's Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the Chinese People's Liberation Army*, (Alexandria, VA: CNA, 2002), <http://web.mit.edu/fravel/www/fravel.2005.evolution.china.military.strategy.pdf>. Book hereafter referred to as Mulvenon and Finkelstein, eds., *China's Revolution in Doctrinal Affairs*.
- 117 [PLA Military Terminology] dictionary, 2nd ed., 2011, 1.
- 118 Roger Cliff, John Fei, Jeff Hagen, Elizabeth Hague, Eric Heginbotham, and John Stillion, *Shaking the Heavens and Splitting the Earth: Chinese Air Force Employment Concepts in the 21st Century*, (Santa Monica, CA: RAND Corporation, 2011), 8-9. Hereafter referred to as Cliff et al., *Shaking the Heavens and Splitting the Earth*.
- 119 The DOD Dictionary was previously referred to as *Joint Publication 1-02*. The Joint Chiefs of Staff, *DOD Dictionary of Military and Associated Terms*, June 2020, 114, <https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/dictionary.pdf>. See also The Joint Chiefs of Staff, *Doctrine for the Armed Forces of the United States, Joint Publication 1*, 12 July 2017, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp1_ch1.pdf?ver=2019-02-11-174350-967.
- 120 The Joint Chiefs of Staff, *DOD Dictionary of Military and Associated Terms*, Joint Publication 1-02, 8 November 2010, as amended through 15 February 2016, 71. Accessed at https://fas.org/irp/doddir/dod/jp1_02.pdf.
- 121 [PLA Military Terminology] dictionary, 2nd ed., 2011, 50.
- 122 [PLA Military Terminology] dictionary, 2nd ed., 2011, 1.
- 123 [PLA Military Terminology] dictionary, 2nd ed., 2011, 1.
- 124 *Air Force Doctrine Volume 1*.
- 125 United States Air Force, *USAF Role in Joint All-Domain Operations*, Air Force Doctrine Note 1-20, 5 March 2020, 1-3, <https://www.doctrine.af.mil/Portals/61/documents/Notes/Joint%20All-Domain%20Operations%20Doctrine--CSAF%20signed.pdf>.
- 126 U.S. Department of the Air Force, "What is the Difference Between the Air Force's Core Functions and Core missions?" undated, <https://www.doctrine.af.mil/Home/FAQ/>. Specifically, from 10 USC Section 161 (a)(1): "(the President) shall establish unified combatant command and specified combatant commands to perform military missions..." and from 10 USC Section 9013(b): "The Secretary of the Air Force is responsible for, and has the authority necessary to conduct, all affairs of the Department of the Air Force."
- 127 "Central Military Commission Opinion on Deepening the Reform of National Defense and the Armed Forces" (中央军委关于深化国防和军队改革的意见), (PRC: Central Military Commission, 1 January 2016). For more on the reforms, see Cristina Garafola, "Will the PLA Reforms Succeed?" *China Analysis*, European Council on Foreign Relations, March 2016, https://www.ecfr.eu/page/-/XIS_ARMY_-_REFORM_AND_LOYALTY_IN_THE_PLA_-_ECFR164.pdf.
- 128 Murray Scot Tanner, "The Missions of the People's Liberation Army Air Force," 135, in Halloran, Cliff, and Saunders, eds, *The Chinese Air Force*. Hereafter referred to as Tanner, "The Missions of the People's Liberation Army Air Force."
- 129 Tanner, "The Missions of the People's Liberation Army Air Force," 135.
- 130 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 39.
- 131 See Brendan S. Mulvaney, testimony before the U.S.-China Economic and Security Review Commission, hearing on "China's Military Reforms and Modernization: Implications for the United States," 15 February 2018, footnote xii, <https://www.usce.gov/sites/default/files/Dr%20Mulvaney%20testimony%20to%20USCC%2015%20Feb%202018%20PLA%20Air%20Force.pdf>. While the *China Air Force Encyclopedia* notes that "command of the air" and "air superiority" are similar, it explains that "command of the air" can "restrict" an opponent's ability to conduct operations (39), whereas the U.S. doctrinal concepts focus more expansively on dominance or superiority over air space. Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 39-41.
- 132 Lin Hu, ed., [*History of the Air Force*] [空军史], (Beijing: PLA Press, November 1989), 1-10. Hereafter referred to as Lin, ed., [*History of the Air Force*]; Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 4, 57, 216; Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 35; Kevin Lanzit, "Education and Training in the PLAAF," 236-240, in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*; Zhang Xiaoming, *Red Wings Over the Yalu: China, the Soviet Union, and the Air War in Korea*, (Texas A&M University Press: College Station, TX, 2002), 19-36.
- 133 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 36. Soviet pilots reportedly flew missions over Shanghai against Japan while disguised as Chinese forces in 1940. George M. Mellinger, "Chinese Communist Air Force (People's Liberation Army Air Force [PLAAF]," 128-130 in Walter J. Boyne, ed., *Air Warfare: An International Encyclopedia*, Vol. 1 (Santa Barbara, CA: ABC-CLIO, Inc., 2002). Hereafter referred to as Mellinger, "Chinese Communist Air Force."
- 134 Fravel, *Active Defense*, 39-67.

- 135 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 36.
- 136 ["Mao Zedong and People's Air Force Construction"].
- 137 Fravel, *Active Defense*, 39-67. For example, an extensive treatment of the Huaihai Campaign (1948-1949) published by the U.S. Army Command and General Staff College indicates significant use of aircraft in a variety of missions by Nationalist forces, but none by CCP forces. Gary J. Bjorge, "Moving the Enemy: Operational Art in the Chinese PLA's Huai Hai Campaign," *Leavenworth Paper*, Number 22. Fort Leavenworth, KS: Combat Studies Institute Press, 2003, https://www.armyupress.army.mil/Portals/7/combats-studies-institute/csi-books/bjorge_huai.pdf.
- 138 ["Legends of the Chinese People's Liberation Army Air Force"] ["中国人民解放军空军传奇"], *Extensive Collection of the Party History* [党史博采], 20 July 2017. Hereafter referred to as ["Legends of the Chinese People's Liberation Army Air Force"], <http://www.ccphistory.org.cn/node2/shds/n1533/uai25707.html>; Lin, ed., [*History of the Air Force*], 36. Murray Scot Tanner notes Mao's inscription may have served as the PLAAF's first mission statement. Tanner, "The Missions of the People's Liberation Army Air Force," 135; citing Hua Renjie, Cao Yifeng, and Chen Huixiu, eds., [*Air Force Academic Thought History*] [空军学术思想史], (Beijing, Liberation Army Publishers, 2007), 347. Hereafter referred to as Hua, Cao, and Chen, eds., [*Air Force Academic Thought History*], 2007.
- 139 Lin, ed., [*History of the Air Force*], 36.
- 140 Zhang Huiling, ed., ["Legends of the Chinese People's Liberation Army Air Force"]; "Liu Yalou" ["刘亚楼"], *News of the Communist Party of China* [中国共产党新闻], undated, <http://cpc.people.com.cn/GB/64162/126778/127857/7537784.html>. See also Kenneth W. Allen, "The PLA Air Force: 1949-2002 - Overview and Lessons Learned," 106, in Laurie Burkitt, Andrew Scobell, Larry M. Wortzel, eds., *The Lessons of History: The Chinese People's Liberation Army at 75*, (Carlisle, U.S. Army War College, July 2003), <https://publications.armywarcollege.edu/pubs/1367.pdf>. Hereafter referred to as Allen, "The PLA Air Force," 2003.
- 141 Lin, ed., [*History of the Air Force*], 7-8.
- 142 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 38.
- 143 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 14.
- 144 Fravel, *Active Defense*, 96-97.
- 145 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 38-39.
- 146 Fravel, *Active Defense*, 97.
- 147 Allen, *PRC PLAAF*, 1991, Section 2: "History of the PLA Air Force."
- 148 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 36-37.
- 149 Allen, *PRC PLAAF*, 1991, Section 2: "History of the PLA Air Force."
- 150 Allen, *PRC PLAAF*, 1991, Section 2: "History of the PLA Air Force."
- 151 Lin, ed., [*History of the Air Force*], 37.
- 152 Fravel, *Active Defense*, 98.
- 153 The PLAAF's first Commander to be a pilot was Ma Ning in 1973, but Ma and his successor Zhang Tingfa (who was not a pilot) originally served in the ground forces. Wang Hai was the first PLAAF Commander with an aviator background to serve only in the PLAAF; he became the Commander in 1985. Kenneth W. Allen, "The Organizational Structure of the PLAAF," 107, in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*. Hereafter Allen, "The Organizational Structure of the PLAAF."
- 154 Lin, ed., [*History of the Air Force*], 292.
- 155 Allen, "The PLA Air Force," 2003, 106.
- 156 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 38.
- 157 Fravel, *Active Defense*, 74-76.
- 158 Fravel, *Active Defense*, 94.
- 159 Fravel, *Active Defense*, 76.
- 160 Fravel, *Active Defense*, 95.
- 161 Fravel, *Active Defense*, 101-103.
- 162 Fravel, *Active Defense*, 105.
- 163 Fravel, *Active Defense*, 105.
- 164 *2008 Defense White Paper*; Allen, *PRC PLAAF*, 1991, Section 2: "History of the PLA Air Force."
- 165 Allen, *PRC PLAAF*, 1991, Section 2: "History of the PLA Air Force."
- 166 Fravel, *Active Defense*, 95-97.
- 167 Fravel, *Active Defense*, 97-100.
- 168 ["PLAAF Command College"] [空军指挥学院], Ministry of National Defense of the People's Republic of China website, 12 September 2014, http://www.mod.gov.cn/reports/201403/wzry/2014-09/12/content_4536788.htm; Kenneth W. Allen and Mingzhi Chen, *The People's Liberation Army's 37 Academic Institutions*, (Montgomery, AL: China Aerospace Studies Institute, 2020), 149, <https://www.airuniversity.af.edu/Portals/10/CASI/documents/Research/Other%20topics/CASI%20Academic%20Institutions%20Encyclopedia%202020-06-10%20web%20final.pdf?ver=2020-06-11-140140-450>. Hereafter referred to as Allen and Chen, *The People's Liberation Army's 37 Academic Institutions*.

- 169 Kenneth W. Allen, "PLA Air Force Organization," 365, in James C. Mulvenon and Andrew N. D. Yang, eds., *The People's Liberation Army as Organization*, Vol. 1, (Santa Monica: RAND Corporation, 2002). See also Hua Renjie, Cao Yifeng, and Chen Huixiu, eds., [*Air Force Academic Thought History*] [空军学术思想史], (Beijing, Liberation Army Publishers, 1992), 310. Hereafter referred to as Hua, Cao, and Chen, eds., [*Air Force Academic Thought History*], 1992.
- 170 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 105-110.
- 171 Lin, ed., [*History of the Air Force*], 291; Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 39-40.
- 172 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 40.
- 173 Lin, ed., [*History of the Air Force*], 62; Xiaoming Zhang, "Air Combat for the People's Republic: The People's Liberation Army Air Force in Action, 1949-1969," in Mark A. Ryan, David Michael Finkelstein, and Michael McDevitt, eds., *Chinese Warfighting: The PLA Experience Since 1949*, (Armonk, N.Y.: M. E. Sharpe, 2003), 271-272. Hereafter Zhang, "Air Combat for the People's Republic."
- 174 Mellinger, "Chinese Communist Air Force," 129; Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 48-49.
- 175 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 45.
- 176 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 45; Zhang, "Air Combat for the People's Republic," 272-273.
- 177 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 46-47.
- 178 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 47.
- 179 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 50-51.
- 180 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 47.
- 181 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 51.
- 182 Zhang, "Air Combat for the People's Republic," 271-272; Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 53-54.
- 183 Fravel, *Active Defense*, 78.
- 184 Fravel, *Active Defense*, 83.
- 185 Xiaoming Zhang, "The PLAAF's Evolving Influence within the PLA and upon National Policy," 73-74, in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*; Fravel, *Active Defense*, 79. Hereafter Zhang, "The PLAAF's Evolving Influence." The authors did not have access to a 1988 AMS publication on China's military history of the Korean War: Shen Zonghong, Meng Zhaohui, and Guo Yingjun, eds., [*Chinese People's Volunteer Army History of the War to Resist America and Air Korea*] [中国人民志愿军抗美援朝战史], (Beijing: AMS Military History Department, 1988).
- 186 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 56.
- 187 Cristina Garafola, "Trends in PLA Joint Aviation," 17 October 2017, Jamestown Foundation China Defense & Security Conference 2017. For more information on the Yijiangshan campaign, see Kevin McCauley, "PLA Yijiangshan Joint Amphibious Operation: Past is Prologue," *China Brief*, Jamestown Foundation, 13 September 2016, Vol. 16, Issue 14, <https://jamestown.org/program/pla-yijiangshan-joint-amphibious-operation-past-is-prologue/>; Lu, ed., [*The PLA Air Force*], 2012.
- 188 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 59.
- 189 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 59-61.
- 190 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 60.
- 191 Cliff et al., *Shaking the Heavens and Splitting the Earth*, 38, quoting Zhang, "Air Combat for the People's Republic," 282.
- 192 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 56.
- 193 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 63-64.
- 194 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 66-68.
- 195 Zhang, "The PLAAF's Evolving Influence," 74.
- 196 Zhang, "The PLAAF's Evolving Influence," 76.
- 197 Fravel, *Active Defense*, 83.
- 198 Cole, *The Great Wall at Sea*, 10.
- 199 Cole, *The Great Wall at Sea*, 10.
- 200 Fravel, *Active Defense*, 76.
- 201 Fravel, *Active Defense*, 96.
- 202 Fravel, *Active Defense*, 96.
- 203 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 19.
- 204 For more information on the Sino-Soviet split, see Danhua Li and Yafeng Xia, *Mao and the Sino-Soviet Split, 1959-1973: A New History*, (Lanham, Maryland: The Rowman and Littlefield Publishing Group, 2018).
- 205 Phillip C. Saunders and Joshua K. Wiseman, "China's Quest for Advanced Aviation Technologies," 282, 289, in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*. Hereafter Saunders and Wiseman, "China's Quest for Advanced Aviation Technologies."
- 206 Saunders and Wiseman, "China's Quest for Advanced Aviation Technologies," 287.

- 207 Vietnamese and Soviet sources recounted that in order to gain aircraft models that China could no longer obtain from the Soviet Union, as Soviet aid supplies passed through China, China reportedly appropriated some new aircraft from the supplies and replaced them with older Chinese fighters. North Vietnam eventually sent personnel to the Sino-Soviet border to escort the supplies through China and prevent theft occurring prior to their arrival in North Vietnam. Mellinger, “Chinese Communist Air Force,” 129; Bueschel, *Communist Chinese Air Power*, 90-91.
- 208 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 20.
- 209 Fravel, *Active Defense*, 107-123.
- 210 John Wilson Lewis and Xue Litai, “China's Search for a Modern Air Force,” *International Security*, Vol 24, No. 1, 1999, 67. Hereafter referred to as Lewis and Xue, “China's Search for a Modern Air Force.” For more on military linkages to the Third Front, see Covell F. Meyskens, *Mao's Third Front: The Militarization of Cold War China*, Cambridge: Cambridge University Press, 2020, <https://doi.org/10.1017/9781108784788>.
- 211 Fravel, *Active Defense*, 123.
- 212 A 1995 RAND report described the airborne forces as “organized primarily for internal control.” Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, xiv. For more on the 1967 incident, see Thomas W. Robinson, “The Wuhan Incident: Local Strife and Provincial Rebellion during the Cultural Revolution,” *The China Quarterly*, No. 47 (July – September 1971), 413-438, accessed at <https://www.jstor.org/stable/652320>. The following was not available to us but also discusses Wuhan: Harlan Jencks, *From Muskets to Missiles: Politics and Professionalism in the Chinese Army, 1945-1981*, (Boulder, CO: Westview Press, 1982).
- 213 Lin, ed., [*History of the Air Force*], 299.
- 214 Fravel, *Active Defense*, 136-137.
- 215 Lin, ed., [*History of the Air Force*], 195-202.
- 216 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 22.
- 217 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 72-73.
- 218 Lin, ed., [*History of the Air Force*], 300.
- 219 Lin, ed., [*History of the Air Force*], 301.
- 220 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 81-82.
- 221 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 83.
- 222 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 83, 86.
- 223 Lewis and Xue, “China's Search for a Modern Air Force,” 70-71. Other resources on Chinese leaders and the PLA include William W. Whitson, *The Chinese High Command: A History of Communist Military Politics, 1927-71*, (New York: Praeger, 1973); Stanley Karnow, *Mao and China: A Legacy of Turmoil*, (New York: Penguin Books, 1972).
- 224 [*Science of Air Force Campaigns*] [空军战役学], (Beijing: PLA Press, November 1988), 6. Hereafter referred to as [*Science of Air Force Campaigns*].
- 225 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 79; Fravel, *Active Defense*, 172.
- 226 Fravel, *Active Defense*, 172-173. It is not clear whether all of the aircraft were from the PLAAF.
- 227 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 171; “Anti-Defection Devices on China Planes Reported,” Reuters, 15 October 1989, http://articles.latimes.com/1989-10-15/news/mn-233_1_communist-mainland. Hereafter referred to as “Anti-Defection Devices on China Planes Reported.” Examples of specific cases include Matthew Strong, “Chinese Pilot Who Defected to Taiwan Dies at 82,” *Taiwan News*, 5 October 2017, <https://www.taiwannews.com.tw/en/news/3268345>; “Defecting Chinese Jet Pilot Flies His MIG to South Korea,” 21 February 1986, *Los Angeles Times*, <https://www.latimes.com/archives/la-xpm-1986-02-21-mn-10245-story.html>; “Chinese Defector Flies Jet to Seoul,” *Reuters*, 8 August 1983, <https://www.nytimes.com/1983/08/08/world/chinese-defector-flies-jet-to-seoul.html>; “Chinese Air Force Fighter Pilot Defects to Taiwan,” *New York Times*, 8 July 1977, 2, <https://www.nytimes.com/1977/07/08/archives/chinese-air-force-fighter-pilot-defects-to-taiwan.html>.
- 228 “Anti-Defection Devices on China Planes Reported.”
- 229 “Anti-Defection Devices on China Planes Reported”; Harold Skaarup, *Canadian MiG Flights*, (Bloomington, IN: iUniverse, 2008), 108.
- 230 *2008 Defense White Paper*.
- 231 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 78.
- 232 Fravel, *Active Defense*, 112-113.
- 233 Chen Jian, “China's Involvement in the Vietnam War, 1964-69,” *The China Quarterly*, No. 142 (1995), 368-76, <http://www.jstor.org/stable/655420>. Hereafter referred to as Chen, “China's Involvement in the Vietnam War.”
- 234 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 76.
- 235 Chen, “China's Involvement in the Vietnam War,” 376-7; Qiang Zhai, *China and the Vietnam Wars, 1950-1975*. Chapel Hill, NC: The University of North Carolina Press, 2000, 143.
- 236 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 77.
- 237 Lewis and Xue, “China's Search for a Modern Air Force,” 67-68. Lin, ed., [*History of the Air Force*], 197.
- 238 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, xiv.
- 239 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 20.

- 240 For more information on the PLA's performance against Vietnam, see Edward C. O'Dowd, *Chinese Military Strategy in the Third Indochina War: The Last Maoist War*, (New York: Routledge, 2007).
- 241 [Science of Air Force Campaigns] 1988, 6; Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 79. Skirmishing continued through late 1980s, primarily involving shelling.
- 242 Zhang, "The PLA's Evolving Influence," 76.
- 243 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 90-92.
- 244 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 95.
- 245 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 92-93.
- 246 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 94.
- 247 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 96-97.
- 248 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 106-107.
- 249 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 75.
- 250 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 75-76.
- 251 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 75.
- 252 William Beecher, "U.S. Spy Flights Over China Ended to Avoid Incident," *New York Times*, 29 July 1971, <https://www.nytimes.com/1971/07/29/archives/us-spy-flights-over-china-ended-to-avoid-incident-missions.html>; Bob Bergin, "The Growth of China's Air Defenses: Responding to Covert Overflights, 1949-1974," *Studies in Intelligence*, Vol. 57, No. 2 (June 2013), 19-28, <https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/csi-studies/studies/vol-57-no-2/pdfs/Bergin-Overflights.pdf>.
- 253 Lewis and Xue, "China's Search for a Modern Air Force," 70.
- 254 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 75.
- 255 Allen, "The PLA Air Force," 2003, 106-107.
- 256 *National Intelligence Estimate: PRC Defense Policy and Armed Forces*, NIE 13-76, 11 November 1976, 49. Hereafter referred to as *PRC Defense Policy and Armed Forces*.
- 257 *PRC Defense Policy and Armed Forces*, 16, 47-48; *National Intelligence Estimate: Communist China's Weapons Program for Strategic Attack*, NIE 13-8-71, 28 October 1971, 4-5.
- 258 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 225, 229.
- 259 "China's Nuclear Tests: Dates, Yields, Types, Methods, and Comments," Center for Nonproliferation Studies, Monterey Institute of International Studies, June 1998, https://archive.vn/20131205083146/http://cns.miis.edu/archive/country_china/coxrep/testlist.htm. Hereafter referred to as "China's Nuclear Tests."
- 260 Chase and Garafola, "China's Search for a 'Strategic Air Force,'" 23.
- 261 "China's Nuclear Tests."
- 262 Cole, *The Great Wall at Sea*, 16.
- 263 Richard D. Nethercut, "Deng and the Gun: Party-Military Relations in the People's Republic of China," *Asian Survey*, Vol. 22, No. 8 (August 1982), 699, <https://www.jstor.org/stable/2643642>.
- 264 Fravel, *Active Defense*, 167-168.
- 265 Cole, *The Great Wall at Sea*, 13.
- 266 Fravel, *Active Defense*, 174-175.
- 267 Cole, *The Great Wall at Sea*, 15-16.
- 268 Cole, *The Great Wall at Sea*, 174-176.
- 269 Cole, *The Great Wall at Sea*, 163.
- 270 Cole, *The Great Wall at Sea*, 176; Fravel, *Active Defense*, 163.
- 271 Cole, *The Great Wall at Sea*, 176.
- 272 Fravel, *Active Defense*, 175.
- 273 Fravel, *Active Defense*, 176.
- 274 Kevin M. Lanzit and Kenneth Allen, "Right-Sizing the PLA Air Force: New Operational Concepts Define a Smaller, More Capable Force," 441, in Roy Kamphausen and Andrew Scobell, eds., *Right Sizing the People's Liberation Army: Exploring the Contours of China's Military*, Carlisle, PA: Strategic Studies Institute, 2007. Lanzit and Allen cite the following as the source of the quote: Chengdu Military Region Campaign Training Office, ["Air Force Utilization During the Campaign for Positional Defensive Warfare of Group Army Field Positions"] [集团军野战阵地防御战以空军的运用], February 1982. We did not have access to the 1982 study during the writing of this book. See also Hua, Chen, and Cao, eds., [*History of Air Force Theory*], 1992, 294-331.
- 275 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 201.

- 276 Fravel, *Active Defense*, 146.
- 277 Fravel, *Active Defense*, 145-148.
- 278 Fravel, *Active Defense*, 162.
- 279 Allen, *PRC PLAAF*, 1991, Section 3: Strategy and Doctrine.”
- 280 Fravel, *Active Defense*, 179.
- 281 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 29.
- 282 Fravel, *Active Defense*, 180.
- 283 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 105.
- 284 Fravel, *Active Defense*, 166; Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 105.
- 285 Ma Tianbao, ed., Jin Yu, Chen Xiaoliang, and Jin Peng, asst eds., *Chinese Academic Canon in the 20th Century* [20世纪中国学术大典], [*Military Science*] [军事科学] volume, (Fujian: Fujian Education Press [福建教育出版社], 2002), 291, https://books.google.com/books?id=7KGshZdWrQcC&pg=RA4-PA291&lpg=RA4-PA291&dq=%E7%A9%BA%E5%86%9B%E5%A4%A7%E8%BE%9E%E5%85%B8&source=bl&ots=3XszunoYws&sig=ACFu3U1EPO6BiQ4L9Wu1Bmo9tNfBGJoizA&hl=en&sa=X&ved=2ahUKewidsaSotdXpAhX_hXIEHWN4CM4Q6AEwBXoECAkQAQ#v=onepage&q=%E7%A9%BA%E5%86%9B%E5%A4%A7%E8%BE%9E%E5%85%B8&f=false.
- 286 Allen, “The PLA Air Force,” 2003, 105; citing Hua, Cao, and Chen, eds., [*Air Force Academic Thought History*], 1992, 294-331.
- 287 Fravel, *Active Defense*, 166.
- 288 Gao Rui, ed. [*Science of Military Strategy*] [战略学], (Beijing: Academy of Military Science Press, 15 October 1987), 114. Hereafter referred to as SMS 1987.
- 289 SMS 1987, 114.
- 290 SMS 1987, 113.
- 291 SMS 1987, 101.
- 292 SMS 1987, 113.
- 293 SMS 1987, 198-202.
- 294 [*Science of Air Force Campaigns*] 1988, 5-7; foreword. Specifically, these are broken out into the “theater air defense” and “multiple theater air defense” campaigns (40) and aerial offensive campaigns to contest command of the air, weaken the enemy’s war potential, isolate the battlefield, and annihilate enemy forces (60-61), along with the PLAAF’s role in “combined” (合同) campaigns (70-83).
- 295 [*Science of Air Force Campaigns*] 1988, 3; 7.
- 296 Allen, *PRC PLAAF*, 1991, Section 3: “Strategy and Doctrine”; Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 110.
- 297 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 103.
- 298 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 131.
- 299 Fravel, *Active Defense*, 190. For an overview of Chinese assessments on U.S. performance during recent modern conflicts, see Michael S. Chase, Cristina L. Garafola, and Nathan Beauchamp-Mustafaga, “Chinese Perceptions of and Responses to US Conventional Military Power,” *Asian Security*, 14:2, 2018, 136-154. 10.1080/14799855.2017.1301931. Hereafter referred to as Chase et al., “Chinese Perceptions of and Responses to US Conventional Military Power.”
- 300 For more on this topic, see Andrew Scobell, David Lai, and Roy Kamphausen, eds., *Chinese Lessons from Other Peoples' Wars*, (Carlisle, PA: U.S. Army War College, November 2011).
- 301 Fravel, *Active Defense*, 190-191.
- 302 Roger Cliff, “The Development of the PLAAF’s Doctrine,” 153, in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*. Hereafter Cliff, “The Development of the PLAAF’s Doctrine”; Mark A. Stokes, “The Chinese Joint Aerospace Campaign: Strategy, Doctrine, and Force Modernization,” 246, in Mulvenon and Finkelstein, eds., *China's Revolution in Doctrinal Affairs*.
- 303 Fravel, *Active Defense*, 212.
- 304 Fravel, *Active Defense*, 204-205.
- 305 Fravel, *Active Defense*, 182-183.
- 306 Fravel, *Active Defense*, 183.
- 307 Fravel, *Active Defense*, 184.
- 308 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 171.
- 309 Fravel, *Active Defense*, 223-224.
- 310 Fravel, *Active Defense*, 227-228.
- 311 Wang Yongming et al., eds., *Research into the Iraq War*, (Beijing: Liberation Army Publishing House, March 2003), Chapter 6, Section Six. Hereafter referred to as Wang et al., eds., *Research into the Iraq War*.
- 312 Wang et al., eds., *Research into the Iraq War*, preface. “High technology air strike” from The Military Training Department of the General Staff of the Chinese People’s Liberation Army, *Research into the Kosovo War*, (Beijing: Liberation Army Publishing House, 2000). Hereafter referred to as *Research into the Kosovo War*.

- 313 Dai Jinyu, ed., [*Science of Air Force Strategy*] [空军战略学], (Beijing, Guofang Daxue Publishers, July 1995). Hereafter referred to as Dai, ed., [*Science of Air Force Strategy*].
- 314 Dai, ed., [*Science of Air Force Strategy*], 283; Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 57.
- 315 Dai, ed., [*Science of Air Force Strategy*], 3.
- 316 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 15-16; 39.
- 317 For more discussion, see Chase et al., “Chinese Perceptions of and Responses to US Conventional Military Power,” 6.
- 318 Mark A. Stokes, “China’s Quest for Joint Aerospace Power: Concepts and Future Aspirations,” 46, in Hallion, Cliff, and Saunders, eds., *The Chinese Air Force*. Hereafter referred to as Stokes, “China’s Quest for Joint Aerospace Power.”
- 319 Stokes, “China’s Quest for Joint Aerospace Power,” 46.
- 320 SMS 2001, 26.
- 321 SMS 2001, 26. “Offensive air defense” is “攻势防空.”
- 322 SMS 2001, 229.
- 323 SMS 2001, 302; 304.
- 324 SMS 2001, 447.
- 325 SMS 2001, 461.
- 326 SMS 2001, 479.
- 327 Fravel, *Active Defense*, 219-220.
- 328 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 57-59. See also Chase and Garafola, “China’s Search for a ‘Strategic Air Force.’”
- 329 Chen Zhuo, ed., “Systematic Combat Capability of the PLAAF Aviation Force Achieves Leapfrogging,” *China Military Online*, 4 November 2019, http://eng.chinamil.com.cn/2019special/2019-11/04/content_9673105.htm; see also 2004 *Defense White Paper* and 2006 *Defense White Paper*.
- 330 2008 *Defense White Paper*.
- 331 Xu Qiliang [2007-2012]: [“Air Force Commander Xu Qiliang: Take the Road of Scientific Development, Build a Blue Sky Steel Great Wall”] [“空军司令许其亮:走科学发展之路筑蓝天钢铁长城”], *Xinhua*, 1 November 2009, accessed at http://www.gov.cn/jrzq/2009-11/01/content_1453953.htm. Ma Xiaotian [2012-2017]: [“Telling the Air Force’s Story Well”]; Gao Liying and Li Aiming, [“Ma Xiaotian’s 2016 Message to New Pilot Students: ‘Dedicate Life’s Ambitions to the Air and Skies of the Motherland’”] [“马晓天寄语2016年新飞行学员:”把人生的抱负奉献给祖国的天空”], Ministry of Defense website, 2 September 2016, accessed at http://81rc.81.cn/recruit/2016-09/02/content_7238028.htm. Ding Laihang [2017-present]: Zhang Shuo [张硕], ed., [“Air Force Commander Ding Laihang’s Message to PLAAF Command College: ‘Focus the Fight on Educating People to Forge a Phalanx of First-Class Strong Military Talent’”] [“空军司令员丁来杭寄语空军指挥学院: 盯战育人打造一流强军人才方阵”], Air Force distributed, 12 September 2018, accessed at http://www.81.cn/jwgz/2018-09/12/content_9280286.htm; Zhang Mimi [张汨汨], and Wang Ye [王烨], [“Air Force Accelerates the Improvement of Strategic Capability to Safeguard the Nation’s Air and Space Security”] [“空军加快提升战略能力维护国家空天安全”], *Xinhua*, 24 July 2019, accessed at http://www.xinhuanet.com/politics/2019-07/24/c_1210212637.htm; [“Ding Laihang Appointed Air Force Commander”] [“丁来杭任中国空军司令”], Air Force distributed, 1 September 2017, <https://china.huanqiu.com/article/9CaKrnK50Md>.
- 332 Zhu Hui, ed., *Strategic Air Force* [战略空军轮], (Beijing: Lantian Chubanshe, July 2009). At that time, Zhu held an unidentified position at the PLAAF Command College.
- 333 For more details, see Chase and Garafola, “China’s Search for a ‘Strategic Air Force’”; Derek Grossman, Nathan Beauchamp-Mustafaga, Logan Ma, and Michael S. Chase, *China’s Long-Range Bomber Flights: Drivers and Implications* (Santa Monica, CA: RAND Corporation, 2018), https://www.rand.org/pubs/research_reports/RR2567.html. Hereafter referred to as Grossman et al., *China’s Long-Range Bomber Flights*.
- 334 AMS Military Strategy Research Department, [*The Science of Military Strategy*] [战略学], (Beijing: Academy of Military Science Press, December 2013). Hereafter referred to as SMS 2013.
- 335 SMS 2013, 225.
- 336 Fravel, *Active Defense*, 230-231.
- 337 A new book that reviews current and potential future PLAN strategic trajectories is Michael A. McDevitt, *China as a Twenty-First-Century Naval Power: Theory, Practice, and Implications*, (Annapolis, MD: Naval Institute Press, 2020).
- 338 For more on this topic, see Ian Burns McCaslin and Andrew S. Erickson, *Selling a Maritime Air Force: The PLA Air Force Campaign for a Bigger Piece of the Maritime Domain*, (Montgomery, AL: China Aerospace Studies Institute, February 2019); Mark R. Cozad and Nathan Beauchamp-Mustafaga, *People’s Liberation Army Air Force Operations over Water: Maintaining Relevance in China’s Changing Security Environment*, (Santa Monica, CA: RAND Corporation, 2017), https://www.rand.org/pubs/research_reports/RR2057.html. Hereafter referred to as Cozad and Beauchamp-Mustafaga, *People’s Liberation Army Air Force Operations over Water*.
- 339 Yang Qingqun, [“While Inspecting a Certain Guangzhou Military Region Air Force Unit, Ma Xiaotian, Member of the Central Military Commission and Commander of the Air Force, Emphasized that Joint Maritime Search and Rescue Will Require Integration of Military and Local Organizations and High Command Efficiency”] [中央军委委员, 空军司令员马晓天在广空部队检查调研时强调: 海上联合搜救要军地-体多元融合指挥高效], *Air Force News*, 10 November 2014, 1.
- 340 Cozad and Beauchamp-Mustafaga, *People’s Liberation Army Air Force Operations over Water*, 10-1.

- 341 Yang Yi, “For 70 Years, PLA Air Force Grows with the Country,” *China Daily*, 12 November 2019, http://eng.chinamil.com.cn/2019special/2019-11/12/content_9673584.htm; Chen Zhuo, ed., “70 Years on, Confident Chinese Air Force Embraces Growing Openness,” *Xinhua* (English), 12 November 2019, http://eng.chinamil.com.cn/2019special/2019-11/12/content_9673587.htm.
- 342 Chen Zhuo, ed., “Systematic Combat Capability of the PLAAF Aviation Force Achieves Leapfrogging,” *China Military Online*, 4 November 2019, http://eng.chinamil.com.cn/2019special/2019-11/04/content_9673105.htm.
- 343 For more information, see Engstrom, *Systems Confrontation and System Destruction Warfare*. For discussion of the joint firepower strike campaign and other sensitive joint campaigns, see Annual Report to Congress 2020, 163; Mark R. Cozad, “Chinese Contingency Planning for Regional Hotspots,” testimony presented before the U.S.–China Economic and Security Review Commission on 13 April 2017, https://www.rand.org/content/dam/rand/pubs/testimonies/CT400/CT471/RAND_CT471.pdf; Li Yousheng, ed., [*Lectures on the Science of Joint Campaigns*] [联合战役学教程], (Beijing: Military Science Press, 2012).
- 344 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 6, as referenced in Tanner, “The Missions of the People’s Liberation Army Air Force,” 135. The specific tasks are not described.
- 345 Tanner, “The Missions of the People’s Liberation Army Air Force,” 135.
- 346 Tanner, “The Missions of the People’s Liberation Army Air Force,” 135.
- 347 Cliff, “The Development of the PLAAF’s Doctrine,” 153-154.
- 348 Cliff, “The Development of the PLAAF’s Doctrine,” 154.
- 349 Blasko, *The Chinese Army Today*, 2nd ed., 2012, 125.
- 350 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 93.
- 351 Blasko, *The Chinese Army Today*, 2nd ed., 2012, 125.
- 352 *PLA Military Terminology* dictionary, 2nd ed., 2011, 962.
- 353 Cliff, “The Development of the PLAAF’s Doctrine,” 153-154.
- 354 Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century*, 101.
- 355 Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century*, 101.
- 356 Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century*, 176.
- 357 See Zhang Jian, ed., [*New Three Attacks Three Defenses Training Knowledge*] [新三打三防训练知识], (Beijing: Academy of Military Science Press, August 2003); Fravel, *Active Defense*, 226; *Sina News*, “The PLA’s ‘Three Attacks Three Defenses’ and the New ‘Three Attacks Three Defenses’” [解放军的‘三打三防’和‘新三打三防’], 13 October 2000, <http://mil.news.sina.com.cn/2000-10-13/6339.html>.
- 358 PRC State Council Information Office, *China: Arms Control and Disarmament*, (Beijing, November 1995); PRC State Council Information Office, *China’s National Defense 1998*, (Beijing, July 1998); PRC State Council Information Office, *China’s National Defense 2000*, (Beijing, October 2000).
- 359 See Bonnie S. Glaser, “The PLA Role in China’s Taiwan Policymaking,” in Phillip C. Saunders and Andrew Scobell, eds., *PLA Influence on China’s National Security Policymaking*, Stanford University Press, Stanford, California, 2015, 180.
- 360 SMS 2001, 302, 304.
- 361 SMS 2001, 301-302.
- 362 SMS 2001, 302.
- 363 SMS 2001, 302-303.
- 364 SMS 2001, 317.
- 365 SMS 2001, 317. Aviation forces are not part of the (ground-based) air defense force units, although they play a role in the air defense mission.
- 366 SMS 2001, 318.
- 367 SMS 2001, 320.
- 368 SMS 2001, 334.
- 369 SMS 2001, 340.
- 370 SMS 2001, 342.
- 371 SMS 2001, 342-343.
- 372 SMS 2001, 344.
- 373 SMS 2001, 348-349.
- 374 SMS 2001, 349-352.
- 375 Tanner, “The Missions of the People’s Liberation Army Air Force.”
- 376 Tanner, “The Missions of the People’s Liberation Army Air Force,” 136.
- 377 *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2018*, (U.S. Department of Defense, 16 August 2018), 118-120. Hereafter referred to as *Annual Report to Congress 2018*.
- 378 Tanner, “The Missions of the People’s Liberation Army Air Force,” 136-137.

- 379 Tanner, "The Missions of the People's Liberation Army Air Force," 139, footnote 26.
- 380 Wang Houqing and Zhang Xingye, eds., [*Science of Campaigns 2006*] [战役学], (Beijing: National Defense University, 2006), 558; as cited in Tanner, "The Missions of the People's Liberation Army Air Force," 139-140. Hereafter referred to as Wang and Zhang, eds., [*Science of Campaigns 2006*].
- 381 Engstrom, *Systems Confrontation and System Destruction Warfare*; Tanner, "The Missions of the People's Liberation Army Air Force," 140-141, footnote 35.
- 382 Tanner, "The Missions of the People's Liberation Army Air Force," 141, footnote 39.
- 383 Tanner, "The Missions of the People's Liberation Army Air Force," 142.
- 384 Wang and Zhang, eds., [*Science of Campaigns 2006*], 331-332, as cited in Tanner, "The Missions of the People's Liberation Army Air Force," 143.
- 385 Tanner, "The Missions of the People's Liberation Army Air Force," 144.
- 386 Tanner, "The Missions of the People's Liberation Army Air Force," 145.
- 387 Tanner, "The Missions of the People's Liberation Army Air Force," 146.
- 388 *Annual Report to Congress 2019*, iii.
- 389 *SMS 2013*, 221.
- 390 *SMS 2013*, 221.
- 391 *SMS 2013*, 221-222.
- 392 For more on China's approach to ADIZ and PLAAF ADIZ operations, see Edmund J. Burke, Timothy R. Heath, Jeffrey W. Hornung, Logan Ma, Lyle J. Morris, and Michael S. Chase, *China's Military Activities in the East China Sea: Implications for Japan's Air Self-Defense Force*, (Santa Monica, CA: RAND Corporation, 2018), https://www.rand.org/pubs/research_reports/RR2574.html; Edmund J. Burke, and Astrid Stuth Cevallos, in *Line or Out of Order? China's Approach to ADIZ in Theory and Practice*, (Santa Monica, CA: RAND Corporation, 2017), https://www.rand.org/pubs/research_reports/RR2055.html.
- 393 Huang Panyue, ed., "China PLA Sends Epidemic Prevention Supplies to Militaries of 20 Countries," *mod.gov*, 5 June 2020, accessed at http://eng.mod.gov.cn/news/2020-06/05/content_4866261.htm. Hereafter referred to as "China PLA Sends Epidemic Prevention Supplies."
- 394 *SMS 2013*, 222.
- 395 See Ernest Kao, "China Considered Using Drone in Myanmar to Kill Wanted Drug Lord," *South China Morning Post*, 20 February 2013, <http://www.scmp.com/news/china/article/1154217/china-considered-using-drone-myanmar-kill-wanted-drug-lord>.
- 396 *Annual Report to Congress 2018*, 77.
- 397 *Annual Report to Congress 2020*, 80.
- 398 *Annual Report to Congress 2020*, 87.
- 399 Kevin Pollpeter, "The PLAAF and the Integration of Air and Space Power," 170, in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*.
- 400 "Xu Qiliang: The Chinese Air Force Must Have an Aerospace Security Perspective" ["许其亮: 中国空军必须树立空天安全观"], *Xinhua*, 1 November 2009, <http://mil.news.sina.com.cn/2009-11-01/1424572155.html>; cited in Kenneth W. Allen, *Overview of the PLA Air Force's Kongtian Yiti Strategy*, (Montgomery, AL: China Aerospace Studies Institute, June 2020), 8-9, <https://www.airuniversity.af.edu/Portals/10/CASI/documents/Research/PLAAF/Overview%20of%20the%20PLA%20Air%20Force's%20Kongtian%20Yiti%20Strategy.pdf?ver=2019-12-19-075112-503>. Hereafter referred to as Allen, *Overview of the PLA Air Force's Kongtian Yiti Strategy*.
- 401 For more information on the SSF, please see John Costello and Joe McReynolds, *Center for the Study of Chinese Military Affairs Institute for National Strategic Studies*, China Strategic Perspectives, No. 13, National Defense University Press, Washington, D.C., October 2018, https://ndupress.ndu.edu/Portals/68/Documents/stratperspective/china/china-perspectives_13.pdf; Elsa B. Kania and John Costello, "Seizing the Commanding Heights: The PLA Strategic Support Force in Chinese Military Power," *Journal of Strategic Studies*, May 2020, DOI: 10.1080/01402390.2020.1747444.
- 402 Allen, *Overview of the PLA Air Force's Kongtian Yiti Strategy*, 2020, 4.
- 403 *SMS 2013*, 224-225.
- 404 *SMS 2013*, 222-223.
- 405 *SMS 2013*, 224.
- 406 For more information on Chinese views of the island chains, see Andrew S. Erickson and Joel Wuthnow, "Barriers, Springboards and Benchmarks: China Conceptualizes the Pacific 'Island Chains.'" *The China Quarterly*, 225, March 2016, 1-22, doi:10.1017/S0305741016000011.
- 407 For some examples, see Zhao Lei, "Air Force Now Able to Launch Long-Range, Precision Strikes," *China Daily* (English), 14 October 2015, http://www.chinadaily.com.cn/china/2015-10/14/content_22178512.htm; "H-6U Aerial Refueling Tanker Improves PLA Air Force's Long-Range Raid Capability," *China Military Online* (English), 8 September 2015, http://english.chinamil.com.cn/news-channels/china-military-news/2015-09/08/content_6671974.htm.
- 408 Yao Jianing, "China's Air Force Conducted Four Drills over the Western Pacific in 2015," *CRI*, 4 January 2016, http://english.chinamil.com.cn/news-channels/china-military-news/2016-01/04/content_6842698.htm; Grossman et al., *China's Long-Range Bomber Flights*.
- 409 *SMS 2013*, 227.
- 410 *SMS 2013*, 227.
- 411 See Zhang, ["Chinese Air Force Walks a New Path Different than U.S., Russia"]; ["Telling the Air Force's Story Well"]; ["First Time!"].

- 412 Scott W. Harold, *Defeat, Not Merely Compete: China's View of Its Military Aerospace Goals and Requirements in Relation to the United States*, (Santa Monica, CA: RAND, 2018), 23.
- 413 Roger Cliff, "The Development of the PLAAF's Doctrine," 157.
- 414 *SMS 2013*, 224.
- 415 For more information on the SA-21, please see Timothy R. Heath, "How China's New Russian Air Defense System Could Change Asia," *War on the Rocks*, 21 January 2016, <http://warontherocks.com/2016/01/how-chinas-new-russian-air-defense-system-could-change-asia/>.
- 416 Heginbotham et al., *The U.S.-China Military Scorecard*, 101–114.
- 417 *SMS 2013*, 227.
- 418 For more information on ISR missions carried out by Chinese UAVs, see Hsu et al., "China's Military Unmanned Aerial Vehicle Industry."
- 419 *SMS 2013*, 224.
- 420 *SMS 2013*, 222.
- 421 Xiao Tianliang [肖天亮], ed., *Science of Military Strategy* [战略学], National Defense University Press [国防大学出版社], Beijing, April 2015, 353–357. Hereafter referred to as *SMS 2015*; Xiao Tianliang [肖天亮], ed., *Science of Military Strategy* [战略学], National Defense University Press [国防大学出版社], Beijing, May 2017, 371–376. Hereafter referred to as *SMS 2017*.
- 422 *SMS 2015*, 356–357; *SMS 2017*, 375–376.
- 423 *SMS 2015*, 349–353; *SMS 2017*, 367–371.
- 424 Cristina L. Garafola and Timothy R. Heath, *The Chinese Air Force's First Steps Towards Becoming an Expeditionary Air Force*, (Santa Monica, CA: RAND Corporation, 2017), vi. Hereafter referred to as Garafola and Heath, *The Chinese Air Force's First Steps*.
- 425 Allen, *Overview of the PLA Air Force's Kongtian Yiti Strategy*, 11.
- 426 Chen Zhuo, ed., "China to Create World-Class Air Force," *China Military Online* (English), 12 November 2019, http://eng.chinamil.com.cn/2019special/2019-11/12/content_9673589.htm.
- 427 ["Xi Jinping Meets with Delegates to PLA Air Force Party Congress"] [习近平接见空军第十三次党代会代表], *Xinhua*, 18 June 2019, www.xinhuanet.com/politics/2019-06/18/c_1124640015.htm. "Xi meets with delegates to PLA Air Force Party Congress," *Xinhua* (English), 18 June 2019, www.xinhuanet.com/english/2019-06/18/c_138153618.htm.
- 428 Information on the PLA's and PLAAF's political work system comes from Ma Leqi, ed., [*Political Instructor's Handbook*] [指导员手册], Jinan: Huanghe Press, September 2001, 9; Song Shilun and Xiao Ke, eds., [*China Military Encyclopedia*] [中国军事百科全书], (Beijing: Military Science Publishing House, July 1997), Volume 4, 3. Hereafter referred to as Song and Xiao, eds., [*China Military Encyclopedia*] 1997; [*The Science of PLA Political Work*] [中国人民解放军政治工作学], (Beijing: NDU Military Building and Military Political Work Research Department, National Defense University Press, May 2006); and interviews.
- 429 Song and Xiao, eds., [*China Military Encyclopedia*] 1997, Volume 4, 131–132.
- 430 Liu Yongshou and Wang Yongquan, "Military Party Committee System," 131–132; Cheng Baoshan, ed., "The Fundamental Laws and Regulations of Military Political Work in the New Century and New Era—Studying the Newly Revised and Promulgated 'Regulations of the Chinese People's Liberation Army on Political Work'" [新世纪新阶段军队政治工作的根本法规——学习新修订颁布的“中国人民解放军政治工作条例”], (Beijing: Military Science Press, 2004), 184–201.
- 431 [*Dictionary of China's Communist Party Central Committee Members for 1921-2003*] [中国共产党历届中央委员大辞典], (Beijing: Chinese Communist Party History Press, 2004), 587–588.
- 432 ["Deng Changyou"] [邓昌友], Baidu, undated, accessed at <https://baike.baidu.com/item/邓昌友>.
- 433 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 361.
- 434 ["The First Plenary Session of the 12th Air Force Party Committee Held in Beijing"] [空军党委十二届一次全体会议在京召开], *Air Force News*, 19 June 2014, 1.
- 435 "Xi Meets with Delegates to PLA Air Force Party Congress," *Xinhua* (English), 18 June 2019, www.xinhuanet.com/english/2019-06/18/c_138153618.htm.
- 436 He Weirong, ed., [*Science of Air Force Training*] [空军军事训练学], (Beijing: Academy of Military Science Press, 2006), 202–207. Hereafter referred to as He, ed., [*Science of Air Force Training*].
- 437 Allen, *PRC PLAAF*, 1991, Section 8, 8-1. "Air Force Aviation Engineering Department" in Zhu, ed., [*Air Force Dictionary*], 146. *World Military Yearbook 1993-1994* [世界军事年鉴], (Beijing, PLA Press), June 1994, 81.
- 438 Given the complexity of the system, see also Allen, "Introduction to the PLA's Organizational Reform"
- 439 *Annual Report to Congress: Military and Security Developments Involving The People's Republic of China*, 2014, (Washington, D.C.: Office of the Secretary of Defense, 24 April 2014), 11. Hereafter referred to as *Annual Report to Congress 2014*.
- 440 "Military Area Command" [军区] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 329. 2002, 2008, and 2010 *Defense White Papers*.
- 441 2019 *Defense White Paper. Annual Report to Congress: Military and Security Developments Involving the People's Republic of China*, 2019, (Washington, D.C.: Office of the Secretary of Defense, 21 August 2019). Hereafter referred to as *Annual Report to Congress 2019*.
- 442 Zhu, ed., [*Air Force Dictionary*], 146–147. 2002, 2010, and 2012 *Defense White Papers*.
- 443 2019 *Defense White Paper. Annual Report to Congress: Military and Security Developments Involving the People's Republic of China*, 2016, (Washington, D.C.: Office of the Secretary of Defense, 26 April 2016). Hereafter referred to as *Annual Report to Congress 2016*.

- 444 2002 Defense White Paper.
- 445 2010 Defense White Paper.
- 446 2012 Defense White Paper.
- 447 2012 Defense White Paper.
- 448 Li Baozhong, ed., [*Comparison of Chinese and Foreign Military Systems*] [中外军事制度比较], (Beijing: Shangwu Yinshuguan Press, May 2003), 144-145. Hereafter referred to as Li, ed., [*Comparison of Chinese and Foreign Military Systems*]. Hu Guangzheng, ed., Teaching Material for Comparing Chinese and Foreign Military Organizational Structure [中外军事组织体制比较教程], (Beijing: Academy of Military Science Publishers, July 1997), 190-191. Hu Guangzheng, ed., [*Modern Military Organizational Reform Research*] [当代军事体制改革研究], (Beijing: Military Science Press, October 2007), 466. Hereafter referred to as Hu, ed., [*Modern Military Organizational Reform Research*]. Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 214.
- 449 *Directory of PRC Military Personalities 2018*.
- 450 *Directory of PRC Military Personalities 2018*.
- 451 *The Military Balance 2018*, (London: The International Institute for Strategic Studies (IISS), March 2018); *Directory of PRC Military Personalities 2018*; and *PLA Aerospace Power*.
- 452 Li, ed., [*Comparison of Chinese and Foreign Military Systems*], 144-145. The wording of the sentence is actually “PLAAF Headquarters executes some operational command authority” (具有部分作战指挥权).
- 453 “Xi Urges Breakthroughs in Military Structural Reform,” *Xinhua* (English), 26 November 2015, accessed at http://news.xinhuanet.com/english/2015-11/26/c_134859089.htm.
- 454 The primary sources for this subsection are Kenneth W. Allen, Brendan S. Mulvaney, and James Char, “Ongoing Organizational Reforms of the People’s Liberation Army Air Force,” (London: Taylor and Francis Group, *Journal of Strategic Studies*, 2020, DOI: 10.1080/01402390.2020.1730818). Hereafter referred to as Allen, Mulvaney, and Char, “Ongoing Organizational Reforms.” Allen, “Introduction to the PLA’s Administrative and Operational Structure.” Allen, “Introduction to the PLA’s Organizational Reform.” Kenneth W. Allen, “PLA Air Force: Lessons Learned 1949-2002,” in Laurie Burkitt, Dr. Andrew Scobell, and Dr. Larry Wortzel, eds., *The Lessons of History: The Chinese People’s Liberation Army at 75*, (Carlisle, PA: Strategic Studies Institute, 2003). Kenneth W. Allen, “The Organizational Structure of the PLAAF,” in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*; and PLAAF 2010, Chapter 1.
- 455 Yao Jun, ed., [*A History of China’s Aviation*] [中国航空史], (Zhengzhou: Dajia Publishers, September 1998), 376. Hereafter referred to as Yao, ed., [*A History of China’s Aviation*].
- 456 Zhu, ed., [*Air Force Dictionary*], 146.
- 457 *World Military Yearbook 1999* [世界军事年鉴1999], (Beijing, PLA Press), 103.
- 458 *PLAAF 2010*, Chapter 1.
- 459 Yuan Wenxian, [*The Science of Military Command*] [军队指挥学], (Beijing: National Defense University Press, May 2008).
- 460 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 217.
- 461 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 217.
- 462 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 217.
- 463 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 218.
- 464 The first article in CNKI written by anyone from the Armament General-Use Equipment Department was published in November 2004, and the first time it appeared in *Air Force News* was 29 January 2005, 3. There are still articles on the Internet referring to this department. The first time the Air Force Armament General-Use Equipment Military Representative Bureau appeared in *Air Force News* was 24 February 2005, 2. See Kenneth W. Allen, “PLA Air Force Organizational Reforms: 2000-2012” in Kevin Pollpeter and Kenneth W. Allen, eds., *The PLA as Organization v2.0*, (Vienna, VA: Defense Group Inc., 2015).
- 465 Information from “Product Center” [产品中心], undated, accessed on 1 April 2012 at www.zgjyzb.cn/news_show.asp?id=18. Article name not known, *Chinahvacr.com*, accessed on 1 April 2012 at www.chinahvacr.com/News/Class9/201007/News_3036299.shtml.
- 466 Niu Keli, “Air Force Bureaus of Military Representatives,” in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 245.
- 467 Allen, Mulvaney, and Char, “Ongoing Organizational Reforms.” Additional information was found various PLAAF publications and online.
- 468 Kevin McCauley, “President Xi Clears the Way for Military Reform: PLA Corruption, Clique Breaking and Making, and Personnel Shuffle,” (Washington, D.C.: Jamestown Foundation, *China Brief*, Volume 15, Issue 3, 4 February 2015). Zhang Tao, ed., “China’s new Central Military Commission organ established,” *China Military Online* (English), 11 January 2016, accessed at http://eng.chinamil.com.cn/view/2016-01/11/content_7160559.htm. Zhang Tao, ed., “Xi Urges Leaders of CMC Organs to Respect Party Disciplines,” *Xinhua* (English), 12 January 2016, accessed at http://eng.chinamil.com.cn/view/2016-01/12/content_7160562.htm. James Mulvenon, “And Then There Were Seven: The New, Slimmed-Down Central Military Commission,” Hoover Institution, *China Leadership Monitor*, Number 56, Spring 2018, 17 May 2018, accessed at <https://www.hoover.org/sites/default/files/research/docs/clm56jm.pdf>.
- 469 See Kenneth W. Allen, “Introduction to the PLA’s Organizational Reforms: 2000-2012” and “PLA Air Force Organizational Reforms: 2000-2012,” in Kevin Pollpeter and Kenneth W. Allen, eds. *The PLA as Organization v2.0*, (Vienna, VA: Defense Group Inc., 2015) for detailed information about the role of the former Headquarters Department.
- 470 “Xi Urges Breakthroughs in Military Structural Reform,” *Xinhua* (English), 26 November 2015, accessed at http://news.xinhuanet.com/english/2015-11/26/c_134859089.htm.

- 471 Also see Allen, “Introduction to the PLA’s Organizational Reforms: 2000-2012.”
- 472 Jiang Fangran, ed., [*An Introduction to Headquarters Department Work*] [司令部工作概论], (Beijing: Academy of Military Science, 2000), 98-99.
- 473 See Allen, “Introduction to the PLA’s Organizational Reforms: 2000-2012” and *Directory of PRC Military Personalities 2015* and *Directory of PRC Military Personalities 2019*. Information also came from multiple *Air Force News* articles since 2000.
- 474 Information concerning the Confidential Bureau was found in [“Air Force Party Committee Standing Committee Joins Meeting to Eliminate Poisoning by Guo Boxiong and Xu Caihou”] [空军党委常委参加肃清郭徐流毒影响专题组织生活会侧记], *Air Force News*, 16 December 2016, 1. “Confidential Assurance” [机要保障], *PLA Military Terminology* dictionary, 2nd ed., 2011, 193.
- 475 *Air Force News*, 29 June 2018, 3.
- 476 Kenneth W. Allen, “The Organizational Structure of the PLAAF,” in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*; and *PLAAF 2010*.
- 477 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 217. Previously, it was also responsible for Party discipline, although that responsibility has most likely been transferred to the PLAAF DIC.
- 478 See Allen, “Introduction to the PLA’s Organizational Reforms: 2000-2012” and *Directory of PRC Military Personalities 2015* and *Directory of PRC Military Personalities 2019*. Information also came from multiple *Air Force News* articles since 2000.
- 479 Editorial, [“Air Force Political Work Department [Enlisted] Soldier and Civilian Personnel Bureau Responsible for Comrades Shifting from Civilian Cadre to Civilian Personnel Questions”], *Air Force News*, 12 January 2018, 1. Reference to the PLAAF Political Work Department’s [Enlisted] Soldier and Civilian Personnel Bureau (政治工作部兵文局) first emerged in 2017: “The Leaders of the Air Force Political Work Department’s [Enlisted] Soldier and Civilian Personnel Bureau Visited Our School to Study the Training of Noncommissioned Officers (NCOs)” (空军政治工作部兵文局领导莅临我校调研士官生培养工作), accessed at <http://www.hamc.edu.cn/info/1092/4492.htm>. See also *Directory of PRC Military Personalities 2018*.
- 480 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 217. Kenneth W. Allen, “The Organizational Structure of the PLAAF,” in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force*; and *PLAAF 2010*.
- 481 See Allen, “Introduction to the PLA’s Organizational Reforms: 2000-2012” and *Directory of PRC Military Personalities 2015* and *Directory of PRC Military Personalities 2019*. Information also came from multiple *Air Force News* articles since 2000.
- 482 *People’s Liberation Army Air Force*, Chapter 2 (Organizational Structure). *Directory of PRC Military Personalities 2018*.
- 483 Liu Guoqing, [“Air Force Logistics Department ‘Maintenance Core, Listen from the Command’ and Observe the Theme Speech for the Contest Finals”], *Air Force News*, 17 October 2017, 1.
- 484 Allen, *PRC PLAAF*, 1991.
- 485 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 218.
- 486 See Allen, “Introduction to the PLA’s Organizational Reforms: 2000-2012” and *Directory of PRC Military Personalities 2015* and *Directory of PRC Military Personalities 2019*. Information also came from multiple *Air Force News* articles since 2000.
- 487 *People’s Liberation Army Air Force*, Chapter 2 (Organizational Structure). *Directory of PRC Military Personalities 2019*.
- 488 No official translation was found for this department; however, the term *waichang* (外场) is translated as “airfield.” *The Chinese-English English-Chinese Military Dictionary* [英汉汉英军事大辞典], (Beijing: Xuewan Press, November 2011), 530, has multiple entries for *waichang* and translates all of them as “airfield.” Given its responsibility for aircraft maintenance, the term “maintenance” was added for clarity’s sake.
- 489 See Allen, “Introduction to the PLA’s Organizational Reforms: 2000-2012” and *Directory of PRC Military Personalities 2015* and *Directory of PRC Military Personalities 2019*.
- 490 Allen, “Introduction to the PLA’s Organizational Reforms: 2000-2012.”
- 491 The information for this section is consolidated from the following reports: Allen, Mulvaney, and Char, “Ongoing Organizational Reforms.” Allen, “Introduction to the PLA’s Administrative and Operational Structure.” Allen, “Introduction to the PLA’s Organizational Reform.” Kenneth W. Allen, “PLA Air Force: Lessons Learned 1949-2002.” Kenneth W. Allen, “The Organizational Structure of the PLAAF.” *PLAAF 2010*, Chapter 1.
- 492 Hu, ed., [*Modern Military Organizational Reform Research*], 94.
- 493 *PLAAF 2010*, Chapter 2 (Organizational Structure).
- 494 Lawrence “Sid” Trevethan, “*Brigadization*” of the PLA Air Force, (Montgomery, AL: China Aerospace Studies Institute, 17 June 2018). Hereafter referred to as Trevethan, “*Brigadization*” of the PLA Air Force. See also Andreas Rupprecht, *Modern Chinese Warplanes: Chinese Air Force – Aircraft and Units*, (Houston, TX: Harpia Publishing, 2018). Hereafter referred to as Rupprecht, *Modern Chinese Warplanes*.
- 495 *Annual Report to Congress 2018*.
- 496 “Air Force Lhasa Base and Women’s Federation of the Autonomous Region Carry Out Condolences to Lajiao Township” [空军拉萨基地, 自治区妇联到拉郊乡开展慰问活动], Lhasa government website, accessed on 31 May 2019 at http://www.luozha.gov.cn/xwzx/ttxw/201905/t20190531_30985.html.
- 497 *The Military Balance 2018*.
- 498 Trevethan, “*Brigadization*” of the PLA Air Force.
- 499 “Air Force Major General Wang Kangping Becomes Commander of Air Force Base,” *The Paper*, 6 February 2018, accessed at http://www.thepaper.cn/newsDetail_forward_1991905.
- 500 *The Military Balance 2018*.
- 501 Timothy Wright, “Chinese PLAAF H-6N Pictured Carrying Large Missile,” *IISS*, October 2020, accessed at <https://www.iiss.org/blogs/analysis/2020/10/mdi-chinese-plaaf-h-6n-missile>.

- 502 Huang Panyue, ed., “Bomber Takes Off for Round-The-Clock Flight Mission,” *China Military Online* (English), 27 March 2020, accessed at http://english.chinamil.com.cn/view/2020-03/27/content_9778779.htm. Andreas Rupprecht notes that the air brigade is located in the Central TCAF. See <https://twitter.com/RupprechtDeino/status/1175786567794929665?s=20>.
- 503 Zhao Danpeng, Xu Peng, Xia Qi, et al., [“Development of the First Generation Companion Particle Target Tube”] [第一代伴随粒子靶管的研制], *CNKI*, November 2018, accessed at <https://kns.cnki.net/kcms/detail/detail.aspx?filename=QJGY201811032&dbcode=CJFD&dbname=CJFD2018&v=>.
- 504 *2002 Defense White Paper*.
- 505 “Services” [军种] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 332.
- 506 “Air Force Branches” (空军兵种), Zhu, ed., [*Air Force Dictionary*], 154. “Arms” (兵种), *PLA Military Terminology* dictionary, 2nd ed., 2011, 332; *2012 Defense White Paper* uses arms. Lu Xiaoping, ed., *The PLA Air Force*, (Beijing: China Intercontinental Press, 2012), Chapter 4, 85-108, uses “arms.” *DOD Reports to Congress* use arms.
- 507 “Forces, troops, units” [部队] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 332.
- 508 “Element” [分队] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 332-333.
- 509 *2002 Defense White Paper*.
- 510 “Arms” [兵种] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 332. “Air Force Branches” [空军兵种], Zhu, ed., [*Air Force Dictionary*], 154, 159, 160, 161, 162. Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 223-233. *World Military Yearbook* [世界军事年鉴], (Beijing, PLA Press), annual or biannual from 1985 to 2015. [*PLA Air Force Officer Handbook*] [中国人民解放军空军军官手册], (Beijing: Lantian Press, 2006), 1st Edition, 28. [*PLA Air Force Enlisted Force Handbook*] [中国人民解放军空军士兵手册], (Beijing: Lantian Press, November 2006), 13. Hereafter referred to as [*PLAAF Enlisted Force Handbook*]. Lu, ed., *The PLA Air Force*, 85-111.
- 511 *2019 Defense White Paper*.
- 512 Yao Yanjing, Lai Mingchuan, Wang Yamin, [*Military Organization System Research*] [军事组织体制研究], (Beijing, National Defense University Press, June 1997), 377. [*People’s Liberation Army History 1927-1982*] [中国人民解放军大史记1927-1982], 284. Yuan Wei, ed., [*History of the People’s Liberation Army’s Five Field Armies*] [中国人民解放军五大野战部队发展史略], (Beijing: PLA Press, 1987), 29. Song and Xiao, eds., [*China Military Encyclopedia*], Volume 2, 330.
- 513 *PLAAF 2010*, Chapter 5. *PLA Aerospace Power*, 17-18.
- 514 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 223-233.
- 515 Cliff et al., *Shaking the Heavens and Splitting the Earth*, 20.
- 516 *Annual Report to Congress 2016*, 32.
- 517 According to a *Wikipedia* article concerning fighter generations, the term “generation” first appeared in the 1990s and different people and organizations, including the U.S., England, Russia, Australia, and China, created their own definition and assigned different aircraft to each generation. See “Jet Fighter Generations,” *Wikipedia*, last edited on 8 January 2021, accessed at https://en.wikipedia.org/wiki/Jet_fighter_generations. “Five Generations of Jet Fighter Aircraft,” *Pathfinder*, Air Power Development Centre Bulletin, Australian Air Power Development Center, Issue 170, January 2012, accessed at <https://airpower.airforce.gov.au/APDC/media/PDF-Files/Pathfinder/PF170-Five-Generations-of-Jet-Fighter-Aircraft.pdf>. The identification of the J-20 as a 4th-generation aircraft is found in Luo Erwen and Xu Yi, [“Gathering Troops in Zhurui: From the Training Ground to the Parade Ground”] [点兵朱日和:从演训场到阅兵场], *China Air Force*, August 2017, 16-22. Jeffrey Lin and P.W. Singer, “Chinese Air Force Takes Delivery of New J-16 Strike Fighters,” *Eastern Arsenal*, 7 May 2014, accessed at <https://www.popsoci.com/blog-network/eastern-arsenal/chinese-air-force-takes-delivery-new-j-16-strike-fighters/>. “The Official News of the 2018 Golden Helmet Came: The 3.5th Generation Fighters Entered for the First Time, and the J-16 Won the Championship” [2018金头盔官方消息来了:3.5代战斗机首次参赛,歼-16夺总冠军], 21 December 2018, accessed at https://k.sina.com.cn/article_6513000185_184347ef900100dold.html. *PLA Aerospace Power*. Zhang Wenchang, Xu Hui, and Ma Jialong, [“How to Choose My Country’s Next-generation Carrier-based Fighter?”] [我国下一代舰载战斗机该如何选?], *China Military Online*, 22 January 2018, accessed at http://www.chinamil.com.cn/bqtd/2018-01/22/content_9476421.htm.
- 518 Wang, ed., *China Today: Air Force*. Lin, ed., [*History of the Air Force*]. Yao, ed., [*A History of China’s Aviation*].
- 519 Wang, ed., *China Today: Air Force*, 503-504. Liu Yazhou and Yao Jun, eds., *A History of China’s Aviation: Second Edition* [中国航空史:第二版], Hunan: Hunan Science and Technology Press, August 2007, 583.
- 520 *Military Power of the People’s Republic of China: 2008*, (Washington, D.C.: Office of the Secretary of Defense, March 2008), 53. The PLAAF also has the 4th Transport Division (MUCD 95616) in the Chengdu MRAF that is not noted in the Military Power report.
- 521 Allen, Mulvaney, and Char, “Ongoing Organizational Reforms.”
- 522 *PLA Aerospace Power*, 30-31. Allen, Mulvaney, and Char, “Ongoing Organizational Reforms.”
- 523 *PLA Aerospace Power*, 18.
- 524 *The Military Balance 2019*, (London: The International Institute for Strategic Studies (IISS), March 2019). Rupprecht, *Modern Chinese Warplanes*. Four former bomber divisions that were created in the 1950s and 1970s were abolished in the 1980s and 1990s: 23rd and 25th divisions in 1985 and 20th and 48th divisions in 1992. See [*History of the Air Force Air Divisions of the Chinese People’s Liberation Army*] [中国人民解放军空军航空兵师历史沿革], 13 May 2014, accessed at <http://www.plaaf.net/special/hkbs.html> and http://blog.sina.com.cn/s/blog_a3f74a990101f67.html.
- 525 The upgrade information is based on analysis of several articles in *Air Force News* during 2003 that first identified the maintenance group Directors as Deputy regiment leader grade officers.
- 526 See Allen, *PRC PLAAF*, 1991, Section 13. Information from several *Air Force News* articles between 2002-2006 indicate that this information is still valid.
- 527 Hu Hongbin, Song Kexin, and Lin Wengui, [“Eastern TCAF Base Works to Turn NCO ‘Personnel’ into ‘Technicians’”] [东部战区空军某基地助推机务士官走上成长快车道纪实], *Air Force News*, 7 September 2018, 1.

- 528 Wang Qingqing, Mei Tingxuan, and Chi Yuguang, ["Eastern TCAF Air Regiment Group Training Competition"] [东部军区空军航空兵某团机务大队组织开展全员比武], *Air Force News*, 17 February 2016, 1.
- 529 For information on the intermediate repair facilities, see *Air Force News*, 30 June 2005. On 21 June 2005, the PLAAF's 5706 Overhaul Factory formally opened its second repair line (第二条修理线) for a new type of combat aircraft. [Note: The wording indicates this is the second line, meaning second facility, for this particular type of aircraft, rather than merely a second repair line in addition to a first line that is being used for another type of aircraft.] in August 2002, the factory officially received the task to start building the second line. It took almost three years and RMB 220 million (USD 27.5 million) to build. [Note: The PLAAF's 5706 Overhaul Factory is in Dalian, Liaoning Province, and is also known as the Changfeng Aircraft and Engine Factory.] *Air Force News*, 27 April 2006. According to the caption accompanying a photo showing the nose of a Sukhoi aircraft and a pilot whose helmet has a helmet mounted site base, at 0800 on 20 April 2006, a new type of aircraft rolled out of the PLAAF's 5706 factory in Dalian after completing 10 months of overhaul. This was the first new type of aircraft to receive an overhaul at this factory. The 2003-4 issue of *China Air Force* magazine, 13, has a photo and caption showing Su-27s at the Dalian intermediate overhaul facility. *Air Force News* also had multiple article during the 2010s, including Chen Lei and Liu Hanbao, ["Northern TCAF Air Brigade Adapts to New Regulations to Carry out Flight Support"] [北部战区空军航空兵某旅适应新法规开展飞行保障见闻], *Air Force News*, 20 April 2018, 1.
- 530 *Air Force News*, 21 September 2002, 1.
- 531 As noted in Chapter 3, the PLA defines elements (分队) as organizations at the battalion, company, and platoon level.
- 532 The primary source for this section was analysis of over 500 *Air Force News* articles during the 2000s and 2010s.
- 533 Liu Daoqin, ed., [*The Science of Air Force Tactical Logistics*] [空军战术后勤学], (Beijing: Air Force Command College, September 2002), 21. Hereafter referred to as Liu, ed., [*The Science of Air Force Tactical Logistics*].
- 534 See Allen, *PRC PLAAF*, 1991, Section 13. Although the information in this section comes from visits to PLAAF units in the late 1980s, the information still tracks with that available in *Air Force News* articles. See *Air Force News*, 1 June 2006, 3 where a Nanjing MRAF airfield station has 500 personnel. See Liu, ed., [*The Science of Air Force Tactical Logistics*], Chapter 2, 48, for detailed information on the organizational structure of PLAAF airfield stations. The 2002 through 2006 *Air Force News* also has several hundred articles containing information on the airfield stations.
- 535 Liu, ed., [*The Science of Air Force Tactical Logistics*], 36-37.
- 536 The information in this paragraph is based on analysis of several photos in *China Air Force* of ground crews preparing aircraft and standing in formation at the front of an aircraft while waiting for pilots to approach the aircraft. See photos in *China Air Force* Volume 2003-2 inside cover, and Volume 2008-1, 38 and 59. See also the entries for "Aircraft Maintenance Personnel" (航空机务人员), "Ground Crew" (地勤人员), and "Ground Crew" (地勤机组) in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 237, 251. Information on personnel assigned to a single aircraft for their career comes from analysis of articles in *Air Force News* describing the career of certain maintenance personnel. See *Air Force News*, 11 June 2002, 2. *Air Force News*, 15 March 2003, 1. *Air Force News* 15 June 2006, 1.
- 537 Huang Chunyi, Chi Yuguang, Ding Yibo, and Dai Zhihua, ["A Day in the Life of an Aircraft Maintenance Unit"], *China Air Force*, April 2014, 12-19.
- 538 Cheng Guo, ["Red Sword Aircraft Maintenance"], *Air Force News*, 5 December 2017, 2.
- 539 Rupprecht, *Modern Chinese Warplanes*, 21-23.
- 540 Rupprecht, *Modern Chinese Warplanes*, 21-23.
- 541 "Numbering System," discussion on China-Defense.com, accessed in 2001 at http://www.china-defense.com/aviation/numbering-system/plaaf_num_sys-1.html.
- 542 Rupprecht, *Modern Chinese Warplanes*, 21-23.
- 543 The information in this table is based on analysis in 2005 by this book's lead author.
- 544 Rupprecht, *Modern Chinese Warplanes*, 21-23, 175.
- 545 Rupprecht, *Modern Chinese Warplanes*, 21-23.
- 546 This information is based on detailed discussions with Andreas Rupprecht, Sid Trevethan, and Henry Boyd.
- 547 ["It's Warm!" Look at This Close Military-Civil Relationship!"] [暖爆啦! 来看这份军民鱼水情!], Dengzhou City website, July 2019, accessed at <http://www.dengzhou.gov.cn/shyzt/sydt/webinfo/2019/07/1560226012233604.htm>.
- 548 Information is based on discussions with various analysts and a review of multiple photos of bombers online, such as ["H-6 Bomber"] [轰-6轰炸机], *China Military Online*, 7 January 2016, accessed at http://www.81.cn/kj/2016-01/07/content_6847826.htm; ["Chinese Bombers Recent First Flight Near Taiwan"] [中国轰炸机最近一次飞越台湾接近台湾], JinListing.com, 22 June 2020, accessed at <https://www.jinlisting.com/中国轰炸机最近一次飞越台湾接近台湾/>; and ["A U.S. Military Plane Appeared in the Airspace Southwest of Taiwan, and on the Same Day, Japan Spotted a PLA Bomber Turning and Flying to the East of Taiwan"] [美军机现身台湾西南空域同日, 日本发现解放军轰炸机拐弯飞至台湾东部外海], Guancha, 28 June 2020, accessed at <https://user.guancha.cn/main/content?id=336306&s=fwrhmtycwz>. In addition, see Scramble at <https://www.scramble.nl/orbats/china/airforce>.
- 549 Rupprecht, *Modern Chinese Warplanes*, 21-23.
- 550 Rupprecht, *Modern Chinese Warplanes*, 21-23.
- 551 *PLAAF 2010*, Chapter 11. The three terms used are Airborne Force, Airborne Corps, and Airborne Troops. "Airborne Force" [空降兵] and "Airborne Corps" [空降兵军] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 959. "Airborne force" [空降兵] in Zhu, ed., [*Air Force Dictionary*], 160. "Airborne Troops" in Lu, ed., *The PLA Air Force*, 102-104.
- 552 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 223-233.
- 553 2002, 2008, and 2019 *Defense White Papers*. "Air Force Branches" [空军兵种] in Zhu, ed., [*Air Force Dictionary*], 154. "Arms" [兵种] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 332. "Airborne Force" in Zhu, ed., [*Air Force Dictionary*], 160.

- 554 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 231.
- 555 Jencks, *From Muskets to Missiles*, 56-57, 95-97.
- 556 *Air Force News*, 1 June 2002, 3. *Air Force News*, 30 July 2002, 3. Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 231-232.
- 557 *Handbook on the Chinese Armed Forces*, (Washington, D.C.: Defense Intelligence Agency, July 1976), 4-47.
- 558 *Handbook on the Chinese Armed Forces*, (Washington, D.C.: Defense Intelligence Agency, November 1984). "PLA Airborne Brigades Become Divisions," *Jane's Defence Weekly*, Volume 20, Number 14, 2 October 1993, 12. Department of Defense, "The Security Situation in the Taiwan Strait," which was a report submitted by Secretary of Defense William Cohen to the U.S. Senate as directed by the FY99 Appropriations Bill, 17 February 1999.
- 559 [*Military Economics Studies*] 军事经济研究], Number 8, 1995.
- 560 Zhu, ed., [*Air Force Dictionary*], 854.
- 561 *The Military Balance 2018*; and *Directory of PRC Military Personalities 2018*.
- 562 Allen, Mulvaney, and Char, "Ongoing Organizational Reforms."
- 563 He Zhiqin, ["Heroes Live Forever in the Fire"], *Air Force News*, 8 March 2018, 1. This is an anomaly since regiments are usually not subordinate to brigades.
- 564 2002, 2008, and 2019 *Defense White Papers*. *World Military Yearbook* [世界军事年鉴], (Beijing, PLA Press), published annually or biannually from 1991 to 2015. "Arms" [兵种] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 332. "Air Force Branches" [空军兵种] in Zhu, ed., [*Air Force Dictionary*], 154. [*PLA Air Force Officer Handbook*] [中国人民解放军空军军官手册], (Beijing: Lantian Press, 2006), 1st Edition, 28. [*PLA Air Force Enlisted Force Handbook*], 13. Allen, Mulvaney, and Char, "Ongoing Organizational Reforms." *PLAAF 2010*, Chapters 9 and 10.
- 565 2008 *Defense White Paper*.
- 566 *PLAAF 2010*, Chapter 10. Allen, Mulvaney, and Char, "Ongoing Organizational Reforms."
- 567 The information on the AAA branch's history comes from page 3 of the 6 August 2002 issue of *Air Force News* that had a short history of the anti-aircraft artillery (AAA) troops (高射炮兵 or 高炮兵). See also Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 229-230.
- 568 "Air Defense Force" [防空军] in Zhu, ed., [*Air Force Dictionary*], 142. The Air Defense Force began in 1950 as an Air Defense Department under the General Staff Department. In 1955, it became an Air Defense Force Department, which was then reorganized as a service and renamed as the Air Defense Force.
- 569 This information is based on analysis of *Air Force News* from 2002 through 2006, plus Hu, ed., [*Modern Military Organizational Reform Research*], 96.
- 570 Tian Dasong, ["Because of Loyalty, There Is Obedience"], *Air Force News*, 10 March 2017, 1.
- 571 Zhu Xiaobing and Ding Yibo, ["An Eastern TCAF Base Established Effective Service Mechanism to Assist Grassroots Units- Fast Response to Grassroots Difficulties"], *Air Force News*, 7 December 2017, 1.
- 572 Zhang Wei and Shi Qiang, ["Airborne Force Battalion Reforms"], *Air Force News*, 21 April 2017, 2.
- 573 The highest number of subordinate AAA companies noted in *Air Force News* was 7 (七连).
- 574 *PLAAF 2010*, Chapter 9. Allen, Mulvaney, and Char, "Ongoing Organizational Reforms."
- 575 *PLAAF 2010*. At present, no brigades are subordinate to a division and no regiments are subordinate to a brigade, although some regiments are independent regiments that are not subordinate to any division.
- 576 *Air Force News* has references to the 1st, 2nd, 3rd, and 4th companies (一连; 二连; 三连; and 四连) subordinate to a battalion, which I believe refer to launch companies. No number higher than four had been noted.
- 577 *PLAAF 2010*, Chapter 9. Allen, Mulvaney, and Char, "Ongoing Organizational Reforms."
- 578 Chen Tao, ["Eastern TCAF SAM Brigade Support to Newly Transferred Unit Combat Methods Research Verification"], *Air Force News*, 21 June 2017, 2.
- 579 Wei Liping and Chi Yuguang, ["The Transition of a Blade Unit"], *China Air Force*, April 2016, 34-35.
- 580 *PLAAF 2010*, Chapter 12. Allen, Mulvaney, and Char, "Ongoing Organizational Reforms."
- 581 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 230.
- 582 [*PLA Air Force Officer Handbook*] [中国人民解放军空军军官手册], (Beijing: Lantian Press, 2006), 1st Edition, 28. *World Military Yearbook 2007* [世界军事年鉴 2007], (Beijing, PLA Press), 148. Lu, ed., *The PLA Air Force*, 089-111.
- 583 2019 *Defense White Paper*. 2013, 2014, and 2015 editions of *World Military Yearbook* [世界军事年鉴], (Beijing, PLA Press).
- 584 Yang Jin, ["Western TCAF Radar Station in Tibet"], *Air Force News*, 15 February 2016, 1.
- 585 Guo Xilin, ed., [*Science of Air Force Radar Troop Tactics*] [空军雷达兵战术学], (Beijing: Academy of Military Science Press, August 2002), 98-99.
- 586 Guo, ed., [*Science of Air Force Radar Troop Tactics*]. The book describes the radar intelligence stations being assigned to the Air Corps and Air Corps-level bases, but all of those units were downgraded to division-level Command Posts in 2004. Therefore, it is assumed the Command Posts still retain the radar intelligence branch stations.
- 587 The information on central radar stations is derived from analysis of articles in *Air Force News*.
- 588 According to Zhu, ed., [*Air Force Dictionary*] (73), a guidance station is responsible for guiding friendly aircraft into battle.
- 589 *PLAAF 2010*, Chapter 12. Allen, Mulvaney, and Char, "Ongoing Organizational Reforms."

- 590 Translated as “communications” in Lu, ed., *The PLA Air Force*, 85-108. “Air Force Signal Corps” [通信兵] in Zhu, ed., [*Air Force Dictionary*], 162.
- 591 *World Military Yearbooks 1991 to 2015*. [*PLA Air Force Officer Handbook*] [中国人民解放军空军军官手册], (Beijing: Lantian Press, 2006), 1st Edition, 28. Lu, ed., *The PLA Air Force*, 85-108. 2008 *Defense White Paper*.
- 592 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 232-233.
- 593 Song and Xiao, eds., [*China Military Encyclopedia*], Volume 3, 609.
- 594 This information on communications organizations is derived from analysis of articles in *Air Force News*.
- 595 *PLAAF 2010*, Chapter 12. Allen, Mulvaney, and Char, “Ongoing Organizational Reforms”
- 596 “Air Force Electronic Warfare Units” [空军电子对抗兵] in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 232. “Air Force Electronic Countermeasures Regiment” [空军电子对抗团] in Zhu, ed., [*Air Force Dictionary*], 162.
- 597 2008 *Defense White Paper*.
- 598 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 232.
- 599 [*PLA Air Force Officer Handbook*] [中国人民解放军空军军官手册], (Beijing: Lantian Press, 2006), 1st Edition, 28. 2002 and 2008 *Defense White Papers*. *World Military Yearbook 2013*. Lu, ed., *The PLA Air Force*, 089-111.
- 600 Allen, Mulvaney, and Char, “Ongoing Organizational Reforms.”
- 601 Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1252.
- 602 *PLAAF 2010*, Chapter 12. Allen, Mulvaney, and Char, “Ongoing Organizational Reforms.”
- 603 This term was not identified in the 1996 [*Air Force Dictionary*], the 2005 [*China Air Force Encyclopedia*], or in the [*PLA Air Force Officer Handbook*] [中国人民解放军空军军官手册], (Beijing: Lantian Press, 2006), 1st Edition, 28; however, it appeared in the 2002 *Defense White Paper*, the *World Military Yearbooks* starting in 2007, and [*PLA Air Force Enlisted Force Handbook*], 13.
- 604 Xin Ming, ed., *Chinese People’s Liberation Army Officers Handbook: Air Force Volume* [中国人民解放军军官手册: 空军分册], (Qingdao: Qingdao Publishing, 1991), 119; and Shi Hu and Dong Changjun, “Air Force Technical Reconnaissance Stations” [空军技术侦察站] in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 241-42.
- 605 “Air Force Reconnaissance and Intelligence Support” [空军侦察情报保障] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 983. Shi Hu and Dong Changjun, “Air Force Technical Reconnaissance Stations” [空军技术侦察站] in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 241-42.
- 606 The former GSD Technical Reconnaissance Department (技术侦察部), which was also known as the Third Department and 3PLA and was merged into the PLASSF, oversaw all PLA technical reconnaissance activity. It had direct authority over 12 operational bureaus, of which eight were clustered in Beijing while two others were based in Shanghai, one in Qingdao, and one in Wuhan. The operational bureaus were separate and distinct from technical reconnaissance bureaus (TRBs) under the PLA’s seven MRs, PLAN, PLAAF, and Second Artillery. The TRBs were identified as both a bureau (a bumen) and a unit (budui). The key here is that the key leader is called both a bureau Director and a Commander and each TRB is assigned an MUCD, while no other PLA bumen are assigned an MUCD. For further background, see Mark Stokes, Jenny Lin, and L.C. Russell Hsiao, “The Chinese People’s Liberation Army Signals Intelligence and Cyber Reconnaissance Infrastructure,” Occasional Paper, Project 2049 Institute, 11 November 2011. Mark Stokes, “PLA Reform and Reorganization: Who Are the Masters of Cyber, Space, Nuclear, and Maritime Domains?” Paper presented at the 2016 CAPS-RAND-NDU Conference on the PLA, Arlington, VA, 18-19 November 2016, 11-17.
- 607 Marcus Clay, *Supporting the Infinite Battlefield: A Preliminary Study of the Chinese Strategic Support Force Through 2018 PLA Civilian Personnel Recruitment Database*, (Montgomery, AL: China Aerospace Studies Institute, 2019), 40, 54-55.
- 608 Mark Stokes, Jenny Lin, and L. C. Russell Hsiao, “The Chinese People’s Liberation Army Signals Intelligence and Cyber Reconnaissance Infrastructure,” (Arlington, VA: Project 2049 Institute, 11 November 2011), 11-13, accessed at http://project2049.net/documents/pla_third_department_sigint_cyber_stokes_lin_hsiao.pdf on 21 July 2012.
- 609 Ji Jianming, “Air Force Technical Reconnaissance Troop Training” [空军技术侦察兵训练] in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 291.
- 610 Ji, “Air Force Technical Reconnaissance Troop Training,” in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 291.
- 611 *PLAAF 2010*, Chapter 12. Allen, Mulvaney, and Char, “Ongoing Organizational Reforms.”
- 612 “Air Force Chemical Defense Corps” [空军防化兵] in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 233.
- 613 Zhang Changsheng, Ma Junhong, and Su Gongbing, [“PLAAF Chemical Defense Troops”] [空军防化兵], *China Air Force*, May-June 2006, 35-37. This article has five photos of chemical defense troops in action at an airfield. The article is about the Chemical Defense Group subordinate to PLAAF Headquarters.
- 614 *Air Force News*, 25 February 2006, 2.
- 615 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 233.
- 616 This information is taken from analysis of the PLAAF’s internal newspaper, *Air Force News*, and *China Air Force*.
- 617 This information is taken from analysis of the PLAAF’s internal newspaper, *Air Force News*.
- 618 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 233.
- 619 “PLA Chemical Defense Command Engineering Academy,” undated, accessed at www.edudx.com.cn/html/200701/20070120191438.htm.
- 620 “Air Force Engineering Corps” [空军工程兵] in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 233.
- 621 Song and Xiao, eds., [*China Military Encyclopedia*], Volume 2, 22. *PLA Military Terminology* dictionary, 2nd ed., 2011, 333. Zhu, ed., [*Air Force Dictionary*], 145. *Directory of PRC Military Personalities 2019*.

- 622 [70 Years of the PLA] [中国人民解放军史的70年], (Beijing: Military Science Press, July 1997), 568.
- 623 Song and Xiao, eds., [China Military Encyclopedia], Volume 2, 22. [PLA Military Terminology], 1997, 156, and 2011, 332.
- 624 This is based on the author's analysis of information obtained on the PLAAF over a 20-year period as well as individual entries in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1235-1240. Even the encyclopedia has the entries listed in protocol order. This is also the order shown in Wang Hai, [General Wang Hai: My Combat Career] [王海上将:我的战斗生涯], (Beijing: Zhongyang Wenxian Press, February 2000), 300.
- 625 Tencent Weibo blog, accessed at <http://t.qq.com/feng656746221>.
- 626 Editor, ["Chengdu MR Army Aviation Flight Group Commander, Senior Colonel Deng Guifang, Invited to Give a Situation and Policy Report at Our School"] [成都军区陆航团飞行大队大队长邓贵芳大校受邀来我校做形势与政策报告], 26 November 2010, accessed at <http://szb.swpu.edu.cn/html/201011/26/20101126152828.htm>.
- 627 ["Appreciation of Deng Yu's Painting Art"] [邓于绘画艺术欣赏], 5 January 2010, accessed at www.meixun.org/shuhua/shuhuyayishujianshang/12626819494043.html.
- 628 *Directory of PRC Military Personalities 2019*.
- 629 The information in this section comes from Lü Gang, "Equipment Academy of Air Force" [空空装备研究院] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1252; Allen, "Introduction to the PLA's Organizational Reform"; and PLAAF 2010, Chapter 15. Allen, Mulvaney, and Char, "Ongoing Organizational Reforms."
- 630 Tai Ming Cheung, Eric Hagt, Susan Puska, Debra Geary, and Joe McReynolds, "Evolving Push-Pull Relationship Between the Research, Development, and Acquisition Communities," paper presented at Second Annual Conference on China's Defense and Dual-Use Science, Technology, and Industrial Base, 30 June – 1 July 2011, 16.
- 631 Song and Xiao, eds., [China Military Encyclopedia] 1997, Volume 2, 398. ["RAND Corporation Comment on China's National Defense: Shipbuilding Progresses Significantly, Aviation Development Lags Behind"] [兰德公司评中国国防:造船进展显著航空发展滞后], 23 August 2006, accessed at http://news.fznews.com.cn/jszx/2006-8-23/2006823ke8re+kybai03427_2.shtml.
- 632 Lu Xicheng, "GAD S&T Committee Director Lu Xicheng: National Defense S&T Battleline Brilliant Model" [总装备部科技委副主任卢锡城:国防科技战线的光辉典范], *Xinhua*, 11 November 2011.
- 633 Accessed at www.sszg.com/2005/1-13/18472449574.html.
- 634 Yang Qing, ["Ceremony Held in Beijing to Inaugurate New Reform Organizations: Air Force Research Academy, Engineering University, Medical College"], *Air Force News*, 24 July 2017, 1. *Air Force News*, 25 September 2005, 1.
- 635 Zhou Hong, ["Air Force Research Academy Identifies Mission and Organizational Structure"], *Air Force News*, 15 November 2017, 1.
- 636 ["Concerning 2017 Air Force Outstanding Division and Brigade Level Party Committee Personnel Awards"], *Air Force News*, 14 February 2018, 1.
- 637 ["PLA Air Force Commanders"] [中国人民解放军空军#司令员], *Wikipedia*, last edited on 9 January 2021, accessed at <https://zh.wikipedia.org/wiki/中国人民解放军空军#司令员>.
- 638 ["PLA Air Force Chiefs of Staff"] [中国人民解放军空军参谋部], *Wikipedia*, last edited on 12 December 2020, accessed at <https://zh.wikipedia.org/wiki/中国人民解放军空军参谋部>. ["PLA Air Force Political Work Department"] [中国人民解放军空军政治工作部], *Wikipedia*, last edited on 25 December 2020, accessed at <https://zh.wikipedia.org/wiki/中国人民解放军空军政治工作部>.
- 639 ["PLA Air Force Logistics Department"] [中国人民解放军空军后勤], *Wikipedia*, last edited on 19 December 2020, accessed at <https://zh.wikipedia.org/wiki/中国人民解放军空军后勤部>. ["PLA Air Force Equipment Department"] [中国人民解放军空军装备部], *Wikipedia*, last edited on 18 December 2020, accessed at <https://zh.wikipedia.org/wiki/中国人民解放军空军装备部>.
- 640 ["PLA Air Force Commanders"] [中国人民解放军空军#司令员], *Wikipedia*, last edited on 9 January 2021, accessed at <https://zh.wikipedia.org/wiki/中国人民解放军空军#司令员>.
- 641 *PLAAF 2010*, Chapter 5.
- 642 In February 2016, the Headquarters Department, whose Director is the Chief of Staff, was renamed the Staff Department and the Political Department was renamed the Political Work Department.
- 643 Yao, ed., [A History of China's Aviation], 659.
- 644 Yao, ed., [A History of China's Aviation], 657.
- 645 Yao, ed., [A History of China's Aviation], 657. Allen 1991, Section 12. 1999 *Directory*, 54.
- 646 Yao, ed., [A History of China's Aviation], 657. Allen 1991, Section 12. 1999 *Directory*, 46.
- 647 Yao, ed., [A History of China's Aviation], 657, 666.
- 648 Yao, ed., [A History of China's Aviation], 666. Song and Xiao, eds., [China Military Encyclopedia] 1997, Volume 7, 160.
- 649 Yao, ed., [A History of China's Aviation], 667. Song and Xiao, eds., [China Military Encyclopedia] 1997, Volume 7, 160.
- 650 Interview with PLA officials.
- 651 Yao, ed., [A History of China's Aviation], 659.
- 652 Yao, ed., [A History of China's Aviation], 664.
- 653 Yao, ed., [A History of China's Aviation], 664.
- 654 Allen 1991, Section 12.

- 655 *China Air Force*, September-October 1999, 27.
- 656 Yao, ed., [*A History of China's Aviation*], 661, 662. The lead author of this book visited the 7th Air Corps in 1989.
- 657 Yao, ed., [*A History of China's Aviation*], 659.
- 658 Yao, ed., [*A History of China's Aviation*], 660.
- 659 Yao, ed., [*A History of China's Aviation*], 660.
- 660 Yao, ed., [*A History of China's Aviation*], 661.
- 661 Yao, ed., [*A History of China's Aviation*], 666.
- 662 Yao, ed., [*A History of China's Aviation*], 666. Song and Xiao, eds., [*China Military Encyclopedia*] 1997, Volume 7, 160.
- 663 Yao, ed., [*A History of China's Aviation*], 662, 667.
- 664 Yao, ed., [*A History of China's Aviation*], 667.
- 665 *1994 Directory*, 47.
- 666 Yao, ed., [*A History of China's Aviation*], 664.
- 667 Allen 1991, Section 11. Yao, ed., [*A History of China's Aviation*], 664.
- 668 Yao, ed., [*A History of China's Aviation*], 664.
- 669 *1994 Directory*, 47.
- 670 Yao, ed., [*A History of China's Aviation*], 660.
- 671 Yao, ed., [*A History of China's Aviation*], 664.
- 672 Yao, ed., [*A History of China's Aviation*], 666.
- 673 Yao, ed., [*A History of China's Aviation*], 664, 666.
- 674 Yao, ed., [*A History of China's Aviation*], 660.
- 675 Yao, ed., [*A History of China's Aviation*], 666. Song and Xiao, eds., [*China Military Encyclopedia*] 1997, Volume 7, 160.
- 676 Yao, ed., [*A History of China's Aviation*], 667. Song and Xiao, eds., [*China Military Encyclopedia*] 1997, Volume 7, 160.
- 677 *Directory 1996*, 41.
- 678 Yao, ed., [*A History of China's Aviation*], 661.
- 679 Yao, ed., [*A History of China's Aviation*], 661.
- 680 *China's Air Force*, 1987-5, Volume 10, 22-23. The author escorted two USAF delegations to Lhasa 1988.
- 681 Yao, ed., [*A History of China's Aviation*], 661.
- 682 Yao, ed., [*A History of China's Aviation*], 667.
- 683 Information in these tables is compiled from Wang, ed., *China Today: Air Force*, and Lin Hu, ed., [*History of the Air Force*] [空军历史], (Beijing: PLA Press, PLAAF Headquarters Education and Research Office, November 1989). ["History of the Air Force Air Divisions of the Chinese People's Liberation Army"] [中国人民解放军空军航空兵师历史沿革], 13 May 2014, accessed at <http://www.plaaf.net/special/hkbs.html> and http://blog.sina.com.cn/s/blog_a3f74a990101fi67.html. This blog provides detailed information about how each division began as flight groups, where each division moved or were abolished or merged throughout their history, and who the Commander and political officer were when the divisions were established.
- 684 For background on the growing role of women in the PLA see Elsa Kania, "Holding Up Half the Sky? (Part 1)—The Evolution of Women's Roles in the PLA," (Washington, D.C.: Jamestown Foundation *China Brief*, Volume 16, Issue 15, 4 October 2016); and Elsa Kania and Kenneth W. Allen, "Holding Up Half the Sky? (Part 2)—The Evolution of Women's Roles in the PLA," (Washington, D.C.: Jamestown Foundation *China Brief*, Volume 16, Issue 16, 26 October 2016).
- 685 Huang Panyue, ed., "New Paratroopers Practice Parachute Skills," *mod.gov*, 9 February 2017, accessed at http://eng.mod.gov.cn/HomePicture/2017-02/09/content_4772064_5.htm. Huang Panyue, ed., "Airmen Guarantee Flight Security Before Flight Tasks," *mod.gov*, 6 September 2019, accessed at http://eng.mod.gov.cn/news/2019-09/06/content_4849922.htm and http://eng.mod.gov.cn/news/2019-09/06/content_4849922.htm. Guo Fengkuan and Li Jianwen, "Victory of the Sky: The Air Force's Forever Original Heart" [制胜天空: 空军人永远的初心], *China Military Online* in Chinese, 3 April 2019, accessed at http://www.mod.gov.cn/power/2019-04/03/content_4838794.htm.
- 686 Bi Yongjun, ["Master's and Doctorate Degrees—Development Trend in Military Officers Contingent"], *PLA Daily* (Internet Version), 11 December 2000, 1. "Chinese Army Officers to Be Better Educated" *Xinhua*, (English), 11 December 2000.
- 687 "PLA Downsizing History," *Renmin Haijun*, 13 September 2003, 3; "Reduction of 200,000 Troops is Aimed at Paving the Way for Informatization of the Armed Forces," *Hong Kong Tzu Ching*, Number 156, 1 October 2003, 64-65.
- 688 "Chinese Armed Forces Modernization Marked in National Day Article," *Xinhua* (English), reprinted in *BBC*, 1 October 2001.
- 689 "System of Selecting Cadres" [干部选拔制度] in Xu Yaoyuan, Lin Xianghai, and Mu Song, eds. [*Military Cadre Work*] [军队干部工作], Second Edition, Volume 39, (Beijing: Encyclopedia of China Publishing House, 2006), 36-37. Hereafter referred to as Xu, Lin, and Mu, eds., *Military Cadre Work*.
- 690 Marcus Clay and Dennis J. Blasko, "People Win Wars: The PLA Enlisted Force, and Other Related Matters," *War on the Rocks*, 31 July 2020 accessed at <https://warontherocks.com/2020/07/people-win-wars-the-pla-enlisted-force-and-other-related-matters/>.

- 691 Guo Hongbin, ["Seven Major Moves in New Reform of the NCO System"], *Air Force News*, 18 November 2009, 1.
- 692 Xing Zhenhong, [*NCO Building Theory and Practice*] [士官队伍建设理论与实践], (Beijing: National Defense University Press, December 2012), 194-195. Hereafter referred to as Xing, *NCO Building Theory and Practice*.
- 693 Xing, *NCO Building Theory and Practice*, 212.
- 694 Xing, *NCO Building Theory and Practice*, 201.
- 695 [*PLA Air Force Enlisted Force Handbook*], 252.
- 696 Unless noted, these terms were found in *PLA Military Terminology* dictionary, 2nd ed., 2011, 338-344.
- 697 "On Probation" [见习] in Zhang Qiliang, ed., *A Chinese-English Dictionary of Military Terms* (汉英军事词典), (Beijing: Naval Press, December 2001), 404.
- 698 This translation came from the 2004 *Defense White Paper*.
- 699 "Recruitment of Flying Cadet" (招飞) in *PLA Military Terminology* dictionary, 2nd ed., 2011, 960.
- 700 Information on these career tracks and terminology were accessed at <http://qiming0130.blog.163.com/blog/static/7975228120119279109428/>. See also "System of Cadre Grades," [干部等级制度] in Xu, Lin, and Mu, eds., *Military Cadre Work*, 48-50.
- 701 Xu, Lin, and Mu, eds., *Military Cadre Work*, 48-50.
- 702 Dennis J. Blasko, *The Chinese Army Today: Tradition and Transformation for the 21st Century*, (London and New York: Routledge, 2006), 63-64. Hereafter referred to as Blasko, *The Chinese Army Today*, 1st ed., 2006.
- 703 Editorial, ["Air Force Political Work Department [Enlisted] Soldier and Civilian Personnel Bureau Responsible for Comrades Shifting from Civilian Cadre to Civilian Personnel Questions"] *Air Force News*, 12 January 2018, 1. Reference to the PLAAF Political Work Department's [Enlisted] Soldier and Civilian Personnel Bureau [政治工作部兵文局] first emerged in 2017: "The leaders of the Air Force Political Work Department's [Enlisted] Soldier and Civilian Personnel Bureau Visited Our School to Study the Training of Noncommissioned Officers (NCOs)" [空军政治工作部兵文局领导莅临我校调研士官生培养工作], accessed at <http://www.hamc.edu.cn/info/1092/4492.htm>. See also Directory of PRC Military Personalities 2018.
- 704 Yu Daqing, ed., [*PLA Officer Handbook*] [中国人民解放军军官手册], (Beijing: PLA General Political Department Cadre Department, December 2011), 021. Hereafter referred to as Yu, ed., [*PLA Officer Handbook*]. Xu, Lin, and Mu, eds., *Military Cadre Work*, 71-73.
- 705 The original figure of the ranks was found at <https://www.wuannx.com/index.php/new/327.html>. The authors of this book added the English.
- 706 ["Six officers Promoted to General before the Army Founding Day"] [建军节前我军再晋6上将军衔称谓溯源], 10 February 2012, accessed at <http://military.worker.cn/c/2011/07/31/110731174331932484589.html>.
- 707 The pictures of the ribbons were found at Du Jingchen, *Handbook for Officers and Enlisted of the Chinese PLA Navy*, (Beijing: Haichao Press, 2012). Hereafter referred to as Du, *Handbook for PLAN Officers and Enlisted Personnel*.
- 708 Ibid.
- 709 *Law of the People's Republic of China on Officers in Active Service (2000 Amendment)* [中华人民共和国现役军官法(2000修正)], Peking University Law School, 2000, accessed at <http://cn.pkulaw.cn/display.aspx?cgid=2723626e4c45c365bdfb&lib=law>.
- 710 Yu, ed., [*PLA Officer Handbook*], 022-039.
- 711 Liu Ying, ["Air Force Families"], *Air Force News*, 8 September 2017, 3.
- 712 "Air Force Reserve," undated, accessed at <https://afreserve.com/about>.
- 713 For a full list of promotions from 1988 to 2020 see ["PLA Generals"] [中国人民解放军上将] accessed at <https://baike.baidu.com/item/中国人民解放军上将>.
- 714 Page 1 in the following *Air Force News*: 31 December 2013; 17 July 2014; 11 May 2016; 1 August 2016; 18 January 2017; and 24 July 2018.
- 715 This information comes from analysis of multiple PLAAF sources, with a particular focus on *Air Force News*.
- 716 Information for the 2019 ceremony was found at ["The Air Force Held a Promotion Ceremony: Yu Qingjiang, Zhou Li, and Xu Xueqiang Were Promoted to the Rank of Lieutenant General"] [空军举行晋衔仪式: 俞庆江, 周利, 许学强晋升空军中将军衔], The Paper, 28 June 2019, accessed at https://www.thepaper.cn/newsDetail_forward_3838000, and for the December 2017 ceremony at *Air Force News*, 18 January 2017, 1.
- 717 Information about this process and the form can be found in a PLA publication entitled *Recruitment Handbook* [招生手册].
- 718 ["National Key Universities"] [全国重点大学], *Wikipedia*, last edited on 19 December 2020, accessed at <https://zh.wikipedia.org/wiki/全国重点大学>.
- 719 The primary sources for this section are Kenneth W. Allen and Jana Allen, "Chinese Air Force and China Security," in Lowell Dittmer and Maochun Yu, eds., *Routledge Handbook of Chinese Security*, (London: Routledge Press, May 2015); Kenneth W. Allen, *Chinese Air Force Officer Cadet Recruitment, Education, and Training*, (Washington, D.C.: Jamestown Foundation *China Brief*, 30 November 2011); Kenneth W. Allen, *China's Air Force Male Pilot cadet Recruitment, Education and Training*, (Washington, D.C.: Jamestown Foundation *China Brief*, Volume 12, Issue 5, 2 March 2012); Allen and Chen, *The People's Liberation Army's 37 Academic Institutions*; and PLAAF 2010, Chapter 8.
- 720 "1989 Pilot Recruitment Requirements" [1989年招收飞行员条件], *China Air Force*, 1989-3, 48.
- 721 "PLAAF Pilot Recruitment Reaches a New High" [我军招飞人数创历史新高], *China Air Force*, 2006-5, 6.
- 722 "6 Hainan Candidates Were Selected as Air Force Aviation Cadets" [海南6名高中生被录取为空军飞行学员], *eol.cn*, 11 July 2013, accessed at http://gaozhong.eol.cn/bao_kao_zhi_nan_9195/20130711/t20130711_985885.shtml.
- 723 Teng Margaret Fu, "Unequal Primary Education Opportunities in Rural and Urban China," *China Perspectives*, June 2008, accessed at <http://chinaperspectives.revues.org/500>.

- 724 In 2010, Han Chinese comprised 91.5 percent of the population, while the officially recognized 54 ethnic minorities totaled 8.5 percent. Information was accessed at “Ethnic Minorities in China,” *Wikipedia*, last edited on 30 December 2020, accessed at https://en.wikipedia.org/wiki/Ethnic_minorities_in_China.
- 725 “PLAAF Pilot Recruitment Reaches a New High” (我军招飞人数创历史新高), *China Air Force*, 2006-5, 6. *PLA Air Force Officer Handbook*, 217.
- 726 “PLA Air Force Stop Recruiting Pilots from Civilian College Grads,” *Xinhua* (English), 25 September 2013, accessed at http://news.xinhuanet.com/english/china/2013-09/25/c_132749622.htm.
- 727 *China Air Force*, April 2011, 8.
- 728 Shen Jinke, Yang Zhen, and Zhang Zimian, [“Visiting the First Group of Air Force and Qinghua University Joint Education of Flight Cadets”], *China Air Force*, October 2011, 20-22.
- 729 [“General Regulations for Air Force Pilot Recruitment in 2013”], 233 *Net*, 22 August 2013, accessed on 1 January 2014 at www.233.com/gaokao/zhaosheng/Cadet/20120822/081947480-7.html.
- 730 Daguozhiyi, [“1,100 Candidates Accepted as Air Force Flight Trainees”] [1100考生被录取为空军飞行学员!], *Weixin*, 10 July 2017, accessed at <https://www.wxnmh.com/thread-1020952.htm>.
- 731 [“In 2018, the Number and Quality of Air Force Recruits Hit a New High in 30 Years”] [2018年空军招飞数质量创30年来新高], *eol.cn*, 18 July 2018, accessed at http://gaokao.eol.cn/zhaofei/fxy/201807/t20180718_1617659.shtml.
- 732 Elsa Kania and Kenneth W. Allen, “Holding Up Half the Sky? (Part 2)—The Evolution of Women’s Roles in the PLA” [“The Female Paratrooper Carried a Hundred Catties on Her Back for Most of the Day”] [女空降兵背上百斤大半天下巴磕伞刀流血还跳伞], *PLA Daily*, 31 May 2016, accessed at <https://mil.huanqiu.com/article/9CaKrnJVjt>. http://www.airforceworld.com/a/2160602/3137_10.html.
- 733 Unless noted, the information on female aviators comes from Kenneth W. Allen and Emma Kelly, “China’s Air Force Female Aviators: Sixty Years of Excellence (1952-2012),” Washington, D.C.: Jamestown Foundation *China Brief*, volume 12, issue 12, 22 June 2012.). Hereafter referred to as Allen and Kelly, “China’s Air Force Female Aviators.” in September 2012, the PLAAF also published a detailed history of the female aviation program in *PLA Air Force Female Pilots*, (Beijing: Lantian Press, September 2012).
- 734 Wei Changchun, [“The Air Force Recruited 40 Female Pilots This Year”], *Air Force Net* (www.kjzfw.net/Item/244.aspx), 12 April 2013, which was accessed on 17 March 2014.
- 735 Du Haifeng (杜海丰), [“Air Force to Recruit the 11th Batch of 35 Female Pilot Cadets”] [空军将招收第11批35名女飞行学员], *China Military Online*, 7 June 2017, accessed at http://jz.chinamil.com.cn/n2014/tp/content_7630130.htm. “Chinese Air Force to Recruit 40 Female Student Pilots in 2019,” Ministry of Defense in English, 11 November 2018, accessed at http://eng.mod.gov.cn/news/2018-11/11/content_4829203.htm.
- 736 Yu, ed., [PLA Officer Handbook], 36-39. Xie Hong, [“Training and Education of PLA Air Force Pilots in Reform”] in *Trainer* magazine, 2012 Number 3 (19 September 2012), 3-6.
- 737 [“Recruitment for PLAAF Engineering University”] [高校中国人民解放军空军工程大学招聘], *Xinhua*, 24 December 2007, accessed at http://news.xinhuanet.com/edu/2007-12/24/content_7303693.htm.
- 738 Ibid.
- 739 Unless noted, the information in this subsection comes from Kenneth W. Allen, “Chinese Air Force Officer Recruitment, Education and Training,” (Washington, D.C.: Jamestown Foundation *China Brief*, volume 11, issue 22, 30 November 2011). Hereafter referred to as Allen, “Chinese Air Force Officer Recruitment.”
- 740 [“Air Force One-Half on New Cadre Come from National Defense Student Program”] [空军一半新干部来自国防生], *Sina.com*, 1 September 2006, accessed at <http://edu.sina.com.cn/exam/2006-09-01/111652631.html>.
- 741 Li Xuanqing and Hu Chunhua, [“Whole Military Sees Good Trend of Development in Relying on Ordinary Colleges, Universities to Cultivate National Defense Students”], *PLA Daily*, 14 December 2007.
- 742 *PLA Daily*, 30 November 2009.
- 743 See [“Alumni you Nong”] [校友夙夜], cqwzez.com, 4 December 2010, accessed at www.cqwzez.com/Article/1533.html.
- 744 One of the primary sources for enlisted force terms and concepts is Zheng Shaobo (郑少波), ed., [Enlisted Force Practical Dictionary] [士兵实用辞典], (Beijing: Academy of Military Science Press, 2005).
- 745 “Enlisted Man” [士兵] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 342. “Soldier” (士兵) in Zhu, ed., [Air Force Dictionary], 177.
- 746 “Non-commissioned Officer” [士官] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 341.
- 747 Dong Zhaohui, ed., “Master Chief System optimizes China’s structure of military strength,” *China Military Online* (English), 21 January 2015, accessed at http://english.chinamil.com.cn/news-channels/china-military-news/2015-01/21/content_6317519.htm.
- 748 “Compulsory Serviceman” [义务兵] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 341. The 2004 *Defense White Paper* uses the term *yiwubing* ten times and translates it as “conscript” each time.
- 749 Cong Wensheng, “China’s Military Service System,” *China Armed Forces*, Number 12, Volume 4, 2011, 25-27. Xiang Yong, “PLA Experiments with Chief Non-Commissioned Officer System,” and Su Yincheng, “Chief NCOs Debut in PLA,” *China Armed Forces*, Number 31, Volume 1, 2015, 22-27.
- 750 For example, the PRC’s 2004 *Defense White Paper* translated the terms as conscription, the 2006 *Defense White Paper* translated them as enlistment, and 2010 *Defense White Paper* translated them as recruitment. The 2002, 2008, 2012, 2015, and 2019 *Defense White Papers* did not have an entry for either term. Note that neither term was found in *PLA Military Terminology* dictionary, 2nd ed., 2011.
- 751 “Voluntary Service System” [志愿兵役制] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 35. “Air Force of Chinese People’s Volunteers” (中国人民志愿军空军) in Zhu, ed., [Air Force Dictionary], 779.

- 752 The date for the 1998 *Military Service Law* is sometimes confusing, because it was approved in 1998 but was not implemented until 1999. As a result, some reports use the approval date, while others use the implementation date.
- 753 Jiang Siyi, ed., [*Political Work Dictionary*], (Beijing, Military Sciences Publishing House, April 1991), 99.
- 754 *Military Science*, Volume 2, in Song and Xiao, eds., [*China Military Encyclopedia*] 1997, Volume 4, 563.
- 755 Defense Intelligence Agency, *Handbook of the Chinese People's Liberation Army*, Washington, D.C., 1984, 2.
- 756 *Military Science*, Volume 2, in Song and Xiao, eds., [*China Military Encyclopedia*] 1997, Volume 4, 563.
- 757 Cong Wensheng, "China's Military Service System," *China Armed Forces*, Number 12, Volume 4, 2011, 25-27.
- 758 Jencks, *From Muskets to Missiles*, 227.
- 759 *Military Studies* (军事学术), Part 1, *Chinese Military Encyclopedia* [中国军事百科全书], Vol 2, (Beijing: Academy of Military Sciences Publishing House, July 1997), 404.
- 760 Cong Wensheng, "China's Military Service System," *China Armed Forces*, Number 12, Volume 4, 2011, 25-27. *Military Science*, Volume 2, in Song and Xiao, eds., [*China Military Encyclopedia*], 1997, 563.
- 761 Ibid.
- 762 Gong Yide, ed., *PLA Enlisted Soldier's Handbook* [中国人民解放军士兵手册], (Beijing: Academy of Military Science Press, January 1999), 8; *Military Studies* [军事学术], Part 1, *Chinese Military Encyclopedia* [中国军事百科全书], Vol 2, (Beijing: Academy of Military Sciences Publishing House, July 1997), 404.
- 763 [*World Military Yearbook 1991*] [世界军事年鉴1991], (Beijing, PLA Press, August 1991), 68; *Military Studies* [军事学术], Part 1, *Chinese Military Encyclopedia* [中国军事百科全书], Vol 2, 404.
- 764 Gong Yide, ed., *PLA Enlisted Soldier's Handbook* [中国人民解放军士兵手册], (Beijing: Academy of Military Science Press, January 1999), 8; Zhu Rongchang, ed., [*Air Force Dictionary*] (空军大词典), (Shanghai: Shanghai Dictionary Publishing House, September 1996), 167.
- 765 Gong Yide, ed., *PLA Enlisted Soldier's Handbook* [中国人民解放军士兵手册], (Beijing: Academy of Military Science Press, January 1999), 8.
- 766 *Military Science*, Volume 2, in Song and Xiao, eds., [*China Military Encyclopedia*], 1997, 563.
- 767 *Military Science*, Volume 2, in Song and Xiao, eds., [*China Military Encyclopedia*], 401-405. Although the [*Air Force Dictionary*] translates "zhuanye junshi" (专业军士) as a "technical sergeant," the decision was made to render this term as "specialist sergeant" given its application to the entire PLA.
- 768 Cong Wensheng, "China's Military Service System," *China Armed Forces*, Number 12, Volume 4, 2011, 25-27. *Military Science*, Volume 2, in Song and Xiao, eds., [*China Military Encyclopedia*], 1997, 563.
- 769 "Military Service Law of the People's Republic of China," *Xinhua* (English), 30 December 1998.
- 770 "China's Population and Development in the 21st Century," *Xinhua* (English), 19 December 2000.
- 771 Mei Shixiong, "Only-Child Soldiers Become the Main Force in Fighting Floods," *Liaoning Ribao*, 16 July 2003.
- 772 "Regulations on Military Service of Active-Duty Soldiers in the Chinese People's Liberation Army," *Xinhua* (English), 11 July 1999.
- 773 Interviews with PLAAF officers.
- 774 [*World Military Yearbook 2015*] [世界军事年鉴2015], Academy of Military Science Press, October 2017, 53.
- 775 ["Master Sergeant Class One, 'Missile Soldier King' Wang Zhongxin Retires Gloriously after 34 Years"] [一级军士长, "导弹兵王"王忠心光荣退休: 入伍已有34年], *The Paper*, 17 May 2020, accessed at https://www.thepaper.cn/newsDetail_forward_7437319.
- 776 Feng Chunmei, "PLA to Institute New Measures for Developing the NCO Contingent – Over 1,000 People to be Recruited from Civilians This Year," *Renmin Ribao*, 15 October 2004, 10; "Number of NCOs in the Chinese Military Already 30 percent of the Total Number of Soldiers," *Zhongguo Xinwen She*, 28 August 2002.
- 777 Hu Guangzheng, ed., [*The Science of Military Organizational Structure*] [军队组织编制学教程], (Beijing: Academy of Military Science Press, 2008), 84. Xing, *NCO Building Theory and Practice*, 205.
- 778 Cong Wensheng, "China's Military Service System," (Beijing: *China Armed Forces*, Number 12, Volume 4, 2011), 25-27. *Military Science*, Volume 2, in Song and Xiao, eds., [*China Military Encyclopedia*] 1997, 563.
- 779 Hu Chuanmu and Xu Shuangxi, "CMC Promulgates Scheme to Deepen NCO System Reform," *PLA Daily* in English online, 13 July 2009, accessed at http://english.chinamil.com.cn/site2/news-channels/2009-07/13/content_1834690.htm. Hu Chuanmu and Xu Shuangxi, "CMC promulgates scheme to deepen NCO system reform," *PLA Daily* in Chinese online, 13 July 2009, accessed at www.chinamil.com.cn/site1/xwpdxw/2009-07/13/content_1833903.htm. "China Reveals Plan to Restructure PLA's Non-commissioned Ranks," *Xinhua* (English), 14 July 2009.
- 780 Blasko, *The Chinese Army Today*, 2nd ed., 2012, 76.
- 781 Ibid.
- 782 Cheng Sijin, "Conscription: From the Masses" in David M. Finkelstein and Kristen Gunness, eds., *Civil-Military Affairs in Today's China: Swimming in a New Sea*, (New York: M.E. Sharpe, 2006).
- 783 Ren Weifang, "How Did a Difficulty in Conscription Turn Into a Craze to Join the Military?" *Zhongguo Minbing*, December 2002.
- 784 ["Tattoos, Weight Given More Leeway by Army"], *Shanghai Daily*, 3 November 2011.
- 785 Qin Lichun and Deng Zhiqiang, ["This Life has a Reason to Make Us All March Together"], *Air Force News*, 14 February 2006, 3.

- 786 See more at “Why Did Mao Zedong Believe That Rural Peasants Could Help Bring about a Social Revolution in China?”, answers.com, 21 October 2010, accessed at http://wiki.answers.com/Q/Why_did_Mao_Zedong_believe_that_rural_peasants_could_help_bring_about_a_social_revolution_in_China.
- 787 Su Ruozhou, [“Major Reform in Our Army’s Service System – Yang Zhiqi, Director of the Military Affairs Department of General Staff Headquarters, Answers Reporters’ Questions on Military Service Regulations”], *PLA Daily*, 13 July 1999, 2.
- 788 Ibid.
- 789 *Education in China: Lessons for U.S. Educators*, study commissioned by the Asia Society, the Business Roundtable and the Council of Chief State School Officers, September 2005. “43 Percent of China’s High School Graduates Admitted to Colleges,” *China Daily* in English, 17 October 2017, accessed at http://www.chinadaily.com.cn/china/2017-10/17/content_33370581.htm.
- 790 “China’s College Enrollment Rate Increases,” *Xinhua* (English), 11 January 2009, accessed at http://news.xinhuanet.com/english/2009-01/11/content_10639139.htm. “China’s College Enrollment Rate Exceeded 23 Percent in 2011,” *Hi138.com*, accessed at http://eng.hi138.com/education-papers/higher-education-papers/201112/369006_on-the-declining-quality-of-university-teaching-problem-analysis.asp. “China College Enrollment in 2013,” *WantChinaTimes* (English), 2 January 2013, accessed at www.wantchinatimes.com/news-subclass-cnt.aspx?id=20130102000124&cid=1101.
- 791 Zac Hambides, “China’s Growing Army of Unemployed Graduates,” 4 October 2010, accessed at www.wsws.org/articles/2010/oct2010/chin-004.shtml.
- 792 Cheng Baoshan, *Fundamental Laws and Regulations of Military Political Work in the New Century and New Era*, (Beijing, AMS Publishing House, May 2004), 107.
- 793 “More Than 2.3 Million Potential Targets for Conscription Discovered,” *PLA Daily Online*, 8 November 2008. “1008, Recruitment is Launched from a New Starting Point,” *PLA Daily Online*, 14 September 2008.
- 794 “More College Students to be Recruited,” *Xinhua* (English), 9 September 2011. “China’s People’s Liberation Army Targets Students in the Modernization Push,” *Hong Kong Service of Agence France-Presse*, 23 September 2011. According to interviews with Taiwan PLA specialists in June 2013, during 2009 and 2009, the PLA recruited a total of 180,000 civilian college students and graduates, including 128,000 graduates and 52,000 students.
- 795 The website <http://www.canjun.cn/> provides good information on recruiting civilian university students and graduates. The translation of the web-page title is “University Student Pre-Conscription Registration System.”
- 796 “Interpretations of Policy Regarding Deepening Reform in the System of Noncommissioned Officers,” *PLA Daily Online*, 4 November 2009.
- 797 Multiple sources, including Li Shanshan, “China’s Military Service System,” (Beijing: *China Armed Forces*, Number 12, Volume 4, 2011), 31-33.
- 798 “Arrangements for the 2012 Winter Recruitment Work,” *PLA Daily*, 14 September 2012. Registration must be completed by the 31st of October.
- 799 “Tattoos, Weight Given More Leeway by Army.” Recruits will no longer be rejected for having face or neck tattoos, as long as the body art does not exceed two centimeters. The changes also allow of body weight up to 25 percent greater or 15 percent lower than the military’s standard, in contrast to the former 20 percent greater and 10 percent lower.
- 800 Multiple articles from the PLA’s NCO direct recruiting website, accessed at www.zhengbing.net/Class.asp?ID=4. Ceng Zeng, [“Announcement on the Pre-Enlistment of New College Graduates in 2012”] [2012年应届大学毕业生入伍预征公告], 11 May 2012, accessed at http://hngy.university-hr.cn/showarticle.php?actiontype=5&keyword_type=&search_keyword=&id=1440.
- 801 [“Starting Today, Zhengzhou Will Directly Recruit NCOs from the Local Area and Will Begin to Register”] [今日起郑州市从地方直接招收士官工作将开始报名工作], 10 June 2010, accessed at <http://www.canjun.cn/viewnews-511.html> and <http://baike.baidu.com/view/2815444.htm>.
- 802 Ibid.
- 803 “China Reveals Plan to Restructure PLA’s Non-Commissioned Ranks,” *Xinhua* (English), 14 July 2009.
- 804 *China Air Force*, January 2016.
- 805 [“What Is the Difference Between an NCO and an Officer? Is There a Chance to Be Promoted to an Officer? What Conditions Are Required?”] [部队士官和军官有何区别, 有机会晋升为军官吗, 需要何种条件?], 25 November 2018, accessed at <https://kknews.cc/zh-cn/military/6zjq2ql.html>.
- 806 Ibid.
- 807 [“More Than 20 Percent of the 20,000 Young People Who Joined the Military in Guangdong in 2014 Were Civilian College Students”] [广东2014年2万多名青年入伍其中大学生新兵比例超过20 percent], 6 September 2014, accessed at www.0730hao.cn/Article/zbd/27959.html.
- 808 [“Take Dreams as Horses and Live Up to Shaohua”] [以梦为马不负韶华——衢州市2019年新兵欢送仪式侧记], *Quzhou Daily News*, 18 September 2019, accessed at http://www.qz.gov.cn/art/2019/9/18/art_1525342_38193664.html.
- 809 The information in this subsection was compiled from multiple articles found on the [Conscription/Recruitment Dynamics] [征兵动态] tab on the University/college Student Conscription (Recruitment) Information Network [大学生征兵信息网] (www.0730hao.cn/index.html) for the years 2012-2016.
- 810 “Beijing MAC Organizes Sergeants to Conduct Assembly Training,” *China Military Online* (English), 20 November 2014, accessed at http://english.chinamil.com.cn/news-channels/photo-reports/2014-11/20/content_6233881.htm. Dong Zhaohui, ed., “Master Chief System Optimizes China’s Structure of Military Strength,” *China Military Online* (English), 21 January 2015, accessed at http://english.chinamil.com.cn/news-channels/china-military-news/2015-01/21/content_6317519.htm. Zhang Tao, ed., “Defense Ministry’s Regular Press Conference on March. 26, 2015,” *China Military Online* (English), 26 March 2015.
- 811 Xiang Yong, “PLA Experiments with Chief Non-Commissioned Officer System” and “Su Yincheng, “Chief NCOs Debut in PLA,” (Beijing: *China Armed Forces*, Number 31, Volume 1, 2015), 22-27.
- 812 Dong Zhaohui, ed., “Master Chief System Optimizes China’s Structure of Military Strength,” *China Military Online* (English), 21 January 2015, accessed at http://english.chinamil.com.cn/news-channels/china-military-news/2015-01/21/content_6317519.htm. “Beijing MAC Organizes Sergeants to Conduct Assembly Training,” *China Military Online* (English), 20 November 2014, accessed at <http://english.chinamil.com.cn/news-channels/>

photo-reports/2014-11/20/content_6233881.htm. Xiang Yong, “PLA Experiments with Chief Non-Commissioned Officer System,” and “Su Yincheng, “Chief NCOs Debut in PLA,” (Beijing: *China Armed Forces*, Number 31, Volume 1, 2015), 22-27.

- 813 [“Air Force Organizes First Group of Preparatory Master Chief Training”] [空军组织首批预任士官长培训], *Air Force News*, 23 April 2015, 1. The August 2015 issue of *China Air Force* (中国空军) magazine, which is all in Chinese, had 22 pages of articles concerning the test case program for the PLAAF’s master chief program under the overall title “Air Force Master Chief” [空军士官长]. One article noted that this was the first time a senior NCO had ever had his own office. The final 4-page article gave an overview similar programs in five countries – United States, Russia, Japan, France, and Germany.
- 814 See [“The Latest News of Military Reform 2015: China’s First Lady Maser Chief [Sergeant] Was Born.”], yjbys.com, 16 June 2015, accessed at <http://www.yjbys.com/news/385050.html>. With only a few exceptions, PLA communications/signals regiments have all male or all female companies. Therefore, she is most likely the master chief for an all-female company.
- 815 “Senior NCOs on the Liaoning” [辽宁舰上的高级士官], (Beijing: *China Armed Forces*, Number 42, Volume 6, December 2016), 80-85.
- 816 Liu Hang, [“The Military’s First 36 Master Chiefs Assume Their Biller and Become New Grassroots Forces”] [全军首任36名士官长上岗履职成基层新力量], *Renminwang*, 9 December 2014, accessed at http://www.81.cn/jwz/2014-12/09/content_6261804.htm.
- 817 “System of Civilian Cadres” [“文职干部制度”] in Xu, Lin, and Mu, eds., *Military Cadre Work*, 53-55. Central Military Commission, [PLA Civilian Cadre Interim Regulations] [中国人民解放军文职干部暂行条例], *Baidu.com*, 27 April 1988, http://law.baidu.com/pages/chinalawinfo/1/71/900738b3a6f881e10113c4bf014d5df2_o.html. [PLA Civilian Cadre Regulations] [中国人民解放军文职干部条例], *Junren.net*, 24 September 2008, accessed at <http://www.junren.net/viewnews-3928.html>.
- 818 Central Military Commission, [PLA Civilian Cadre Interim Regulations] [中国人民解放军文职干部暂行条例], *Baidu.com*, 27 April 1988, accessed at http://law.baidu.com/pages/chinalawinfo/1/71/900738b3a6f881e10113c4bf014d5df2_o.html. [PLA Civilian Cadre Regulations], 2008.
- 819 2002, 2010, and 2019 *Defense White Papers* use “non-ranking officer,” while the 2004 *Defense White Paper* used “civil cadre.” Civilian Cadre is used in Su Shubo, Yang Qi, Yu Zhiyong, and Lin Cheng, eds. [Military Cadre Work Handbook] [军队干部工作手册], (Beijing: National Defense University Press, May 2011), 149. Hereafter referred to as Su et al., eds., [Military Cadre Work Handbook].
- 820 Su et al., eds., [Military Cadre Work Handbook].
- 821 *Air Force News*, 12 May 2005, 3.
- 822 *Air Force News*, 13 April 2006, 1.
- 823 Blasko, *The Chinese Army Today*, 1st ed., 2006, 63-64.
- 824 Ibid.
- 825 See <https://mts.jk51.com/tushuo/8963026.html#lg=1&slide=0>.
- 826 Blasko, *The Chinese Army Today*, 2nd ed., 2012, 78.
- 827 “System of Civilian Personnel” [文职人员制度] in Xu, Lin, and Mu, eds., [Military Cadre Work], 55-57.
- 828 “Revised Regulation on Civilian Personnel” issued in 2017, *Xinhua* (English), 26 August 2018.
- 829 “CMC Soldier and Civilian Bureau: Civilian Personnel System Restructuring” [军委政治工作部兵员和文职人员局: 文职人员制度体系性重塑], *The Paper*, 10 November 2017, accessed at http://www.thepaper.cn/newsDetail_forward_1859723. [PRC State Council and CMC Order Number 689] [中华人民共和国国务院, 中华人民共和国中央军事委员会令689号], 10 November 2017, accessed at http://www.gov.cn/zhengce/content/2017-11/10/content_5238592.htm.
- 830 [“Announcement of the first public recruitment of civilian personnel in the military”] (全军首次面向社会公开招聘文职人员公告), 10 July 2018, accessed at http://www.81rc.mil.cn/news/2018-07/10/content_8085413.
- 831 See http://vv.chinamil.com.cn/asset/category3/2018/07/10/asset_327705.mp4.
- 832 [“Announcement of the First Public Recruitment of Civilian Personnel in the Military”] (全军首次面向社会公开招聘文职人员公告), 10 July 2018, accessed at http://www.81rc.mil.cn/news/2018-07/10/content_8085413.
- 833 Li Jiayao, ed., “Chinese Military Completes First Public Civilian Personnel Recruitment,” *mod.gov*, 7 March 2019, accessed at http://eng.mod.gov.cn/news/2019-03/07/content_4837354.htm.
- 834 [2018 Civilian Recruitment / 2018 Military Civilian Personnel Billet Grades”] [2018文职招聘/2018年军队文职人员岗位等级标志], accessed at www.dfzwjy.com/m/view.php?aid=8640.
- 835 “CMC Soldier and Civilian Bureau: Civilian Personnel System Restructuring” [军委政治工作部兵员和文职人员局: 文职人员制度体系性重塑], *The Paper*, 10 November 2017, accessed at http://www.thepaper.cn/newsDetail_forward_1859723. [PRC State Council and CMC Order Number 689] [中华人民共和国国务院, 中华人民共和国中央军事委员会令689号], 10 November 2017, accessed at http://www.gov.cn/zhengce/content/2017-11/10/content_5238592.htm.
- 836 2012 *Defense White Paper*.
- 837 Thanks to Dennis J. Blasko, who helped write this section on Reserve Forces.
- 838 [“What Military Uniforms Do Our Military Reserve Units Wear and How Much Do You Know?”] [我军预备役部队穿什么军服, 你了解多少?], *Chinamil.com*, 30 June 2020, accessed at http://www.chinamil.com.cn/jmywyl/2020-06/30/content_9843570.htm.
- 839 “Reserve Officer” (预备役军官) in Dong Huiyu and Mou Xianming, eds., *Dictionary of Modern Military Education (sic)* [现代军校教育辞典], Second Edition, (Beijing: National Defense University Press, 2011), 340. Hereafter referred to as Dong and Mou, eds., *Dictionary of Modern Military Education (sic)*.
- 840 2004 *Defense White Paper*.

- 841 “Benefits and Treatment of Reserve Officer” [预备役军官待遇] and “Discharge of Reserve Officer” [预备役军官退役] in Xu, Lin, and Mu, eds., [*Military Cadre Work*], 196-197.
- 842 [“Decision Concerning Adjustments to Reserve Unit Leadership Structure”] [关于调整预备役部队领导体制的决定], *People’s Daily*, 29 June 2020, accessed at http://paper.people.com.cn/rmrb/html/2020-06/29/nw.D110000renmrb_20200629_2-01.htm.
- 843 “Armed Police to Be Commanded by CPC Central Committee, CMC,” *China Military Online* in English, 27 December 2017, accessed at http://english.chinamil.com.cn/view/2017-12/27/content_7886532.htm.
- 844 [“Accelerate the Transformation and Development of Reserve Forces”] [加速推进后备力量建设转型发展], accessed at http://www.81.cn/gfbmap/content/2016-03/17/content_137991.htm.
- 845 Huang Panyue, ed., “China to Optimize Reserve Forces Structure for Future Combat Need: Spokesperson,” *Xinhua* (English), 2 July 2020, accessed at http://eng.mod.gov.cn/news/2020-07/02/content_4867459.htm.
- 846 [“What Military Uniforms Do Our Military Reserve Units Wear and How Much Do You Know?”] [我军预备役部队穿什么军服, 你了解多少?], *Chinamil.com*, 30 June 2020, accessed at http://www.chinamil.com.cn/jmywyl/2020-06/30/content_9843570.htm.
- 847 Ibid.
- 848 [“PLAAF Creates First Reserve Airfield Station”], *Air Force News*, 1 November 2005, 1.
- 849 Zhang Shengqiang and Xiong Huaming, [“PLAAF Reserve Airfield Station cooperates w/ETC Navy Base and ETC Army Aviation”] [空军某预备役场站联合东部战区海军某基地, 东部战区陆军航空兵某], [www.mod.gov.cn](http://www.mod.gov.cn/power/2018-08/17/content_4822750.htm), 17 August 2018, accessed at http://www.mod.gov.cn/power/2018-08/17/content_4822750.htm. Zhang Rushuang and Xiong Shenhui, [“Reserve Airfield Station Support Teams Gain Actual-Combat Experience”], *Air Force News*, 4 January 2016, 2. Xiong Huaming and Lin Zheng, [“PLAAF Reserve Airfield Station Trains with Active Duty Unit”], *Air Force News*, 2 February 2016, 2. Zhang Shengqiang, Xiong Huaming, and Xu Shenghong, [“PLAAF Reserve Airfield Station Conducts Joint Training with Local PLA Navy, PLA Army units”], *PLA Pictorial*, 15 November 2018. Bai Jie, Shen Weihong, and Liu Hanbao, [“Air Force Logistics Training Base Advances Airfield Support Personnel Training”], *Air Force News*, 6 July 2018, 4. Ma Yingfei and Qian Renyuan, [“Eastern TCAF airfield station flight support drill”], *Air Force News*, 9 March 2016, 2.
- 850 *2008 Defense White Paper*.
- 851 [“Eastern TCAF Reserve AAA Brigade”] [东部战区空军某预备役高炮旅], [fanchang.gov.cn](http://www.fanchang.gov.cn/xwzx/ztlz/fxkhzt/gdzs/11993909.html), 5 August 2020, accessed at <http://www.fanchang.gov.cn/xwzx/ztlz/fxkhzt/gdzs/11993909.html>. [“Southern TCAF Reserve AAA Division”] [南部战区空军某预备役师], www.81.cn, 12 October 2020, accessed at http://www.81.cn/zq/2020-10/12/content_9916788.htm. [“Western TCAF Reserve AAA Division”] [西部战区空军某预备役高炮师], www.js7tv.cn, 20 August 2020, accessed at http://www.js7tv.cn/video/202008_227148.html.
- 852 Jing Feng and Xiong Huaming, [“Air Force Reserve Missile Regiment Repairs Recently-Received Missile”], *Air Force News*, 20 Jul 2018, 2.
- 853 [“Shanghai Air Force Reserve SAM Regiment”] [上海空军预备役地空导弹兵团], tyjr.sh.gov.cn, 25 December 2019, accessed at <http://tyjr.sh.gov.cn/shtyjrswj/jcdt/20200803/5394656d27f74caea40afd58e21d2333.html>, and [“Air Force Reserve SAM Regiment”] [空军某预备役导弹团], www.81.cn, 25 December 2019, accessed at http://www.81.cn/kj/2019-12/25/content_9703428.htm.
- 854 [“Shanghai Air Force Reserve Radar Battalion”] [上海空军预备役雷达营], tyjr.sh.gov.cn, 3 August 2020, accessed at <http://tyjr.sh.gov.cn/shtyjrswj/jcdt/20200803/5394656d27f74caea40afd58e21d2333.html>. [“An Air Force Reserve Radar Battalion Organizes Retired Enlisted Soldiers to Return to Training”] [空军某预备役雷达营组织退役士兵返岗复训], *Chinamil.com*, 3 December 2018, accessed at http://www.81.cn/zgyby/2018-12/03/content_9366928.htm.
- 855 “National Defense Reserve Strength” [国防后备力量], *Xinhua*, 22 September 2009, accessed at http://www.gov.cn/jjrzg/2009-09/22/content_1423768.htm on 5 July 2020.
- 856 Huang Panyue, ed., “China to Optimize Reserve Forces Structure for Future Combat Need: Spokesperson,” *Xinhua* (English), 2 July 2020, accessed at http://eng.mod.gov.cn/news/2020-07/02/content_4867459.htm.
- 857 Marcus Clay, Ph.D., *Understanding the “People” of the People’s Liberation Army: A Study of Marriage, Family, Housing, and Benefits*, China Aerospace Studies Institute, 30 March 2019, accessed at [s://www.airuniversity.af.edu/Portals/10/CASI/Books/Understanding_the_People_of_the_PLA.pdf?ver=2018-08-01-121059-327](https://www.airuniversity.af.edu/Portals/10/CASI/Books/Understanding_the_People_of_the_PLA.pdf?ver=2018-08-01-121059-327).
- 858 Li Ming and Wu Xi, “Please Marry a PLA Man” [“嫁人就嫁解放军” 军旅姻缘是个好活动], *China Military Online*, 24 October 2016, accessed at http://jz.chinamil.com.cn/n2014/tp/content_7320082.htm.
- 859 [“Officer Blind Dates, Military Personnel’s Marriage and Love Problems”] [军官集体相亲--军人的婚恋难题], 23 June 2012, accessed at <http://www.hunlian100.com/news-471.aspx>.
- 860 “Ministry of Veterans Affairs (China),” *Wikipedia*, last edited on 4 December 2020, accessed at [https://en.wikipedia.org/wiki/Ministry_of_Veterans_Affairs_\(China\)](https://en.wikipedia.org/wiki/Ministry_of_Veterans_Affairs_(China)). Catherine Wong, “China’s Military Veterans Ministry Opens after Pension Protests,” *South China Morning Post*, (English), 16 April 2018, accessed at <https://www.scmp.com/news/china/diplomacy-defence/article/2141894/chinas-military-veterans-ministry-opens-after-pension>. “Ministry of Veterans Affairs of the People’s Republic of China” [中华人民共和国退役军人事务部], undated, accessed at http://www.mva.gov.cn/gongkai/zfxxgkpt/zfxxgkzn/201903/t20190325_23728.html. *2019 Defense White Paper*.
- 861 Thanks to Mike Zi YANG, who is a Senior Analyst, China Programme, S. Rajaratnam School of International Studies, Nanyang Technological University, Singapore, for writing this sub section on mental health issues, which is based on Zi Yang, “Assessing Mental Health Challenges in the People’s Liberation Army, Part 1: Psychological Factors Affecting Service Members, and the Leadership Response,” (Washington, D.C.: Jamestown Foundation *China Brief*, Volume 19, Issue 14, 31 July 2019; Part 2, Volume 19, Issue 15, 14 August 2019).
- 862 Zhao Lin and Zhang Liyi, “Physical and Mental Health Conditions and Influential Factors of Air-force Officers and Soldiers in Plateau” [驻高原空军官兵身心健康状况及其影响因素], (*China Journal of Health Psychology*, November 2014, 1642-1644, accessed at http://www.alljournals.cn/view_abstract.aspx?pcid=A9DB1C13C87CE289EA38239A9433C9DC&cid=oAA7D21481497F8&jid=F74CF06C9D95FD84AF6C8A7E932D38E&aid=9BC11AE380FC16BFoFoA2169036D20o8&yid=9EAD63ADE6B277ED&from_type=1).

- 863 Zheng Ji, Wang Chao, Wang Xiaoxia, Ji Yayun, Li Jiesheng, and Lai Chengcai, ["Report on the Health Situation of Plateau Training in the Ground Forces of the Air Force"] [空军某地面部队高原驻训健康患病情况报告], unidentified journal, 2019, accessed at <http://www.cnki.com.cn/Article/CJFDTotal-JYXN201906002.htm#>.
- 864 ["Our Air Force Units Jointly Build a 'Pilot Combat Psychological Quality Joint Research Base'"] [我空军部队合建'飞行员作战心理品质联合研究基地'], *Sina*, 12 November 2018, accessed at <https://mil.news.sina.com.cn/2018-11-12/doc-ihnstwwr1806529.shtml>.
- 865 Li Xiaolong, ["Air Force Medical University Mental Health Project"], *Air Force News*, 27 September 2017.
- 866 Xiao Ying, Zhao Yang, Yao Li, and He Sanyuan, ["New Soldiers Complete Basic Training, Encouraged by Families"], *Air Force News*, 22 November 2017.
- 867 ["Have You Paid Attention to Your Child's Mental Health-Written to Parents of Students Participating in the Air Force's Flight"] [孩子的心理健康, 您关注过吗——写给参加空军招飞学生的家长], 44, accessed at <http://new.oversea.cnki.net/KCMS/detail/detail.aspx?dbcode=CJFQ&dbname=CJFDLASN2020&filename=DZXI202003026&v=MDU4ODFUZiRaNocoSE5ITXJJOuHbZb1I4ZVgxTHV4WVM3RGgxVDNxVHJXTTFGckNVUjdxZlIHZHZGeWptVXlvQUk=>.
- 868 ["Southern Theater Command Air Force Aviation Brigade Organizes Psychological Work Cadre Cultivation and Training"] [南部战区空军航空兵某旅组织心理工作骨干培训], 10 January 2020, accessed at <http://www.gx.chinanews.com/sz/2020-01-10/detail-1fzspxvu351813.shtml>.
- 869 ["Central Theater Command Air Force Created a Psychological Support Center to Strengthen Frontline Psychological Work"] [中部战区空军成立心理服务中心加强基层一线心理服务工作], *Xinhua*, 12 October 2018, accessed at http://www.xinhuanet.com/2018-10/12/c_1123552029.htm.
- 870 ["Western Theater Command Air Force Radar Brigade New-Soldier Training Encountered a Bottleneck"] [西部战区空军雷达某旅新兵训练遭遇瓶颈], *Xinhua*, 17 March 2017, accessed at http://www.xinhuanet.com/mil/2017-03/17/c_129511552.htm.
- 871 The two primary sources for this section are Kenneth W. Allen and Brendan Mulvaney, "Changes in the PLA's Military Education" in Roy D. Kamphausen, ed., *The People in the PLA 2.0*, (Carlisle, PA: U.S. Army War College Press, October 2020), and Allen and Chen, *The People's Liberation Army's 37 Academic Institutions*.
- 872 *Enlisted Professional Military Education Policy*, Joint Staff, CJCSI 1805.01B, 15 May 2015, www.jcs.mil/Portals/36/Documents/Doctrine/education/cjsi1805_01b.pdf?ver=2017-12-29-142216-520.
- 873 "Cultivation and Training" [培训] in *Military Training* [军事训练] Volume, [*China Military Encyclopedia*] [中国军事百科全书] (2nd Edition), (Beijing: Encyclopedia of China Publishing House, June 2006), 563-564.
- 874 "Development and Training" [培训] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 323.
- 875 "Training" [培训] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 223.
- 876 *China's Military Strategy* [中国的军事战略], (Beijing: The State Council Information Office of the People's Republic of China, May 2015), accessed at www.81.cn/dblj/2015-05/26/content_6507373.htm and www.china.org.cn/china/2015-05/26/content_35661433.htm.
- 877 "Education of Military Profession" [军事职业教育] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 89-90.
- 878 ["Focus On the Key! Military Professional Education Is Closely Related to You and Me"] [划重点! 军事职业教育与你我息息相关], *Xinhua*, 1 March 2018, www.xinhuanet.com/mil/2018-03/01/c_129819877.htm. Ni Hai, Xu You, and Li Xiaoliang, "Military Vocational Education: Closely Related to You and Me—Interpretation of the Military Professional Education of Our Army by Experts from Relevant Departments of the Military Commission" [军事职业教育: 与你我息息相关——军委机关有关部门专家解读我军军事职业教育], *PLA Daily*, 1 March 2018, accessed at www.81.cn/jfjbmap/content/2018-03/01/content_200638.htm.
- 879 "Academic Credential Education" [军队院校学历教育] in *Military Training* [军事训练], (Beijing: Encyclopedia of China Publishing House, 2008), 539-540, and from Chinese Higher Education law accessed at www.foreignren.com/index.php?option=com_content&view=article&id=1224:higher-education-law-of-the-peoples-republic-of-china&catid=55:chinese-law&Itemid=99. "Academic Education" [学历教育] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 111. *2006 Defense White Paper* (2006年中国的国防), (Beijing: Information Office of the State Council of the People's Republic of China, December 2006).
- 880 "Military Vocational Education" [军队院校任职教育] in *Military Training* [军事训练], (Beijing: Encyclopedia of China Publishing House, 2008), 322.
- 881 "Professional Education in Military Colleges and Schools" [军队院校任职教育], *Military Training* (军事训练), (Beijing: Encyclopedia of China Publishing House, 2008), 538-539. "Professional Education College [人制教育院校] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 144-145. *2006 Defense White Paper* [2006年中国的国防], (Beijing: Information Office of the State Council of the People's Republic of China, December 2006).
- 882 Dong and Mou, eds., *Dictionary of Modern Military Education* (sic).
- 883 Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3.
- 884 "National Defense University" [国防大学] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 460. "National Defence University" in Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3, 665-667.
- 885 ["Military and Political College of the CPLA"] [中国人民解放军军政大学] in Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3, 660-661.
- 886 ["Institute of International Relations of the CPLA"] [中国人民解放军国际关系学院] in Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3, 678.
- 887 ["University Foreign Languages of the CPLA"] [中国人民解放军外国语学院] in Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3, 678-679. "Army Logistic University" [陆军勤务学院] accessed at <http://gb.oversea.cnki.net/kcms/detail/detail.aspx?filename=JSCX201905021&DBName=cjfqtotal&dbcode=cjfq>.
- 888 ["Shenyang Artillery Academy of the CPLA"] [中国人民解放军沈阳炮兵学院] in Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3, 689-690. "Shenyang Artillery College" [沈阳炮兵学院] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 467.
- 889 ["Air Force Communications NCO Academy"] [空军通信士官学校] accessed at <https://www.weibo.com/ttarticle/p/show?id=23093510007740801477171249>.

- 890 “Harbin Flight College (哈尔滨飞行学院)” in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 481. “Free Air Combat Training Course Included in Air Force [Harbin] Flight Academy Syllabus,” *China Military Online* (English), 6 February 2018, accessed at http://english.chinamil.com.cn/view/2018-02/06/content_7934591.htm.
- 891 “Air Force Command College” (空军指挥学院) in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1243. “Air Force Commanding College” (空军指挥学院) in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 478.
- 892 “Commanding Officer” [指挥军官] in Xu, Lin, and Mu, eds., [*Military Cadre Work*], 85-86.
- 893 “Cadet” [学员] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 341.
- 894 “Military Training of Students” [学生训练] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 41.
- 895 “Reserve Cadre” [后备干部] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 465.
- 896 “Source and Criteria for Reserve Officer” [预备役军官来源和条件], “Selection of reserve officer” [预备军官选拔], and “Training System in Military *Xueyuan* and Schools” [军队院校培训体制] in Xu, Lin, and Mu, eds., [*Military Cadre Work*], 191-192, 562-563.
- 897 Yuan Wei and Zhang Zhuo, eds., [*History of the Development of China's Military Academic Institutions*] [中国院校展史], (Beijing: National Defense Press, August 2001), 915.
- 898 “Post-doctoral” [博士后] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 331.
- 899 “Academic Education College” [学历教育院校] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 144.
- 900 Zhu Rongchang, ed., [*Air Force Dictionary*] [空军大辞典], (Shanghai: Shanghai Dictionary Press, September 1996), 71.
- 901 *PLA Military Terminology* dictionary, 2nd ed., 2011, 132.
- 902 Sun Ruling, *Basic Introduction to Operations Command* [作战指挥基础概论], (Beijing: National Defense University Press, May 2011), 101.
- 903 Xu Yaoyuan, Lin Xianghai, and Mu Song, eds., “Commanding Officer” [指挥军官], in Xu, Lin, and Mu, eds., [*Military Cadre Work*], 84; Su et al., eds., [*Military Cadre Work Handbook*], 35-36.
- 904 Xu et al., “Staff Officers Contingent” [参谋军官], in [*Military Cadre Work*] [军队干部工作], Second Edition, Volume 39, (Beijing: *China Military Encyclopedia* Press, 2006), 72-73.
- 905 Dong and Mou, “Establishment of Rank of Military College” [军校编制等级], in *Dictionary of Modern Military Education*, 112-113.
- 906 Dong and Mou, “Academic” [学术], in *Dictionary of Modern Military Education*, 295-297; “Air Force Logistics College 2019 Master’s Student Recruitment Guide” [空军勤务学院2019年硕士研究生招生简章], *Yanzhao Net*, accessed 5 December 2019, <https://yz.chsi.com.cn/sch/viewZszc--infoId-2112358079,categoryId-10462725,schId-368174,mindex-12.dhtml>; “Air Force Logistics College 2019 Master’s Graduate Student Recruitment Guide” [空军勤务学院2019年硕士研究生招生简章], *Sohu*, 28 September 2018, http://www.sohu.com/a/256815537_672309; “Air Force Logistics College 2016 Master’s Student Recruitment Guide” [空军勤务学院2016年硕士研究生招生简章], *Yanzhao Net*, accessed 5 December 2019, <https://yz.chsi.com.cn/sch/viewZszc--infoId-1588670105,categoryId-10462725,schId-368174,mindex-12.dhtml>.
- 907 Dong and Mou, “Department” [系], in *Dictionary of Modern Military Education*, 168.
- 908 Air Force Medical University, “Air Force Medical University”; Air Force Medical University, “Academic Departments,” accessed 7 November 2019, <https://www.fmmu.edu.cn/jgsz/yx1.htm>.
- 909 Ibid. Note that the PLA education dictionary translates this term as “vice-professor,” which is not correct.
- 910 Air Force Medical University, “Air Force Medical University”; Air Force Medical University, “Academic Departments.”
- 911 Air Force Medical University, “Establishment of Majors” [学科建设], accessed 4 December 2019, <https://www.fmmu.edu.cn/jyxx/2/xkjs1.htm>; Air Force Medical University, “Teaching & Learning,” accessed 4 December 2019, https://www.fmmu.edu.cn/en/Teaching___Learning1.htm.
- 912 Xu et al., “Commanding Officer,” 85; Su et al., *Military Cadre Work Handbook*, 35-36.
- 913 “Development and Training” [培训], in *PLA Military Terminology* dictionary, 2nd ed., 2011, 323; Dong and Mou, “Training” [培训], in *Dictionary of Modern Military Education*, 223. Peiyang [培养] is usually translated as “cultivation.” The definition for each entry states that this includes education and training, not just training, and is focused on academic institutions [院校] and training organizations [训练机构].
- 914 Dong and Mou, “National Defense University” [国防大学], in *Dictionary of Modern Military Education*, 460; “National Defence University,” in *PLA Military History*, 665-667.
- 915 Dong and Mou, “Degree” [学位] in *Dictionary of Modern Military Education*, 325.
- 916 “What’s the Difference Between a Bachelor’s Degree Program and a Professional Education Program?” [本科和专科有什么区别?], *Sohu*, 11 August 2016, http://www.sohu.com/a/110053909_175741. According to the source, the professional education programs (*dazhuan* 大专) takes three years to complete, while the bachelor’s degree program (*benke* 本科) takes four years to complete. Graduates of *benke* programs receive bachelor’s degrees, while graduates of *zhuanke* programs do not receive a degree. [本科学制比专科学长, 一般专科三年, 本科四年[医学有五年的]专科就是大学专科, 简称大专: 本科就是大学本科, 一般称为大学就是指本科, 本科毕业达到一定的要求可以授予学士学位, 而大专是没有学位的].
- 917 In China’s educational system, having a certain level of educational experience [学历] does not equate to having a degree [学位]. For example, both the three-year professional education program [大专] and the bachelor’s degree program (本科) provide undergraduate or college level educational experience, but only graduates of a bachelor’s program may receive a degree, while those who graduated from the three-year professional education programs do not.
- 918 Dong and Mou, “Discipline” [学科], in *Dictionary of Modern Military Education*, 174. This is a combination of “discipline” found in the dictionary and the translation of *menlei* (门类) as categories.

- 919 Air Force Medical University, “Introduction on the University” [学校简介], accessed 4 December 2019, <https://www.fmmu.edu.cn/xxgk/xxjj.htm>; Air Force Medical University, “Establishment of Majors.”
- 920 Dong and Mou, “Full time” [全日制], in *Dictionary of Modern Military Education*, 336.
- 921 Dong and Mou, “Discipline” [学科], in *Dictionary of Modern Military Education*, 174. Note: The dictionary does not have an entry for “major.” However, the PLA has translated “major” as *zhuanYe* [专业]. See Air Force Medical University, “Teaching & Learning”; Air Force Medical University, “Academic Departments.”
- 922 Air Force Medical University, “Air Force Medical University.” Note that this source uses “supervisor” instead of advisor. This report uses advisor. Air Force Medical University, “Introduction on the University.”
- 923 Air Force Medical University, “Introduction on the University”; Air Force Medical University, “Establishment of Majors.”
- 924 Dong and Mou, “Party-time Studies” [非全日制], in *Dictionary of Modern Military Education*, 336.
- 925 Air Force Medical University, “Air Force Medical University.” Note that this source uses “supervisor” instead of advisor; however, this report uses advisor. Air Force Medical University, “Introduction on the University.”
- 926 Dong and Mou, “Post-doctoral” [博士后], in *Dictionary of Modern Military Education*, 331.
- 927 Air Force Medical University, “Air Force Medical University”; Air Force Medical University, “Academic Departments.”
- 928 Dong and Mou, “Professional Degree” [专业学位], in *Dictionary of Modern Military Education*, 326.
- 929 Dong and Mou, “Professor” [教授], in *Dictionary of Modern Military Education*, 407.
- 930 Dong and Mou, “Specialties” [专业], in *Dictionary of Modern Military Education*, 175.
- 931 Air Force Medical University, “Air Force Medical University”; Air Force Medical University, “Academic Departments.”
- 932 Ibid.
- 933 The information in this section comes from Kenneth W. Allen, “The Organizational Structure of the PLAAF,” in Halloran, Cliff, and Saunders, eds., *The Chinese Air Force and from PLAAF 2010*, Chapter 7. Yang Zhipo, “Air Force Leadership and Command System,” in *Air Force Encyclopedia*, 214-215.
- 934 Yang Zhipo, “Air Force Leadership and Command System” [空军领导指挥体制] in *Air Force Encyclopedia*, 214. In 1949, the PLAAF Headquarters Training Department was established as a first-level department equal to the Headquarters, Political, and Operations Department. In October 1953, it split into two first level departments: The PLAAF Military Training Department [空军军事训练部], which was responsible for unit training, and the PLAAF Military Schools Management Department [空军军事学校管理部], which was responsible for education and training in the academic institutions. The latter department changed its name to the Air Force Military Academic Institution Department [空军军校部] in 1958. Since then, the training and schools departments have merged and separated several times. Source: Wang, ed., *China Today: Air Force*, and Yuan Wei and Zhang Zhuo, eds., [History of the Development of China's Military Academic Institutions] [中国军校发展史], (Beijing: National Defense University Press, July 2001). Hereafter referred to as Yuan and Zhang, eds., [History of the Development].
- 935 See the National Defense Student regulations at www.heao.com.cn/main/html/pz/201006/content_9227.html.
- 936 *People's Liberation Army Air Force*, Chapter 7.
- 937 [A Guide for Applicants to Military Academic Institutions and Civilian College National Defense Student Program] [军队院校及普通高校国防生班报考指南], (Beijing: PLA Press, January 2005), 19.
- 938 The original source for the material in this section comes from Allen and Chen, *The People's Liberation Army's 37 Academic Institutions*.
- 939 Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 445-459; Zhao Yiping, et al., eds., [PLA Military History], Second Edition, Volume 3.
- 940 Dong Huiyu and Mou Xianming, eds., “The 16th Conference of PLA Military Educational Institutions” [第十六次全军院校会议] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 457-459.
- 941 Bi Yongjun, [“Master's and Doctorate Degrees—Development Trend in Military Officers Contingent”], *PLA Daily* (Internet Version), 11 December 2000, 1.
- 942 Jin Peng and Dong Ming, eds., [An Overview of Chinese Military Academic Institutions] [中国军事院校通览], (Beijing: Academy of Military Science Press, 2003); Li Cheng'an, [Education Reform in Military Academies in the New Situation] [新形势下军队院校教育改革], (Beijing: National Defense University Press, 2015); Sun Yougui, ed., [A Brief History of the Development of Chinese PLA Academic Institutions] [中国人民解放军院校发展简史], (Beijing: Lantian Press, March 1996). Hereafter referred to as Sun, ed., [A Brief History]. Yuan and Zhang, eds., [History of the Development].
- 943 Hu, [Contemporary Military Organizational Reform Research], 307-312; Yuan and Zhang, [History of the Development of China's Military Academic Institutions].
- 944 “Chinese Army Officers to Be Better Educated” *Xinhua* (English), 11 December 2000.
- 945 “Chinese Armed Forces Modernization Marked in National Day Article,” *Xinhua* (English), reprinted in *BBC*, 1 October 2001.
- 946 Sun, [A Brief History of China People's Liberation Army Academic Institutions], 492, 499, 550-551.
- 947 Hu, [Contemporary Military Organizational Reform Research], 307-312; Yuan and Zhang, [History of the Development of China's Military Academic Institutions], 718-723.
- 948 Hu, [Contemporary Military Organizational Reform Research], 307-312; Yuan and Zhang, [History of the Development of China's Military Academic Institutions], 757.
- 949 Sun, ed., [A Brief History], 472, 504.

- 950 Tsang Hsing, "Air Force Reforms"; Xu Yaoyuan, Lin Xianghai, and Mu Song, eds., "System of Promoting Cadres through College Training" [院校培训提拔干部制度] in Xu, Lin, and Mu, eds., [*Military Cadre Work*], 118.
- 951 Yuan and Zhang, [*History of the Development of China's Military Academic Institutions*], 757.
- 952 Tsang Hsing, "Zhang Tingfa Interviewed on Air Force Reforms," *Kuang Chiao Ching*, 16 June 1985, reprinted in *BBC*, 21 June 1985.
- 953 "Chinese Army Officers to Be Better Educated" *Xinhua* (English), 11 December 2000.
- 954 "More Importance Placed on Study in PLA," *Xinhua* (English), 31 May 1983.
- 955 "Chinese Army Officers to Be Better Educated" *Xinhua* (English), 11 December 2000.
- 956 Chen Daojin and Liu Yuan, "Flight Academic Institutions Leap Ahead in Developing the Strategic Position and High Quality of Educating and Training Aviation Cadets" [飞行学院跨越式发展的战略定位与高素质飞行学员培养] in [*Research on New Century New Period Air Force Academic Institution Transformation Building and Personnel Education and Culture*] [新世纪阶段空军院校转型建设与人才培养研究], First Edition, Volume 1, (Beijing: Lantian Press, 2009), 55-66.
- 957 "Air Force College Pilots Graduate 'With Flying Colors,'" *Xinhua* (English), 24 November 1987.
- 958 *Air Force News*, 15 August 2002, 3; Wang, ed., *China Today: Air Force*; Lin, ed., [*History of the Air Force*], 195-202.
- 959 Sun, [*A Brief History of China People's Liberation Army Academic Institutions*], 377.
- 960 "PRC Military Official on Cadre Recruitment," *Xinhua* (English), 23 June 2000.
- 961 "Training New Missile Troops," *PLA Daily*, 26 December 1999. *Xinhua* (English), 17 August 1999.
- 962 "Starting in 2017, the PLA Will No Longer Recruit National Defense Students from Ordinary High School Graduates," *China Military Online* (English), 26 May 2017, accessed at http://www.81.cn/zggfs/2017-05/26/content_7620030.htm. ["National Defense Student Program History"], *Renmin Haijun*, 8 July 2003, 3.
- 963 "Chinese Army Officers to Be Better Educated" *Xinhua* (English), 11 December 2000.
- 964 Yuan and Zhang, [*History of the Development of China's Military Academic Institutions*].
- 965 Sun, ed., [*A Brief History*], 687-689.
- 966 "Air Force Meteorology College of the CPLA" [空军气象学院] in Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3, 761-762.
- 967 Air Force Engineering University Missile College" [空军工程大学导弹学院] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1245.
- 968 "Air Force Radar College of the CPLA" [空军雷达学院] in Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3, 757-758.
- 969 For example, the PLAAF's Engineering University did not create its first post-doctoral research station until 1995, see ["Guidelines Regarding Air Force Engineering University Admitting Local College Graduates"] [空军工程大学接收地方高校毕业生简介], *Air Force Talent*, accessed 13 November 2019, <http://kzrc.hy.ccgw.net>; Office of the Selection & Training of Reserved Duty Officers of Air Force, ["Management Regulations for Air Force Graduating National Defense Program Students Who Are Continuing Graduate Studies"] [空军应届毕业生国防生连读研究生管理规定], accessed 13 November 2019, accessed at http://www.csust.edu.cn/pub/kjxpb/zc/t20080108_63438.htm. For more information, see China Post-Doctoral Science Foundation, ["China Post-Doctoral Science Foundation"] [中国博士后科学基金会], accessed 13 November 2019, accessed at <http://jj.chinapostdoctor.org.cn/V1/Program3/Default.aspx>.
- 970 Dong Huiyu and Mou Xianming, eds., *Dictionary of Modern Military Education* (sic), First Edition, 116-117. Of note, this dictionary translates *renzhi jiaoyu* (任职教育) as vocational educational institutions, but it also translates *zhíyè jiaoyu* (职业教育) as vocational education.
- 971 Liu Longlong, "Military Academic Institutions Adjustment and Reform: The Leadership Positions Above the Division Are Greatly Reduced" [军队院校调整改革: 师职以上领导岗位大幅压减], *The Paper*, 7 August 2017, accessed at <http://news.sina.com.cn/c/nd/2017-08-07/doc-ifyitayr9652243.shtml>.
- 972 The original source for the material in this section comes from Allen and Chen, *The People's Liberation Army's 37 Academic Institutions*. "List of 43 military academies and distribution areas announced after the military reform. (军改后43所军队院校名单及分布区公布), 30 December 2017, accessed at <https://www.toutiao.com/i6505153224301871629/>. See also *Directory of PRC Military Personalities 2018*.
- 973 See Xiong Liping et al., "Tribological Study of N-Containing Borate Derivatives and Their Synergistic Antioxidation Effects with T531," *Friction* 7, Number 5 (2019), 417-431, accessed at <http://d.scholar.cnki.net/DETAIL/REFDETAIL?FILENAME=SSJD46EDC9F404489B1970C7B263738EF412&DBCOD=ssjd>. Hereafter referred to as Xiong et al., "Tribological Study." in addition, an entry for Air Force Duty College was found in the PLA's [*Dictionary of Modern Military Education*], but this does not appear to be correct. Dong Huiyu and Mou Xianming, eds., "Air Force Duty College" [空军勤务学院] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 480.
- 974 Feng Danqing et al., "ERP: An Elastic Resource Provisioning Approach for Cloud Applications," *PLoS One* 14, No. 4 (26 April 2019), accessed at <https://www.ncbi.nlm.nih.gov/pubmed/31026264>. A photo with the official English name on a building was found at "Air Force Communication NCO Academy," accessed at <https://www.weibo.com/ttarticle/p/show?id=2309351000774080801477171249>.
- 975 Multiple PLA media sources; Li Chunzhao, ed., *The Introduction on Air Force Academies Education* [空军院校教育概论], (Beijing: Academy of Military Science Press, September 2017), 122, 149. Hereafter referred to as Li, ed., *The Introduction on Air Force Academies Education*.
- 976 Interview with PLA National Defense University delegation on 4 December 2018.
- 977 Interview with PLAAF Command College delegation on 23 April 2018. Li, ed., *The Introduction on Air Force Academies Education*, 149.
- 978 Li, ed., *The Introduction on Air Force Academies Education*, 149.
- 979 Li, ed., *The Introduction on Air Force Academies Education*, 149.
- 980 *Directory of PRC Military Personalities 2019*.

- 981 “Air Force Command College” [空军指挥学院] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1243. Zhao et al., “Air Force Command College of the CPLA” [中国人民解放军空军指挥学院] in Zhao, et al., eds., [*PLA Military History*], Second Edition, Volume 3, 748-749. “Foreign Military Attachés to China Visit PLA Air Force Command College,” *mod.gov*, 16 June 2017, accessed at http://eng.mod.gov.cn/news/2017-06/16/content_4783094.htm.
- 982 “People Liberation Army Air Command College: School Introduction” [解放军空军指挥学院], *eol.cn*, accessed 27 November 2019 at https://souky.eol.cn/HomePage/index_880.html.
- 983 “Air Force Commander Ding Laihang’s Message to the Air Force Command College: Focus on Education to Foster Top-notch Talents for Strong Military” [空军司令员丁来杭寄语空军指挥学院: 盯战育人打造一流强军人才方阵], reprinted in *China Military Online*, 12 September 2018, accessed at http://www.81.cn/jwgz/2018-09/12/content_9280286.htm. “Chinese Liberation Army Air Force Command College” [中国人民解放军空军指挥学院], *Baidu*, accessed 4 October 2019 at <https://baike.baidu.com/item/中国人民解放军空军指挥学院/6962182>. “Chinese Liberation Army Air Force Command College” [中国人民解放军空军指挥学院], *Wikipedia*, accessed on 4 October 2019 at <https://zh.wikipedia.org/wiki/中国人民解放军空军指挥学院>.
- 984 [“People Liberation Army Air Command College: School Introduction”] [解放军空军指挥学院], *eol.cn*, accessed 27 November 2019 at https://souky.eol.cn/HomePage/index_880.html. [“Air Force Command College”] [空军指挥学院], *Yanzhao Net*, accessed 7 October 2019 at <https://yz.chsi.com.cn/sch/schoolInfo--schId-367826,categoryId-437099.dhtml>.
- 985 [“Comprehensive List of Military Academic Institutions”] [军事院校名单大全], *Sohu*, 26 October 2018, accessed at http://www.sohu.com/a/271386686_100206662.
- 986 “Chinese Liberation Army Air Force Command College” [中国人民解放军空军指挥学院], *Wikipedia*, accessed 4 October 2019 at <https://zh.wikipedia.org/wiki/中国人民解放军空军指挥学院>. “Chinese Liberation Army Air Force Command College,” *Baidu*. “Five Major Generals from Liberation Army Air Force, Rocket Force Promoted to Lieutenant Generals” [解放军空军, 火箭军5名少将晋升中将], *Global Times*, 4 July 2019, accessed at <https://new.qq.com/omn/20190704/20190704AofSoKoo.html>. Directory of PRC Military Personalities 2019.
- 987 “Chinese Liberation Army Air Force Command College,” *Baidu*. [“Air Force Command College Profile”], [空军指挥学院简介], *Kaoyan*, 22 April 2014, accessed at http://yz.kaoyan.com/kjzh/jianjie/index_2.html. “Air Force Command College” [空军指挥学院], 12 September 2014, accessed at http://www.mod.gov.cn/reports/201403/wzry/2014-09/12/content_4536788.htm. “Air Force Command College of the CPLA” [中国人民解放军空军指挥学院] in Zhao et al., eds., [*PLA Military History*], Second Edition, Volume 3, 748-749.
- 988 Guo Kai and Hu Yun, [“Air Force Command College Foreign Training Work 10 Years Bears Fruit”] *Air Force News*, 5 April 2010, 1; Hu Yun and Xue Haixiang, [“Air Force Command College Chinese and Foreign Officer Same Course Combined Training Revelation”], *Air Force News*, 15 March 2010, 3; Zhang Xuefeng and Hu Yun, [“Air Force Command College Chinese and Foreign Student Combined Training Documentary”], *China Air Force*, March 2010, 30-33.
- 989 Wang Wenchang, ed., [*World Military Yearbook 2000*] [世界军事年鉴2000], (Beijing, PLA Press), November 2000, 706; hereafter referred to as *World Military Yearbook 2000*: “My Impression of the Training System of the Indian Air Force,” *PLA Daily*, 4 November 2003, <http://vayu-sena.tripod.com/today-plaaf-impression-of-the-iaf.html>.
- 990 “First Graduation Ceremony for Joint Training of Chinese and Foreign Military Officers at Air Force Command College” [首届中外空军军官在空军指挥学院合训毕业], *Global Times*, reprinted in *Netease*, 16 January 2010, accessed at <http://news.163.com/10/0116/11/5T55SNPD000120GU.html>.
- 991 Xu Hongjian and Shi Juntao, “Chinese and Foreign Air Force Officers Conduct First Simulated Confrontation Exercise in Beijing” [中外空军军官在北京展开首次模拟对抗演练], *China News Service*, reprinted in *Eastday*, accessed at <http://mil.eastday.com/m/20110925/u1a6123512.html>.
- 992 “Air Force Command College,” *Baidu*.
- 993 *Air Force News*, 10 February 2004, 4.
- 994 *Air Force News*, 19 July 2005, 1.
- 995 Guo Kai and Wang Caishan, [“Air Force Command College Grants 20 Foreign Students Master’s Degree”] [空军指挥学院授予20名外军留学生硕士学位], *Air Force News*, 17 July 2014, 1; “Air Force Command College Confers Diplomas on Foreign Students,” *China Military Online* (English), 16 July 2014, accessed at http://eng.chinamil.com.cn/news-channels/china-military-news/2014-07/16/content_6050716.htm.
- 996 [“Foreign Military Attachés Visit the Air Force Command College”] [外国驻华武官参观空军指挥学院], *Xinhua*, 15 June 15 2017, accessed at http://www.xinhuanet.com/2017-06/15/c_1121151131.htm; “Ministry of National Defense Foreign Office Organizes Foreign Military Attachés’ Visit to the Air Force Command College” [国防部外办组织各国驻华武官参观空军指挥学院], *Xinhua*, 20 October 2011, accessed at http://www.gov.cn/jrzq/2011-10/20/content_1974329.htm.
- 997 [“9th Stop: Air Force Engineering University”] [2017军校巡礼第九站:空军工程大学], *mod.gov*, 8 July 2017, accessed at http://www.mod.gov.cn/services/2017-06/08/content_4782380.htm.
- 998 “Air Force Engineering University” [空军工程大学] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1243-1244; Dong Huiyu and Mou Xianming, eds., “Air Force Engineering University” [空军工程大学] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 478-479. Air Force Engineering University, [“Air Force Engineering University”] [空军工程大学], accessed 27 November 2019 at <http://www.afcu.cn/web/afcu/index.html>. The acronym was taken from the website link. No other source was found for the acronym.
- 999 Unless noted, the information in the Background section came from [“9th Stop: Air Force Engineering University”] [2017军校巡礼第九站:空军工程大学], *mod.gov*, 8 July 2017, accessed at http://www.mod.gov.cn/services/2017-06/08/content_4782380.htm.
- 1000 [“Pride of the Military! PLA’s Five Comprehensive Universities”] [军之骄子! 解放军全军五所综合大学], *Xilu*, 8 September 2010, <http://club.xilu.com/emas/msgview-821955-4656460.html>; Huiyu and Mou Xianming, eds., “University” [综合大学] in *Dictionary of Modern Military Education* (sic) [现代军校教育辞典], First Edition, (Beijing: National Defense University Press, July 2009), 115. The other four comprehensive universities were the National University of Defense Technology (NUDT / 国防科学技术大学), Naval Engineering University (NAE / 海军工程大学), PLA Information Engineering University (PLAIEU / 解放军信息工程大学), and PLA Science and Engineering University (PLAUST/解放军理工大学).
- 1001 Air Force Engineering University, [“Academic Departments”] [院系设置], accessed 27 November 2019, <http://www.afcu.cn/web/afcu/yxsx/>.

- 1002 For the website of the journal, see <http://kjgcdx.ijournal.cn/ch/index.aspx>.
- 1003 ["Chinese People's Liberation Army Air Force Engineering University"] [中国人民解放军空军工程大学], *Wikipedia*, accessed 27 November 2019 at <https://zh.wikipedia.org/wiki/中国人民解放军空军工程大学>.
- 1004 Zhao et al., "Air Force Engineering University of the CPLA," 751-752; Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 449.
- 1005 *Directory of PRC Military Personalities 2019*.
- 1006 "12th Stop: Air Force Engineering University," *Sohu*; Air Force Engineering University, "Introduction to the University."
- 1007 *Ibid*.
- 1008 ["9th Stop: Air Force Engineering University"] [2017军校巡礼第九站:空军工程大学], *mod.gov*, 8 July 2017, accessed at http://www.mod.gov.cn/services/2017-06/08/content_4782380.htm.
- 1009 Air Force Engineering University, ["Majors and Specialties"] [学科专业], accessed 27 November 2019, <http://www.afeu.cn/web/afeu/xkzyn/>; ["Air Force Engineering University"], *Baidu*.
- 1010 Air Force Engineering University, ["Introduction to the University"].
- 1011 Air Force Engineering University, ["Foreign Exchanges"] [对外交流], accessed 27 November 2019, <http://www.afeu.cn/web/afeu/dwjl/index.html?pageIndex=1#>.
- 1012 ["9th Stop: Air Force Engineering University"] [2017军校巡礼第九站:空军工程大学], *mod.gov*, 8 July 2017, accessed at http://www.mod.gov.cn/services/2017-06/08/content_4782380.htm; Air Force Engineering University, "Academic Departments."
- 1013 Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 479-480; "Air Force Aviation University" [空军航空大学] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1248.
- 1014 Yan, "Across China: China's 'Most Stunning University Opening Ceremony' Inspires Passion for Air Force," *Xinhua* (English), 30 August 2018, accessed at www.xinhuanet.com/english/2018-08/30/c_137431609.htm.
- 1015 *Ibid*.
- 1016 For more information, see Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 479-480; Yao, ed., [*China Air Force Encyclopedia*]. By 2018, they were identified as flight academies. For an example, see "Free Air Combat Training Course Included in Air Force Flight Academy Syllabus," *China Military Online* (English), 6 February 2018, accessed at http://english.chinamil.com.cn/view/2018-02/06/content_7934591.htm.
- 1017 ["Air Force Aviation University Flight Instructor Training Base Unveiled in Bengbu"] [空军航空大学飞行教官训练基地在蚌埠揭牌], *Anhui365*, 2 May 2012, accessed at <https://www.anhui365.net/PostCenter/ThreadDetail/id/1787064.html>. ["Bengbu City People's Government"] [蚌埠市人民政府], accessed 29 November 2019 at www.bengbu.gov.cn/bbxw/article.jsp?articleId=21005573.
- 1018 ["Military Tour Six Stop: Air Force Aviation University"] [军校巡礼 第六站: 空军航空大学], *China Military Online*, reprinted in *gzshoulu*, 9 June 2018, accessed at <http://www.gzshoulu.wang/article/2250340>.
- 1019 "Military Tour Six Stop: Air Force Aviation University," *China Military Online* (English).
- 1020 Zhang Shuo, ["2017 Military School Tour 22nd Station: Air Force Aviation University"] [2017军校巡礼第二十二站: 空军航空大学], 13 June 2017, www.81.cn/jwz/2017-06/13/content_7637639.htm.
- 1021 ["The 6th Stop: Air Force Aviation University"] [第六站: 空军航空大学], *weixin.qq*, 9 June 2018, accessed at https://mp.weixin.qq.com/s?__biz=MjM-5MTE2NDUwMA==&mid=2657025366&idx=2&sn=238c98973f06fbc5c4115d6fce34f1f&chksm=bd13ec6d8a64657b755af56129030d6605a87ddoe5678559263ab19ca16884541e0971599edb&scene=21#wechat_redirect.
- 1022 Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 479-480.
- 1023 ["Air Force Aviation University Flight Instructor Training Base Unveiled in Bengbu"], Bengbu City People's Government.
- 1024 Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 479-480; Zhao et al., "Air Force Aviation University of the CPLA," 754-755.
- 1025 *Directory of PRC Military Personalities 2019*.
- 1026 ["The 6th Stop: Air Force Aviation University"] [第六站: 空军航空大学], *weixin.qq*, 9 June 2018, accessed at https://mp.weixin.qq.com/s?__biz=MjM5MT E2NDUwMA==&mid=2657025366&idx=2&sn=238c98973f06fbc5c4115d6fce34f1f&chksm=bd13ec6d8a64657b755af56129030d6605a87ddoe5678559263ab19ca16884541e0971599edb&scene=21#wechat_redirect.
- 1027 [*PLA Air Force Enlisted Force Handbook*], 215-216.
- 1028 [*People's Liberation Army Air Force Officer's Handbook*], 340.
- 1029 ["Air Force Aviation University 2018 Master's Graduate Student Recruitment Guide"], *Yanzhao Net*.
- 1030 Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 479-480; Zhao et al., "Air Force Aviation University of the CPLA," 754-755.
- 1031 Zhang Shuo, ["2017 Military School Tour 22nd Station: Air Force Aviation University"] [2017军校巡礼第二十二站: 空军航空大学], 13 June 2017, www.81.cn/jwz/2017-06/13/content_7637639.htm. [*PLA Air Force Enlisted Force Handbook*], 215-216.
- 1032 *Ibid*.
- 1033 ["Chinese People's Liberation Army Air Force Aviation University"], *Baidu*. Jin Zheng and Zhou Chao, ["Air Force Aviation University Flight Instructor Training Base 4th Regiment Training"], *Air Force News*, 6 June 2012, 3.
- 1034 [*People's Liberation Army Air Force Officer's Handbook*], 340. ["PLAAF Aviation University Instructor Base"], *Air Force News*, 26 October 2016, 4.

- 1035 Yan Jibin, ["Training Does Not Stop, Missions Are Not Reduced, and Preparation Is Not Decreased"], *Air Force News*, 22 February 2012, 3. ["PLAAF Aviation University Instructor Base"], *Air Force News*, 26 October 2016, 4. ["Air Force Aviation University Flight Instructor Training Base Regiment Training Safety Tips"], *Air Force News*, 15 June 2017, 1.
- 1036 ["Air Force Aviation University Flight Instructor Training Base Regiment Training Safety Tips"], *Air Force News*, 15 June 2017, 1.
- 1037 ["PLAAF Aviation University instructor base"], *Air Force News*, 26 October 2016, 4. Correspondence with Andreas Rupprecht.
- 1038 ["Chinese People's Liberation Army Air Force Early Warning Academy"] [中国人民解放军空军预警学院], *Baidu*, accessed 29 November 2019, <https://baike.baidu.com/item/中国人民解放军空军预警学院>; Yu Chen-long, Tan Xian-si, and Li Fan, "Study on Search Performance of Long Range Early-Warning Phased Array Radar" (2016 CIE International Conference on Radar (RADAR), Guangzhou, China, 2016), accessed at <https://doi.org/10.1109/RADAR.2016.8059313>. Note that the institution does not have an official website, so the name was found in a Baidu website as well as in information concerning three speakers from the institution in a conference report. In addition, the Academy publishes a quarterly journal with the official English name of *Journal of the Air Force Radar Academy* [空军雷达学院学报]. For the website, see <http://navi.cnki.net/KNav/JournalDetail?pcode=CJFD&pykm=KLDX&Year=&Issue=&Entry=>. The previous official name was Air Force Radar College. Zhang Xiaobao, "Air Force Radar College" [空军雷达学院] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1247.
- 1039 Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 480. This dictionary's translations appear to be random and are not necessarily the official name.
- 1040 Zhang, "Air Force Radar College," 1247.
- 1041 Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 480.
- 1042 Ren Shuang, ["2017 Military Academy Tour 15th Stop: Air Force Early Warning Academy"] [2017军校巡礼第十五站: 空军预警学院], www.81.cn, 9 June 2017, accessed at http://www.81.cn/jwz/2017-06/09/content_7634167.htm.
- 1043 ["2018 Military Academy Tour 3rd Stop: Air Force Early Warning Academy"] [2018军校巡礼 第三站: 空军预警学院], *Chuansongme*, 11 June 2018, accessed at <https://chuansongme.com/n/2393769352529>.
- 1044 Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 417; "Chinese People's Liberation Army Air Force Early Warning Academy," *Baidu*.
- 1045 ["2018 Military Academy Tour 3rd Stop: Air Force Early Warning Academy"] [2018军校巡礼 第三站: 空军预警学院], *Chuansongme*, 11 June 2018, accessed at <https://chuansongme.com/n/2393769352529>.
- 1046 [*PLA Air Force Enlisted Force Handbook*], 216.
- 1047 Kenneth W. Allen, *PLA Air Force, Naval Aviation, and Army Aviation Aviator Recruitment, Education, and Training*, (Washington, D.C.: Jamestown Foundation, 8 April 2016), <https://jamestown.org/report/pla-air-force-naval-aviation-and-army-aviation-aviator-recruitment-education-and-training/>. Hereafter referred to as Allen, *Aviator Recruitment, Education, and Training*.
- 1048 "Harbin Flight College of the Air Force" [空军哈尔滨飞行学院], "Shijiazhuang Flight College of the Air Force" [空军石家庄飞行学院], and "Xi'an Flight College of the Air Force" [空军西安飞行学院] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 481-482; Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1248. The [*China Air Force Encyclopedia*] also identifies all *feixing xueyuan* (飞行学院) as flight colleges.
- 1049 "PLA Air Force Spreads Stall/Spin Recovery Training on JL-8 Aircraft in Flight Academies," *China Military Online* (English), 27 March 2018, accessed at http://eng.chinamil.com.cn/view/2018-03/27/content_7985275.htm; "5 Military Colleges and Academies Conduct Joint Drill," *China Military Online* (English), 8 May 2014, accessed at http://eng.chinamil.com.cn/news-channels/photo-reports/2014-05/08/content_5895921.htm; "PLA Air Force Xi'an Academy Carries out Flight Training Course," *China Military Online* (English), 31 January 2018, accessed at http://english.chinamil.com.cn/view/2018-01/31/content_7927349.htm.
- 1050 Yao et al., "Air Force Flight College," 1248.
- 1051 "Air Force Flight Preparatory School" [空军航空预备学校] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1249.
- 1052 "History of the 16th Flight Academy" [空军第十六飞行学院(领航学院)历史沿革], *Sina*, 22 October 2017, accessed at http://blog.sina.com.cn/s/blog_5c1387a90102xd2n.html.
- 1053 "Air Force Flight Test and Training Base" [空军飞行试验训练基地] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1251.
- 1054 [*People's Liberation Army Air Force Officer's Handbook*], 338-340.
- 1055 Kenneth W. Allen, "PLA Air Force Male Aviation Cadet Recruitment, Education and Training," (Washington, D.C.: Jamestown Foundation *China Brief*, Volume 12, Issue 5, March 2012); State Council Academic Degrees Committee Office, "Annual Reporting Data on Degrees Granted, Structure and Code Manual (2018 Edition)" [学位授予信息年报数据结构及代码手册(2018版)], March 2018, accessed at http://graschool.ahu.edu.cn/_upload/article/files/e6/db/9191fe2440238a3f17892f024594/1dc87887-e9e5-41a4-9cb9-65644720dea2.pdf.
- 1056 *Directory of PRC Military Personalities* 2012.
- 1057 "Harbin Flight College of the Air Force" [空军哈尔滨飞行学院], "Shijiazhuang Flight College of the Air Force" [空军石家庄飞行学院], and "Xi'an Flight College of the Air Force" [空军西安飞行学院] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 481-482. "Chinese People's Liberation Army Air Force Xi'an Flight Academy" [中国人民解放军空军西安飞行学院], *Wikipedia*, accessed 29 November 2019, <https://zh.wikipedia.org/wiki/中国人民解放军空军西安飞行学院>. "Chinese People's Liberation Army Air Force Shijiazhuang Flight Academy" [中国人民解放军空军石家庄飞行学院], *Wikipedia*, accessed 29 November 2019, <https://zh.wikipedia.org/wiki/中国人民解放军空军石家庄飞行学院>. "Chinese People's Liberation Army Air Force Harbin Flight Academy" [中国人民解放军空军哈尔滨飞行学院], *Baidu*, accessed 29 November 2019, <https://baike.baidu.com/item/中国人民解放军空军哈尔滨飞行学院>. "Chinese People's Liberation Army Air Force Harbin Flight Academy" [中国人民解放军空军哈尔滨飞行学院], *Wikipedia*, last edited on 25 December 2020, accessed at <https://zh.wikipedia.org/wiki/中国人民解放军空军哈尔滨飞行学院>.

- 1058 Li, ed., The Introduction on Air Force Academies Education, 148; “Chinese People’s Liberation Army Air Force Aviation University” [中国人民解放军空军航空大学], *Baidu*, accessed 29 November 2019 at <https://baike.baidu.com/item/中国人民解放军空军航空大学>. Jin Zheng and Zhou Chao, [“Air Force Aviation University Flight Instructor Training Base 4th Regiment Training”], *Air Force News*, 6 June 2012, 3. State Council Academic Degrees Committee Office, “Code Manual.”
- 1059 Deng Xiaoci, “Reform of Military Medical Universities to Put Focus Back on Combat,” *Global Times* (English) 14 March 2018, accessed at <http://www.globaltimes.cn/content/1093285.shtml>.
- 1060 “Air Force Medical University,” accessed 4 December 2019 at <https://www.fmmu.edu.cn/en/>; “Air Force Medical University,” *Wikipedia*, accessed 4 December 2019 at https://en.wikipedia.org/wiki/Air_Force_Medical_University. “Fourth Military Medical University of the PLA” [中国人民解放军第四军医大学] in Zhao, et al., eds., [PLA Military History], Second Edition, Volume 3, 723-724. “The Fourth Military Medical University” [第四军医大学] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 473.
- 1061 [“Academic Ranking of World Universities: Military Medical University of the Air Force”], *Shanghai Ranking*, accessed 4 December 2019 at <http://www.shanghairanking.com/World-University-Rankings/Military-Medical-University-of-the-Air-Force.html>.
- 1062 [“Air Force Medical University (Fourth Military Medical University)”] [空军军医大学: (第四军医大学)], accessed 4 December 2019 at <https://www.fmmu.edu.cn/>.
- 1063 *Ibid.*
- 1064 “Air Force Medical University,” Air Force Medical University website, accessed 4 December 2019 at <https://www.fmmu.edu.cn/xxgk/xxjj.htm>.
- 1065 [“Air Force Medical University; Introduction on the University”] [学校简介], Air Force Medical University website, accessed 4 December 2019 at <https://www.fmmu.edu.cn/xxgk/xxjj.htm>.
- 1066 [“Air Force Medical University; Introduction on the University”] [学校简介].
- 1067 *Directory of PRC Military Personalities* 2019. “2017 Military Academy Tour 23rd Stop: 4th Military Medical University” [2017年军校巡礼第二十三站: 第四军医大学], *China Military Online*, 14 June 2017, accessed at http://www.81.cn/jwgz/2017-06/14/content_7639231.htm. “Institutional System” [院系], undated, accessed at <https://www.fmmu.edu.cn/jgsz/yx1.htm>. [“Air Force Medical University; Introduction on the University”] [学校简介].
- 1068 “Air Force Medical University; Teaching & Learning,” accessed 4 December 2019 at https://www.fmmu.edu.cn/en/Teaching_Learning1.htm; [Air Force Medical University, “Establishment of Majors”] [学科建设], accessed 4 December 2019 at <https://www.fmmu.edu.cn/jyxx/xkjs1.htm>.
- 1069 “Air Force Medical University; Academic Departments,” accessed 7 November 2019 at <https://www.fmmu.edu.cn/jgsz/yx1.htm>.
- 1070 [Air Force Medical University, “Establishment of Majors”] [学科建设], accessed 4 December 2019 at <https://www.fmmu.edu.cn/jyxx/xkjs1.htm>.
- 1071 “Air Force Medical University” accessed at <https://www.fmmu.edu.cn/xxgk/xxjj.htm>.
- 1072 Xiong et al., “Tribological Study.” “Service” [勤务] in *PLA Military Terminology* dictionary, 2nd ed., 2011., 67. There are also separate entries for “POL Service” [油料勤务], “Health Service” [卫生勤务], and “Vehicle Transport Service” [汽车运输勤务], etc., all of which are part of logistics support. See pages 497, 500, and 514 of the book for more information.
- 1073 “Air Force Duty College” [空军勤务学院] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 480.
- 1074 Dong and Mou, “Air Force Duty College,” 480. “Xuzhou Air Force Academy of the CPLA” [徐州空军学院] in Zhao et al., eds., [PLA Military History], Second Edition, Volume 3, 760-761. “Chinese People’s Liberation Army Air Force Logistics College,” *Baidu*; “Xuzhou Air Force Academy” [徐州空军学院] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1250.
- 1075 [“Air Force Logistics College 2019 Master’s Graduate Student Recruitment Guide”] [空军勤务学院2019年硕士研究生招生简章], *Sohu*, 28 September 2018, accessed at http://www.sohu.com/a/256815537_672309.
- 1076 Ministry of National Defense, [“Military of National Defense Announces Names of Military Academies after Reform”] [国防部公布调整改革后军队院校名称], 29 June 2017, http://www.mod.gov.cn/jzhzt/2017-06/29/content_4784053.htm; Zhao et al., “Xuzhou Air Force Academy of the CPLA,” 760-761.
- 1077 *Directory of PRC Military Personalities* 2019. [“Chinese People’s Liberation Army Air Force Logistics College”], *Baidu*; [“Air Force Logistics College 2017 Master’s Student Recruitment Guide”] [空军勤务学院2017年硕士研究生招生简章], *Yanzhao Net*, accessed 5 December 2019 on <https://yz.chsi.com.cn/sch/viewZszc--infold-1725401376, categoryId-10462725, schId-368174, mindex-12.dhtml>.
- 1078 “Chinese People’s Liberation Army Air Force Logistics College,” *Baidu*.
- 1079 [“Air Force Logistics College 2017 Master’s Student Recruitment Guide”], *Yanzhao Net*; [“Introduction on Air Force Logistics College”] [空军勤务学院简介], *Kaoyan*, 22 April 2014, <http://yz.kaoyan.com/jkxy/jianjie/>.
- 1080 Zhao et al., “Dalian Air Force Communication Noncommissioned Officer School of the CPLA,” 764-765; Dong and Mou, “Dalian Communication Sergeant School of the Air Force,” 482; Jin Peng and Dong Ming, [An Overview of Chinese Military Academic Institutions], 253.
- 1081 [“2019 Air Force Communication NCO Academy Civilian Recruitment”] [2019年空军通信士官学校空军文职人员招考], Dalian University of Technology, 2 March 2019, accessed at <http://www.0730hao.cn/Article/wenzhi/39111.html>.
- 1082 Zhao et al., “Dalian Air Force Communication Noncommissioned Officer School of the CPLA,” 764-765; [“Chinese People’s Liberation Army Dalian Air Force Communication NCO Academy”] [中国人民解放军空军大连通信士官学校], *Hudong Baike*, accessed 5 December 2019 at <http://www.baik.com/wiki/中国人民解放军空军大连通信士官学校>.
- 1083 *Directory of PRC Military Personalities* 2019.
- 1084 Zhao et al., “Dalian Air Force Communication Noncommissioned Officer School of the CPLA,” 764-765; [PLA Air Force Enlisted Force Handbook], 220-221; “Introduction on Dalian Air Force Communication NCO School,” *eol.cn*.
- 1085 [“2019 Air Force Communication NCO Academy Civilian Recruitment”] [2019年空军通信士官学校空军文职人员招考], Dalian University of Technology, 2 March 2019, accessed at <http://www.0730hao.cn/Article/wenzhi/39111.html>.

- 1086 Hereafter referred to as Du, *Handbook for PLAN Officers and Enlisted Personnel*, 133.
- 1087 The majority of the information in this section came Allen, “Chinese Air Force Officer Recruitment.”
- 1088 www.dx513.com/Article/teece/19816.html and <http://military.people.com.cn/GB/1076/52966/15699452.html>.
- 1089 Li, ed., *The Introduction on Air Force Academies Education*, 122.
- 1090 Ibid.
- 1091 He Zongfa, Dong Jinhai, and Wang Zhanhe, [“Some Thoughts on Further Improving the Quality of Selection and Training of National Defense Students”] [对进一步提高国防生选拔培养质量的几点思考], 7 March 2008, accessed at <http://www.ylhxj.com/ebook/jxyj/jayy2008/jayy20080307-1.html>. See Allen, “Chinese Air Force Officer Recruitment” for further information on this program.
- 1092 *A Guide for Applicants to Military Academic Institutions and Civilian College National Defense Student Program*, 2005. No single author was identified as the editor for this book. The cover identified on the General Political Department Cadre Department’s Professional Military Education Bureau (总政治部干部部培训局) and the Shijiazhuang Army Command Academy’s Military Education Research Institute (石家庄陆军指挥学院军事教育研究所) as co-editors. See also [“Management Regulations for Graduating Air Force National Defense Students to Become Graduate Students”] [空军应届毕业生国防生攻读研究生管理规定], Changsha University of Science and Technology, 8 January 2008, accessed at http://www.csust.edu.cn/pub/kjxpb/zc/t20080108_63438.htm.
- 1093 [“Interpretation of Recruitment Policies in 2010 for Military Academic Institutions and National Defense Student Program”] [2010年军队院校和普通高校国防生招生政策解读], Changsha University of Science and Technology, 11 June 2010, accessed at www.csust.edu.cn/pub/kjxpb/notice/t20100611_126804.htm.
- 1094 Wei Yin Hai and Zhang Jinyu, “Air Force Military Professional University Established,” *China Military Online* (English), 4 July 2008, accessed at english.chinamil.com.cn/site2/news-channels/2008-07/04/content_1348728.htm. [PLA Air Force Military Vocation University] [空军军事职业大学], 4 February 2015, accessed at <http://www.86feiji.com/120000/110736.shtml>. This article has a photo of aircraft flying over the Great Wall and the logo for the university and the name in English.
- 1095 Wei Yin Hai and Zhang Jinyu, “Air Force Military Professional University Established,” *China Military Online* (English), 4 July 2008, accessed at english.chinamil.com.cn/site2/news-channels/2008-07/04/content_1348728.htm. “The PLA’s First Military Professional University is Established in the Air Force” accessed at www.go81.net/news/shownews_12454.html. [“The PLA’s First Military Professional University is Established in the Air Force”] [全军第一家军事职业大学在空军挂牌成立], 3 July 2008 accessed at www.go81.net/news/shownews_12454.html.
- 1096 Li Yue and Luo Erwen, [“PLA Military Education ‘New Offensive’”] [中国人民解放军军事教育“新攻势”], 8 May 2009, accessed at <http://www.infzm.com/content/29139>.
- 1097 [“Introduction to Air Force Military Professional University”] [空军军事职业大学简介], 12 October 2011, accessed at http://gaokao.eol.cn/dong_tai_2866/20111012/t20111012_692301_1.shtml.
- 1098 Information accessed at [“Air Force Military Professional University”] [空军军事职业大学], *Baike*, accessed at <http://baike.soso.com/v15558228.htm>.
- 1099 Wei Yin Hai and Zhang Jinyu, “Air Force Military Professional University Established,” english.chinamil.com.cn/site2/news-channels/2008-07/04/content_1348728.htm, 4 July 2008. [“The PLA’s First Military Professional University is Established in the Air Force”] accessed at www.go81.net/news/shownews_12454.html.
- 1100 [PLA Air Force Military Vocation University] [空军军事职业大学], 4 February 2015, accessed at <http://www.86feiji.com/120000/110736.shtml>.
- 1101 This section comes from Marcus Clay, *China’s “Little Eagles”: People’s Liberation Army Developing Its Next-Generation Pilots*, (Montgomery, AL: China Aerospace Studies Institute, 2019).
- 1102 [“PLAAF Pilot Recruitment Bureau 2018 Recruitment Numbers Reach Highest Number in 30 Years”] [中国空军招飞局2018年空军招飞数量创30年来新高], 18 July 2018, accessed at http://gaokao.eol.cn/zhaofei/fxyy/201807/t20180718_1617659.shtml.
- 1103 [“Our Navy Organized 200 Young People to Learn How to Fly and Eventually Serve as a Pilot On an Aircraft Carrier”] [我海军组织200名少年学开飞机将成未来舰载机飞行员], 4 September 2014, accessed at <http://mil.news.sina.com.cn/jssd/2018-09-04/doc-ihiqtcap1562353.shtml>; See Allen, *Aviator Recruitment, Education, and Training*.
- 1104 [“Tsinghua Pilots Begin Studies for the First Course for ‘Battle Mobilization’”] [清华飞行员万里挑一开学第一课接受“战斗动员”], 21 October 2011, accessed at <http://military.people.com.cn/GB/172467/15967279.html>.
- 1105 [“First Group of Tsinghua Class Pilot Cadets Enter Air Force Battle List”] [首批清华班飞行学员步入空军战斗序], 17 June 2016, accessed at https://www.guancha.cn/military-affairs/2016_06_17_364387.shtml.
- 1106 [“‘Dual-Enrollment’ Female Flight Cadets Fly Out of Small Villages to Reward Parents for Their Hard Work”] [“小乡村飞出”双学籍“女”飞行学员为回报父母努力学习], *Chinanews.com*, 3 September 2019, accessed at <https://www.chinanews.com/sh/2019/09-03/8945568.shtml>.
- 1107 [“Following these ‘Dual-Enrollment’ Pilot Cadets, ‘Check in’ at the Aviation Museum”] [跟着这些“双学籍”飞行学员, “打卡”航空博物馆!], *Chinamil.com*, 31 December 2019, accessed at http://www.chinamil.com.cn/kj/2019-12/31/content_9707028.htm.
- 1108 Guo Yuandan and Zhang Yichi, [“Two Leaders for PLAAF Teenager Schools Were Previously Young Cadets”] [中国空军建青少年航校两任司令都曾是少年学员], *Global Times*, 2 March 2015, accessed at <http://mil.huanqiu.com/china/2015-03/5791135.html>.
- 1109 Ibid.
- 1110 [“2011 Air Force Pilot Recruitment: Middle School Students Are Expected to Become Pilots”] [2011空军招飞: 初中生也有望参加飞行员], 19 September 2010, accessed at http://gaokao.eol.cn/zhaofei/fxyy/201009/t20100919_523275.shtml.
- 1111 For additional background information, see Allen, *Aviator Recruitment, Education, and Training*.

- 1112 Guo Yuandan and Zhang Yichi, ["Two Leaders for PLAAF Teenager Schools Were Previously Young Cadets"] [中国空军建青少年航校两任司令都曾是少年学员], *Global Times*, 2 March 2015, accessed at <http://mil.huanqiu.com/china/2015-03/5791135.html>.
- 1113 ["Young Eagles: Start the School Season, Set a Small Goal, First Come to a Flight Experience"] ["雏鹰”开学季, 定个小目标, 先来个飞行初体验], 1 September 2016, accessed at <https://freewechat.com/a/MzA4ODU2Mzg3Ng==/2649975766/2>.
- 1114 He Junhui and Guan Hong, ["Live from the Air Force Wuhan Junior Aviation Military Academy Cultivation and Training"] [直击空军武汉飞行少年军校培养训练], 10 December 2014, accessed at http://www.81.cn/2015nq/2014-12/10/content_6263405.htm.
- 1115 Zhang Hongwei, ["China's Air Force Recruits Junior Aviation Students"] [中国空军从高一新生中招飞行少年军校学生], 23 August 2011, accessed at http://news.ifeng.com/mil/2/detail_2011_08/23/8608434_0.shtml.
- 1116 Zhang Qin, ["Air Force Junior Aviation Students Discuss Their First Flight Experience"] [空军飞行少年军校学员谈首飞体验], *China Military Online*, 2 December 2014, accessed at http://www.81.cn/jmywyl/2014-12/02/content_6250040_9.htm.
- 1117 ["16 Junior Aviation Academies Identified"] [16所空军青少年航空学校承办中学名单], 17 September 2015, accessed at <http://edu.sina.com.cn/gaokao/2015-09-17/1338483765.shtml>.
- 1118 Cui Bo and Li Ganyang, ["Gorgeous Turn of Air Force Flight Junior Aviation Academy"] [空军飞行少年军校的华丽转身], 24 July 2015, accessed at http://www.mod.gov.cn/academy/2015-07/24/content_4611000.htm.
- 1119 ["Teenagers Aviation School of the Air Force Welcomes Its First Graduates: Some Cadets Will Become 'Preparatory Pilots'"] [空军青少年航校迎首届毕业生: 部分学员将成“准飞行员”], *The Paper*, 2 August 2018, accessed at https://www.thepaper.cn/newsDetail_forward_2310141.
- 1120 *PLAAF 2010; PLA Aerospace Power*; Lin and Garafola, *Training the PLAAF SAM Forces*. McCaslin and Erickson, *Selling a Maritime Air Force*. Jana Allen and Kenneth W. Allen, *The PLA Air Force's Four Key Training Brands*, (Montgomery, AL: China Aerospace Studies Institute, March 2019). Hereafter referred to as Allen and Allen, *The PLA Air Force's Four Key Training Brands*. Allen, *Aviator Recruitment, Education, and Training*. Allen and Kelly, "China's Air Force Female Aviators."
- 1121 Zhu, ed., [*Air Force Dictionary*], 728. Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 800.
- 1122 Zhu, ed., [*Air Force Dictionary*], 183.
- 1123 *PLA Military Terminology* dictionary, 2nd ed., 2011, 996-997. The terms used in *Air Force News* are day (昼), night (夜), after midnight (下半夜), and day into night (*kua zhou ye*; 跨昼夜).
- 1124 Zhu, ed., [*Air Force Dictionary*], 277.
- 1125 *Air Force News*, 17 October 2002, 2.
- 1126 *Air Force News*, 7 March 2002, 2. A Guangzhou MRAF air regiment sometimes has 3-5 day round-the-clock training events with some flying periods lasting 12 hours and some pilots flying 3 hour sorties.
- 1127 Wang, ed., *China Today: Air Force*, 502-507.
- 1128 *PLA Military Terminology* dictionary, 2nd ed., 2011, 968.
- 1129 Zhou Keyu, ed. *China Today: Navy*, (当代中国海军), (Beijing: China Social Sciences Press, 1987), 99.
- 1130 Wu Quanshu, [*Science of Military Training*] [军事训练学], (Beijing: Academy of Military Science Press, 2003), 203.
- 1131 *PLA Military Terminology* dictionary, 2nd ed., 2011, 304.
- 1132 *PLAAF 2010*.
- 1133 *Air Force News*, 8 January 2004, 2. The source of the quote was Li Jinggao, who was the Commander of a Nanjing MRAF regiment.
- 1134 *Air Force News*, 31 August 2006, 2. Wang Tianjun and Lian Huirong, ["A Guangzhou MRAF Air Regiment Establishes Confrontation Training as Part of Its Regular Training"], *Air Force News*, 12 August 2003, 1.
- 1135 The PLAAF had a series of articles in *Air Force News* about Wang Shaohua, including 26 February 2002, 4; 30 March 2002, 3; 30 April 2002, 1; 14 May 2002, 2; 16 July 2002, 1; 18 July 2002, 1; 23 July 2002, 2; 30 July 2002, 2; 26 September 2002, 2; and 26 October 2002, 1. *China Air Force Magazine* also had a special article in its 2002-6 issue, 4.
- 1136 Cheng Minglin and Gao Fuchang, ["Jinan MRAF Regiment: A New Type of Attack Aircraft Transforms Its Combat Power"], *Air Force News*, 5 June 2004, 1.
- 1137 Zhang Shu and Kong Weisheng, ["Eastern TCAF Aviation Unit Organizes Night Flight Training and Tested/Improved a Certain Type of Combat Aircraft's Nighttime Combat Method"], *Air Force News*, 1 April 2018, 9.
- 1138 Qiao Songbai, Yu Hongwei, and Mu Yuntao, ["Reflections on H-6K Bomber Training: 9 Questions"], *Air Force News*, 28 February 2018, 1. For example, *Xinhua* News Agency reporter Zhang Minming and *PLA Daily* reporter Li Jiawen, "The 'God of War' Spreads Its Wings and Writes a New Answer Sheet for a Powerful Country and a Strong Army in Three Years-The Air Force 'Shenwei Brigade' Inspires New Momentum to Fly in a New Era" ("战神”展翅, 三年航迹书写强国强军新答卷——空军“神威大队”激发新动力奋飞新时代), *Xinhuanet*, 29 March 2018, accessed at http://www.xinhuanet.com/2018-03/29/c_1122611893.htm. Ni Guanghui and Li Longyi, "Air Force 'Model Bomber Group'-'God of War' Flies a New Track" (空军“模范轰炸机大队”——“战神”奋飞新航迹), *cpc.people.com*, 18 November 2019, accessed at <http://cpc.people.com.cn/n1/2019/11/18/c419242-31459390.html>. The following articles use the description of the H-6K as "medium-range," "long-range," and "strategic" bombers, respectively. "Massive Parade Highlights China's 'Active Defense' Military Strategy," *Xinhua*, 3 September 2015, accessed at http://eng.mod.gov.cn/Opinion/2015-09/03/content_4617021.htm. Yao Jianing, "Expert: China's AEW&C Aircraft Have Better Maritime Detection Performance," *mod.gov*, 9 October 2016, accessed at http://eng.mod.gov.cn/Opinion/2016-10/09/content_4769060.htm. Huang Panyue, ed., "Camera Captures Moments in Aviadarts Event of IAG 2017," *mod.gov*, 2 August 2017, accessed at http://eng.mod.gov.cn/focus/2017-08/02/content_4787635_25.htm.
- 1139 Zhu Fengyi and Zhang Haisheng, ["Eastern TCAF Aviation Brigade Trains with New Aircraft"], *Air Force News*, 24 January 2018, 1.

- 1140 Lei Yu and Yang Wenhui, ["Southern TCAF Air Brigade Training"], *Air Force News*, 8 November 2017, 3.
- 1141 The base for this section is *PLAAF 2010*, Chapter 7. The information has been updated accordingly.
- 1142 MSGT Eric Griffin from CASI helped write much of this section on the OMTE.
- 1143 Yang Changlin, ed., [*Contemporary Military Officer Encyclopedia-Dictionary*] [当代军官百科词典], (Beijing: PLA Publishers, July 1997), 92. This dictionary does not have an English translation for *dagang*, nor does the *PLA's Military Encyclopedia* published in 1997 have an entry for the *dagang*.
- 1144 Xue Wenhai and Wang Gang, ["Clicking on the Battlefield in the Air"], *China Air Force*, July-August 2005, 36-37. Every time the term *feican* appears in the article and in *Air Force News* articles, it is in parentheses (i.e., "飞参"). "Flight Parameter Recording System" (飞行参数记录系统/ 飞参) in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 787.
- 1145 Zhu, ed., [*Air Force Dictionary*], 180. ["New Air Force Comprehensive Training Plan"] [空军新训练大纲], 1 August 2008, accessed at http://news.xinhuanet.com/mil/2008-08/01/content_8888276_6.htm.
- 1146 He, ed., [*Science of Air Force Training*], 312-314.
- 1147 "Implementing New *Outline of Military Training and Evaluation*," *PLA Daily* online, 1 August 2008. *New Outline of Military Training and Evaluation* promulgated, accessed at http://english.chinamil.com.cn/site2/news-channels/2008-07/25/content_1379311.htm.
- 1148 Liang Pengfei, ["The All-Army New 'Outline of Military Training and Evaluation' Completes the Centralized Review"] [全军新"军事训练与考核大纲"完成集中会审], *mod.gov*, 6 February 2015, accessed at http://www.mod.gov.cn/affair/2015-02/06/content_4569106.htm. *Directory of PRC Military Personalities 2019*.
- 1149 Min Yuxiang and Jiang Long, ["Airborne Corps Transport Air Brigade, New-Aircraft High-Intensity Day-into-Night Flight Training"], *Air Force News*, 26 April 2017, 2.
- 1150 Qiao Songbai and Xu Tongxuan, ["Ding Laihang Visited Beijing-based Organizations"], *Air Force News*, 14 November 2017, 1.
- 1151 Jiang Zhen and Sun Desheng, ["A Northern TCAF Air Brigade Organized Its OMTE Test Training"], *Air Force News*, 16 August 2017, 2.
- 1152 Gao Di and Wu Kun, ["Air Force Shijiazhuang Flight Academy 1st Training Brigade Instruction and Training Overview"], *Air Force News*, 12 July 2017, 2.
- 1153 Jiao Yibao and Meng Qingbao, ["Northern TCAF Radar Brigade New OMTE Intensive Training"], *Air Force News*, 13 July 2017, 2.
- 1154 He, ed., [*Science of Air Force Training*], 202-207.
- 1155 *Volume 1 Basic Doctrine*, (Maxwell AFB, AL: The Curtis E. LeMay Center for Doctrine Development and Education, February 2015).
- 1156 He, ed., [*Science of Air Force Training*], 204.
- 1157 Jiao Yibao and Meng Qingbao, ["Northern TCAF Radar Brigade New OMTE Intensive Training"], *Air Force News*, 13 July 2017, 2. This article noted that the guiding thought had recently been updated. It most likely occurred in conjunction with the PLA's 11th force reduction that began in 2016.
- 1158 He, ed., [*Science of Air Force Training*], 206.
- 1159 *Ibid.*, 89, 207.
- 1160 Yang Rong, ["Making an Inventory of Military Training for 2002"], *Air Force News*, 31 December 2002, 2.
- 1161 ["Jinan MRAF Sukhoi Combat Aircraft Regiment Conducts Confrontation Combat Method Training Event Employing Multiple Aircraft"], 5 February 2009, accessed at <http://mil.qianlong.com/37076/2009/02/05/2500@4853845.htm>. Although *qianlong.com* is a BBS website, official Chinese sites, such as *China Daily Online*, frequently cite it.
- 1162 He, ed., [*Science of Air Force Training*], 202-207. Si Xun, ["Air Force Military Training Guiding Thought"], *Air Force News*, 15 January 2002, 4.
- 1163 He, ed., [*Science of Air Force Training*], 207.
- 1164 Cao Chuanbiao and Liu Jingwu, ["Lanzhou Military Region Air Force Regiment Uses Scientific Development to Guide Training with New Equipment"], *Air Force News*, 21 April 2009, 2. Special Commentator, ["A Historic Breakthrough in the Air Force's Flight Safety Management"], *Air Force News*, 11 June 2009, 1.
- 1165 Yan Guoyou and Song Fang, ["The Turning Point of Change: Setting up of Harsh and True-to-Life Environments"], *Air Force News*, 20 January 2009, 2.
- 1166 *PLA Military Terminology* dictionary, 2nd ed., 2011, 310.
- 1167 ["Chengdu MRAF Regiment Conducts Flight Training Using 3rd-Generation Fighters"], *Air Force News*, 8 January 2008, 1. ["Shenyang MRAF Division Focuses on Realistic Combat Under Electronic Jamming"], *Air Force News*, 19 June 2007, 4. Yan Guoyou and Song Fan, ["The Pivotal Point of Transformation: Forging and Birth of Composite-Force Combat Training"], *Air Force News*, 15 January 2009, 2. "North Sea Fleet Signs Training MOU with Jinan MRAF," *Renmin Haijun*, 19 December 2002, 1.
- 1168 Yang Rong, ["Making an Inventory of Military Training for 2002"], *Air Force News*, 31 December 2002, 2.
- 1169 Lu Yi, ["Chengdu MRAF Air Division Strengthens Regularization and Raises Training Quality"], *Air Force News*, 3 February 2005, 3.
- 1170 "Improve Training Through Science and Technology" (科技兴训), *PLA Military Terminology* dictionary, 2nd ed., 299.
- 1171 Commentator, ["Scientifically Conduct Training: Raising Training Quality and Effectiveness"], *Air Force News*, 15 January 2002, 1.
- 1172 Wu Yi, ["A Nanjing MRAF Radar Regiment Uses Consolidated Base Training to Raise the Combat Effectiveness of New Equipment"], *Air Force News*, 22 April 2004, 1.
- 1173 Commentator, ["Scientifically Conduct Training: Raising Training Quality and Effectiveness"], *Air Force News*, 15 January 2002, 1.
- 1174 Yang Rong, ["Making an Inventory of Military Training for 2002"], *Air Force News*, 31 December 2002, 2.

- 1175 Commentator, ["Scientifically Conduct Training: Raising Training Quality and Effectiveness"], *Air Force News*, 15 January 2002, 1.
- 1176 He, ed., [*Science of Air Force Training*], 221.
- 1177 He, ed., [*Science of Air Force Training*], 225.
- 1178 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 214. He, ed., [*Science of Air Force Training*], 244.
- 1179 He, ed., [*Science of Air Force Training*], 248.
- 1180 "Air Force leadership and command system" [空军领导指挥体制] in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 214.
- 1181 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 214.
- 1182 *PLAAF 2010*.
- 1183 *PLA Aerospace Power*.
- 1184 He, ed., [*Science of Air Force Training*], 333.
- 1185 He, ed., [*Science of Air Force Training*], 334.
- 1186 He, ed., [*Science of Air Force Training*], 335.
- 1187 He, ed., [*Science of Air Force Training*], 335.
- 1188 He, ed., [*Science of Air Force Training*], 336.
- 1189 "Flight Technique" [飞行技术] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 799. "Technical Training" [技术训练], *PLA Military Terminology dictionary*, 2nd ed., 304.
- 1190 Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 799-810.
- 1191 He, ed., [*Science of Air Force Training*], 340.
- 1192 He, ed., [*Science of Air Force Training*], 391.
- 1193 He, ed., [*Science of Air Force Training*], 341.
- 1194 He, ed., [*Science of Air Force Training*], 395.
- 1195 He, ed., [*Science of Air Force Training*], 395.
- 1196 He, ed., [*Science of Air Force Training*], 395.
- 1197 He, ed., [*Science of Air Force Training*], 343.
- 1198 He, ed., [*Science of Air Force Training*], 401.
- 1199 The foundation for this section is *PLAAF 2010*, Chapter 8 and Allen, *Aviator Recruitment, Education, and Training*.
- 1200 Fu Guoqiang, *Comparison of Chinese and Foreign Military Flight Education*, 55-57. Li, ed., *The Introduction on Air Force Academies Education*, Chapter 13.
- 1201 Unless noted, the information in this subsection came from Xie Hong, ["Training and Education of PLA Air Force Pilots in Reform"] 3-6. ["The PLAAF Reforms Its Aviator Education and Training Model"], 13 November 2012, accessed at news.xinhuanet.com/mrdx/2012-11/13/c_131970220.htm.
- 1202 Kenneth W. Allen, "China's Air Force Male Aviation Cadet Recruitment, Education and Training," (Washington, D.C.: Jamestown Foundation *China Brief*, Volume 12, Issue 5, 12 March 2012).
- 1203 ["2014 Air Force Pilot Recruitment: Introduction to the PLA Air Force Aviation University"] (2014空军招飞:中国人民解放军空军航空大学简介), 22 August 2014, accessed at www.mingshiedu.com/gaokao/ystrc/20130822/10670.html.
- 1204 Xie, ["Training and Education of PLA Air Force Pilots in Reform"]; ["The PLAAF Reforms Its Aviator Education and Training Model"]; Liu Xiaolian and Wang Qingliang, eds., [*PLAAF Female Pilots*] [中国人民解放军空军女飞行员], (Beijing: Lantian Press, September 2012); Hereafter referred to as Liu and Wang, eds., [*PLAAF Female Pilots*]; ["2015 Air Force Pilot Cadet Recruitment Guide"] [二〇一五年度空军招收飞行学员简章], 9 January 2015, accessed at <http://sy.kjzfw.org/Item/829.aspx>; Fu Guoqiang, *Comparison of Chinese and Foreign Military Flight Education*, (Beijing: Academy of Military Sciences Press).
- 1205 "CPC Air Force Pilot Recruitment and Training Work [中共空军飞行员的招训工作], Academic Research (學術研究), not dated, Taipei, Taiwan.
- 1206 ["2014 Air Force Pilot Recruitment: Introduction to the PLA Air Force Aviation University"] (2014空军招飞:中国人民解放军空军航空大学简介), 22 August 2014, accessed at www.mingshiedu.com/gaokao/ystrc/20130822/10670.html.
- 1207 *Ibid.*
- 1208 Huang Linling, ["PLAAF Open House Held at the PLAAF Aviation University on 2 September 2018"], *Air Force News*, 12 September 2018, 3. Liang Xiaoying, Jiang Chunyan, and Wu Binbin, ["Interview with Hongdu L-15 sub-system engineer Cui Yanyong"], *China Aviation News*, 20 March 2018, 2. Mike Yeo, "China's Air Force Apparently Receives First L-15 Jet Trainer," *AINonline*, 1 September 2016, accessed at [s://www.ainonline.com/aviation-news/defense/2016-09-01/chinas-air-force-apparently-receives-first-l-15-jet-trainer](http://www.ainonline.com/aviation-news/defense/2016-09-01/chinas-air-force-apparently-receives-first-l-15-jet-trainer). The L-15 made its first flight in 2006, with development reportedly assisted by Russia's Yakovlev Experimental Design Bureau. On 2 September 2018, a PLAAF open house was held at the PLAAF Aviation University in Changchun, Jilin Province, which included the JL-10/L-15 for the first time.
- 1209 Wang Xinjuan, "First Batch of Air Force Pilot Cadets Flying JL-10 Jet Trainers Graduate," *mod.gov*, 20 July 2020, accessed at http://eng.mod.gov.cn/news/2020-07/20/content_4868426.htm.

- 1210 Zhang Tao, ed., "Active Jet Bombers Become Training Aircraft Again for Cadet Pilots," *mod.gov*, 21 April 2015, accessed at http://eng.mod.gov.cn/DefenseNews/2015-04/21/content_458110.htm. Li Kaiqiang and Li Tianxia, ["Active Jet Bombers Become Training Aircraft Again for Cadet Pilots"] [喷气式轰炸机重返空军飞行院校], *PLA Daily*, 19 April 2015, accessed at http://news.mod.gov.cn/headlines/2015-04/19/content_4580771.htm.
- 1211 ["Air Force First Group of Rear Seat Weapons Control Officers Successfully Complete First Flight"] [空军首批后舱武器控制军官顺利完成首飞], *Air Force News*, 2 March 2011, 1.
- 1212 Sun Maoqing, ["Air Force Starts Recruitment Work for about 1,000 Aviator Cadets for 2007"] [07年空军招飞工作启动招收千余名飞行学员], *Xinhua*, 16 November 2006, accessed at <http://gaokao.tl100.com/200611/17379.shtml>.
- 1213 *China Air Force*, April 2013, 6. This was one of ten highlights during the early part of 2013 that were identified at the beginning of the magazine. The section did not have a title.
- 1214 The primary source of information on female aviators comes from Allen and Kelly, "China's Air Force Female Aviators." Liu and Wang, eds., [*PLAAF Female Pilots*]. Xie Hong, "Training and Education of PLA Air Force Pilots in Reform," *Trainer* (教练机), 2012, No 3 (19 September 2012), 3-6. Rob Coppinger, "China's First Woman in Space: Q&A with Astronaut Liu Yang," *SPACE.com*, 4 October 2012, accessed at www.space.com/17887-china-first-female-astronaut-liu-yang-interview.htm. "China's First Female Aerobatic Fighter Pilots Take Flight," Agence France-Presse, 11 November 2014, accessed at www.defensenews.com/article/20141111/DEFREG03/31110036/China-s-First-Female-Aerobatic-Fighter-Pilots-Take-Flight. See "China's First Group of Female Fighter Pilots Fly the J-10 and an Overseas Debut" (中国首批歼击机女飞行员驾歼-10海外首秀), March 17, 2015, accessed at http://fj.ifeng.com/news/photo/detail_2015_03/19/3679219_0.shtml. "PLAAF aerobatic team arrives in Malaysia for stunt shows," *mod.gov*, March 12, 2015, accessed at http://eng.mod.gov.cn/DefenseNews/2015-03/12/content_4574587.htm. According to one article, the women in the JH-7 are assigned as weapons control officers; however, the available photos of them standing near a JH-7 show only women, which implies they are both pilots and weapons control officers.
- 1215 Bai Wei and Du Haifeng, ["Air Force Will Recruit 11th Group of 35 Female Pilot Cadets"] [空军将招收第11批35名女飞行学员], *Chinamil.com*, 7 June 2017, accessed at http://jz.chinamil.com.cn/n2014/tp/content_7630130.htm. "Chinese Air Force to Recruit 40 Female Student Pilots in 2019," *Xinhua* (English), 11 November 2018, accessed at http://eng.mod.gov.cn/news/2018-11/11/content_4829203.htm. "PLA Air Force recruits its 12th batch of female pilots," *Xinhua* (English), 1 July 2019, accessed at http://eng.mod.gov.cn/news/2019-07/01/content_4844937.htm.
- 1216 Allen and Kelly, "China's Air Force Female Aviators."
- 1217 Mei Huabo, ["Watching over the Air Force Personnel's 'Spiritual House'"] [守望空军人的'精神的家园'], *Air Force News*, 27 November 2012, 4.
- 1218 Liu Hanbao and Yang Fen, "Troops" [点兵] photo and caption only, *China Air Force*, August 2015, 8.
- 1219 ["China's Air Force Will Recruit 30 Female Pilots This Year"] [中国空军今年将招收第九批30名女飞行员], 1 April 2008, accessed at <http://mil.huanqiu.com/china/2008-04/82840.html>.
- 1220 ["Air Force Recruitment for the Ninth Group of Female Pilots Occurs Only Three Years After the Eighth Group"] (空军开招第九批女飞行员与第八批仅相隔三年), 19 February 2008, accessed at http://news.xinhuanet.com/mil/2008-02/19/content_7625251.htm.
- 1221 ["The Tenth Group of Female Pilots March 50 Kilometers through the Wild"] (我军第十批女飞行员亮相野外求生徒步近百里), 15 September 2014, accessed at <http://mil.chinaiiss.com/html/20149/15/peb6e.html>. ["2013 Recruitment Plan Includes 40 Women for the Air Force's 10th Group of Female Pilots"] (2013年空军第十批女飞行员计划招收40名), 15 December 2012, accessed at www.liuxue86.com/a/738709.html.
- 1222 "Grounding Regulations" [停飞制度] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 960. "Grounding" [停飞] in Zhu, ed., [*Air Force Dictionary*], 175. Note: The USAF uses the term washout, while the PLAAF uses grounding.
- 1223 Allen, *Aviator Recruitment, Education, and Training*.
- 1224 Dong Zhaohui, ed., "Feature: Pilots of New Generation in PLA Air Force," *China Military Online* (English), 29 December 2014, accessed at http://english.chinamil.com.cn/news-channels/2014-12/29/content_6289444.htm.
- 1225 Bai Chongming and Ji Changguo, eds., *Air Force Strategy Transformation and Flight Personnel Education Innovation*, (Beijing: Lantian Press, May 2010), 70.
- 1226 *Air Force News*, 31 October 2012, p 3.
- 1227 *PLA Air Force Officer Handbook*.
- 1228 "2019 Air Force Recruitment of Flight Cadets Brochure" [2019年空军招收飞行学员简章], 7 September 2018, accessed at https://gaokao.eol.cn/zhaofei/fxyy/201809/t20180907_1624047.shtml.
- 1229 ["2007 Air Force Pilot Recruitment Begins, Recruiting More Than 1,000 Cadets"] [07年空军招飞工作启动招收千余名飞行学员], accessed at <http://gaokao.tl100.com/200611/17379.shtml>.
- 1230 ["College Student Pilot Recruitment for 2009 Highest Number; 1,166 High School Graduates Selected as Air Force Flight Cadets"] [大学生招飞2009年人数最多;1166名大中学生被录取为空军飞行学员], accessed at http://www.zhld.com/zkwb/html/2009-07/15/content_33172.htm.
- 1231 ["2010 Air Force Recruited 836 High School Students as Pilot Cadets"] [2010年空军招收836名高中生飞行学员], 30 August 2010, accessed at http://www.educhn.net/Educational/gk/gk_news/gk_news_zh/20100830/102601.htm.
- 1232 ["The Air Force's Pilot Recruitment Work Is Fully Launched"] [空军2011年招飞工作全面启动即日起即可报名], October 2010, accessed at http://www.zjgw.org/html/xwsz/zyxw/201010/21_13242.html.
- 1233 ["More Than 1,000 New High School Graduates Become Pilot Cadets"] [2012年度空军录取的全国1000余名应届高中毕业生飞行学员], accessed at www.tesoon.com/ask/hm/22/105924.htm.
- 1234 [Air Force Recruits 11th Group 35 Female Pilot Cadets"] [空军将招收第11批35名女飞行学员], 7 June 2017, accessed at <http://www.kjzfw.net/Item/19.aspx>.
- 1235 "2014 PLA Air Force Pilot Recruitment in Full Swing," *China Military Online* (English), 23 June 2014, accessed at http://english.chinamil.com.cn/news-channels/china-military-news/2014-06/23/content_5996653.htm.

- 1236 ["First Batch of Tsinghua Class Flight Students Entered the Air Force Battle Sequence"] [首批清华班飞行学员步入空军战斗序列], 17 June 2016, https://www.guancha.cn/military-affairs/2016_06_17_364387.shtml.
- 1237 ["Air Force Recruits 1,300 New Pilots"] [空军将招收1300名新飞行员], accessed at www.kjzfw.net/Item/787.aspx.
- 1238 ["Selection of New Air Force pilots"] [万里挑一空军飞行员], accessed at https://www.thepaper.cn/newsDetail_forward_1748631.
- 1239 [Air Force Recruits 11th Group 35 Female Pilot Cadets"] [空军将招收第11批35名女飞行学员], 7 June 2017, accessed at <http://www.kjzfw.net/Item/19.aspx>.
- 1240 Bai Wei and Li Jianwen, "PLA Air Force's Pilot Recruitment Hits a New Record High in Quantity and Quality," 18 July 2018, accessed at http://eng.mod.gov.cn/news/2018-07/18/content_4819607.htm.
- 1241 ["2020 Air Force Pilot Recruitment Begins"] [2020年度空军招飞开始], 12 October 2019, accessed at <https://mp.weixin.qq.com/s/op8qlGkpTKMy3BN0WxjEA>.
- 1242 ["2019 Air Force Pilot Recruitment Work Begins"] [2019年度空军招飞定选工作全面展开], *Xinhua*, 15 June 2019, accessed at http://www.xinhuanet.com/mil/2019-06/15/c_1210159883.htm.
- 1243 Zhang He and Guo Ming, ["Central TCAF New Pilot Training"], *Air Force News*, 5 December 2017, 2.
- 1244 Bian Cheng and Chen Yi, ["An Eastern TCAF Air Brigade Improved Its New Pilots' Sense of Combat Readiness"], *Air Force News*, 22 December 2017, 1.
- 1245 Deng Dongzhi, ["Western TCAF Air Brigade Receives Transferred Pilots Following Reform"], *Air Force News*, 25 May 2018, 1.
- 1246 The foundation for this section is PLAAF 2010, Chapter 8 and Allen, *Aviator Recruitment, Education, and Training*.
- 1247 *Air Force News*, 2 June 2005, 4.
- 1248 *Air Force News*, 12 February 2004, 4. *Air Force News*, 29 May 2003, 4.
- 1249 For an example of the increase in the percentage of tactics training from the previous 50 percent to 68.5 percent for one Beijing MRAF air regiment, see *Air Force News*, 19 February 2002, 2.
- 1250 He, ed., [*Science of Air Force Training*], 337.
- 1251 He, ed., [*Science of Air Force Training*], 340.
- 1252 The PLAAF dictionary defines minimum altitude (超低空) as less than 100 meters, low altitude (低空) as 100 to 1,000 meters, medium altitude (中空) as 1,000 to 7,000 meters, high altitude (高空) as 7,000 to 10,000 meters, and very high altitude (超高空) as 15,000 meters and above. Zhu, ed., [*Air Force Dictionary*], 728.
- 1253 He, ed., [*Science of Air Force Training*], 337-338.
- 1254 He, ed., [*Science of Air Force Training*], 337-338.
- 1255 He, ed., [*Science of Air Force Training*], 338.
- 1256 He, ed., [*Science of Air Force Training*], 338.
- 1257 He, ed., [*Science of Air Force Training*], 338.
- 1258 He, ed., [*Science of Air Force Training*], 338.
- 1259 He, ed., [*Science of Air Force Training*], 338.
- 1260 Zhu, ed., [*Air Force Dictionary*], 23.
- 1261 Zhu, ed., [*Air Force Dictionary*], 728. Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 800.
- 1262 This information was taken from analysis of articles in *Air Force News* from 2002 through 2008.
- 1263 McCaslin and Erickson, *Selling a Maritime Air Force*.
- 1264 Allen, "PLA Air Force Operations and Modernization."
- 1265 *Air Force News*, 30 July 2002, 2.
- 1266 Edmund J. Burke and Astrid Stuth Cevallos, "PRC Leadership Dynamics Shaping the Future of the PLA Air Force: Examining the Party's Military Reform Efforts," Edmund J. Burke, Astrid Stuth Cevallos, Mark R. Cozad, and Timothy Heath, *Assessing the Training and Operational Capabilities Proficiency of China's Aerospace Forces*, (Santa Monica, CA: RAND Corporation, 2016), 18. In 2013 alone the Air Force was reportedly able to complete 333 patrols. See Zhu Ningzhu, ed., "Chinese Military Planes Regularly Patrol ADIZ: Spokesman," *Xinhua* (English), January 23, 2014.
- 1267 In March 2015, the Air Force sent aircraft for the first time into the Western Pacific, see "PLA Air Force Conducts First Training in West Pacific," *China Military Online* (English), March 30, 2015, accessed at http://english.chinamil.com.cn/news-channels/2015-03/30/content_6420538.htm. In December 2017, the PLAAF transited over the Tsushima Strait for the first time and carried out an exercise in the Sea of Japan, see Zhao Lei, "Air Force Flies Exercises Over Tsushima Strait, Sea of Japan," *China Daily* (English), 19 December 2017, accessed at http://www.chinadaily.com.cn/cndy/2017-12/19/content_35330227.htm.
- 1268 Tara Copp, "China Has Practiced Bombing Runs Targeting Guam, U.S. Says," *Defense News*, October 31, 2017, accessed at [s://www.defensenews.com/flashpoints/2017/10/31/china-has-practiced-bombing-runs-against-guam-us-says/](http://www.defensenews.com/flashpoints/2017/10/31/china-has-practiced-bombing-runs-against-guam-us-says/).
- 1269 Yaoning, ed., "China's Air Force Conducted Four Drills over the Western Pacific in 2015," China Radio International in English, 4 January 2016, accessed at <http://english.cri.cn/12394/2016/01/03/4182s911236.htm>.
- 1270 Peter Symonds, "Japan Scrambles Fighter to Intercept Chinese Military Aircraft," World Socialist Website (English), 26 September 2016, accessed at <https://www.wsws.org/en/articles/2016/09/26/jpch-s26.html>.

- 1271 “PLAAF Deploys 40 Aircraft to Western Pacific in Show of Strength,” *IHS Jane’s Defence Weekly*, 27 September 2016, accessed at <http://www.janes.com/article/64114/plaaf-deploys-40-aircraft-to-western-pacific-in-show-of-strength>. Yamei, ed., “China Sends Su-35 Fighter Jets for Island Patrol Training,” *Xinhua* (English), 11 May 2018, accessed at http://www.xinhuanet.com/english/2018-05/11/c_137172618.htm.
- 1272 Peter Symonds, “Japan Scrambles Fighter to Intercept Chinese Military Aircraft,” World Socialist Website in English, 26 September 2016, accessed at <https://www.wsws.org/en/articles/2016/09/26/jpch-s26.html>. Nathan Beauchamp-Mustafaga, Derek Grossman and Logan Ma, “Chinese Bomber Flights Around Taiwan: For What Purpose?,” *War on the Rocks*, 13 September 2017, accessed at <https://warontherocks.com/2017/09/chinese-bomber-flights-around-taiwan-for-what-purpose/>.
- 1273 *Annual Report to Congress 2016*.
- 1274 Zeng Ke, [“Far Seas in the Sky”] [远海上空], *China Air Force*, July 2017, 28–29.
- 1275 Li Kaiqiang and Zhang Hongwei [李开强, 张宏伟], “Air Force Organized First Live Fire Training at Sea for Flight School” [空军首次组织飞行院校海上实弹打靶], *PLA Daily* [解放军报], May 20, 2015, accessed at http://www.mod.gov.cn/academy/2015-05/20/content_4585772.htm.
- 1276 Liangyu, ed., “Chinese Air Force Patrol South China Sea,” *Xinhua* (English), November 23, 2017, accessed at http://news.xinhuanet.com/english/2017-11/23/c_136774671.htm.
- 1277 The inclusion of regular high seas training and live fire training at sea events are notable events as the PLAAF Aviation University only began conducting maritime flight training, using a J-8 in 2014, see “PLA JL-8 Trainer Aircraft Conducts Maritime Training for First Time” [我军JL-8教练机首次进行海上训练低空掠过客轮], *Sina* [新浪], September 19, 2014, accessed at <http://mil.news.sina.com.cn/2014-09-19/0922801951.html>. Also, Li Kaiqiang and Zhang Hongwei, “Air Force Organized First Live Fire Training at Sea for Flight School” [空军首次组织飞行院校海上实弹打靶], *PLA Daily*, May 20, 2015, accessed at http://www.mod.gov.cn/academy/2015-05/20/content_4585772.htm.
- 1278 Yin Bangshi and Zhao Shijie, [“The ‘Four Emphases’ Assisting in Improving Actual Combat Capabilities: Snapshots of Southern Theater Command Air Force Air Regiment Launches High-Intensity Live-Fire Training”] [“四突出”助力实战能力提升: 南部战区空军航空兵某团开展大强度实弹训练掠影], *Air Force News*, July 20, 2017, 4.
- 1279 [“Military Representatives Talk About the Air Force’s Actual-Combat Training”] [军队代表畅谈空军实战化训练], *Xinhua*, 11 March 2018, accessed at http://www.xinhuanet.com/mil/2018-03/11/c_129827188.htm. For more on the PLAAF’s key training brands, see Allen and Allen, *The PLA Air Force’s Four Key Training Brands*.
- 1280 Huang Panyue, ed., “PLA Air Force Unveils ‘Golden Dart-2016’ Military Competition,” *China Military Online* (English), 22 July 2016, accessed at http://eng.chinamil.com.cn/view/2016-07/22/content_7183724.htm. [“China Air Force 2015 ‘Golden Darts’ Competition for the First Time Will be Organized to Orient Towards the Sea”] [中国空军2015年“金镖”比武首次在海上方组织] *China News Service* [中国新闻网], 8 September 2015, accessed at <http://military.people.com.cn/n/2015/0908/c1011-27557653.html>.
- 1281 Allen and Allen, *The PLA Air Force’s Four Key Training Brands*, 4. Zhang Yuqing, [“‘Golden Helmet’ Competition Pushes Air Force Actual Combat Military Training into a New Age”] [“金头盔”比武推动空军实战化军事训练迈进新时代], *Xinhua News Agency* [新华社], 13 November 2017, accessed at http://kj.81.cn/content/2017-11/13/content_7821660.htm.
- 1282 Zhang Yuqing and Zhang Mimi, [“China’s Air Force Strengthens Open/Far Sea Training to Improve Strategic Capability”] [中国空军加强远海训练提升战略能力], *Xinhua* Online, 15 December 2016, accessed at http://news.xinhuanet.com/2016-12/15/c_1120123755.htm.
- 1283 Mark R. Cozad and Nathan Beauchamp-Mustafaga, *The People’s Liberation Army Air Force Operations over Water: Maintaining Relevance in China’s Changing Security Environment*, (Santa Monica, CA: RAND Corporation, 2017), 19.
- 1284 Ma Xiaotian, “Strive to Improve the Ability of the Air Force to Fight and Win” [努力提高空军部队能打仗打胜仗能力], *PLA Daily*, 2 April 2014, accessed at http://www.81.cn/2014-content_18620/2014-04/02/content_6153511.htm.
- 1285 For an example, see the first post on the PLAAF’s Weibo account on 18 May 2018, accessed at <https://m.weibo.cn/status/424103308679115>.
- 1286 Mimi Lau and Liu Zhen, “China’s New Air Force Chief Lays Out Long-Range Mission,” *South China Morning Post*, 4 September 2017, accessed at <https://www.scmp.com/news/china/diplomacy-defence/article/2109566/chinas-new-air-force-chief-lays-out-long-range-mission>.
- 1287 Mimi Lau and Liu Zhen, “China’s New Air Force Chief Lays Out Long-Range Mission,” *South China Morning Post*, 4 September 2017, accessed at <https://www.scmp.com/news/china/diplomacy-defence/article/2109566/chinas-new-air-force-chief-lays-out-long-range-mission>.
- 1288 Xu Ban and Ren Daguang, [“PLA Air Force Holds Military Training Conference”] [空军召开军事训练会议], *Air Force News*, 11 January 2018, 1.
- 1289 Yin Bangshi and Zhao Shijie, [“The ‘Four Emphases’ Assisting in Improving Actual Combat Capabilities: Snapshots of Southern Theater Command Air Force Air Regiment Launches High-Intensity Live-Fire Training”] [“四突出”助力实战能力提升: 南部战区空军航空兵某团开展大强度实弹训练掠影], *Air Force News*, 20 July 2017, 4.
- 1290 Jeffrey Lin and P.W. Singer, “Finally, a Modern Chinese Aerial Tanker,” *Popular Science*, 2 April 2014, accessed at <https://www.popsci.com/blog-network/eastern-arsenal/finally-modern-chinese-aerial-tanker>. For the rumored development of a tanker version of the Y-20, see *Asia Times* Staff, “‘Chubby Girls’ Sister to Boost China’s Military Capability,” 14 December 2017, accessed at <http://www.atimes.com/article/chubby-girls-sister-boost-chinas-military-capability/>.
- 1291 Eric Heginbotham, et.al., *The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power*, 33.
- 1292 Yang Qingqun, [“While Inspecting a Certain Guangzhou Military Region Air Force Unit, Ma Xiaotian, Member of the Central Military Commission and Commander of the Air Force, Emphasized that Joint Maritime Search and Rescue Will Require Integration of Military and Local Organizations and High Command Efficiency”] [中央军委委员, 空军司令员马晓天在广空部队检查调研时强调: 海上联合搜救要军地-体多元融合指挥高效], *Air Force News*, 10 November 2014, 1.
- 1293 Ibid.
- 1294 Ibid.

- 1295 Luo Erwen and Xiong Qingyong, ["Build a Maritime Real-War Actual-Training 'Magic Stone'"] [打造海上实战实训的'魔导石'], *China Air Force*, May 2018, 28-29.
- 1296 Mark R. Cozad and Astrid Stuth Cevallos, "Trends in PLA Air Force Joint Training: Assessing Progress in Integrated Joint Operations," Edmund J. Burke, Astrid Stuth Cevallos, Mark R. Cozad, and Timothy Heath, *Assessing the Training and Operational Capabilities Proficiency of China's Aerospace Forces*, (Santa Monica, CA: RAND Corporation, 2016), 53.
- 1297 *Ibid.*, 45.
- 1298 Huang Panyue, ed., "Su-35, J-20 Fighter Jets Help Maintain China's Airspace Safety," *China Military Online* (English), 12 February 2018, accessed at http://english.pladaily.com.cn/view/2018-02/12/content_7942685.htm.
- 1299 First video posted on the PLAAF's official Weibo account on 23 April 2018, accessed at <https://m.weibo.cn/status/4231887629616281>.
- 1300 Bai Tiantian, "PLA Sends Second Planes Round Taiwan for Second Time in a Week," *Global Times* (English), 26 April 2018, accessed at <http://www.globaltimes.cn/content/1099897.shtml>.
- 1301 The monthly quota averages about 8.3 percent of the total, with most units completing their quotas in early December. For example, the 12 October 2004 issue of *Air Force News* noted that a Beijing MRAF air regiment had already finished 88 percent of its annual flying training plan. In some cases, units exceeded their annual quota by a few percent. By the end of November 2005, a Nanjing MRAF air regiment had completed 103 percent of its flying training quota for the year. *Air Force News*, 6 December 2005, 1. For example, in 2000, the flying hour quota for one regiment subordinate to a Shenyang MRAF air division was 2,400 hours. This number went up several hundred hours in 2005. Wang Zhenxiang (王振祥) is the Director of the Equipment Department at the unidentified air division, and the regiment most likely had 24 aircraft.
- 1302 *Air Force News*, 6 June 2006, 2. The regiment most likely had 24 aircraft.
- 1303 See *Air Force News*, 24 December 2002, 3. *Air Force News*, 28 December 2004, 1. *Air Force News*, 30 December 2004, 1. *Air Force News*, 6 January 2005, 1. Numerous *Air Force News* article note that flying pretty much stops from around 24 December to 3-4 January. During this period, maintenance on the aircraft is completed.
- 1304 Michael S. Chase, Kenneth W. Allen, and Benjamin S. Purser III, *Overview of People's Liberation Army Air Force "Elite Pilots"*, (Santa Monica, CA: RAND Corporation, 2016). Hereafter referred to as Chase, Allen, and Purser, *Overview of PLAAF "Elite Pilots."*
- 1305 *PLAAF 2010*, Chapter 8. See *Air Force News*, 19 February 2002, 2. Another unit (Jinan MRAF) increased its tactics training from 20 percent to 52.8 percent by the end of 2002. See *Air Force News*, 5 November 2002, 2.
- 1306 A 19 February 2002 *Air Force News* article (page 2) summed up several of the changes from the 2002 OMTE. 1 January and 9 February 2002, a Beijing MRAF fighter regiment flew on 14 days, of which 10 included flight activity that continued from daytime into night. The average flight time during each flying period increased 16 hours over 2001, night flying was 44 percent of the total flight time, and tactical training increased to 68.5 percent compared to 50 percent in the past. In the past, basic training was the primary, but now tactical training has become the primary training subject. In the past, small flying periods were the primary, now large training periods are the primary. Tactical training includes intercepts in the clouds at night, night formation flights, and red and blue force opposition training.
- 1307 *Air Force News*, 16 January 2003, 2.
- 1308 *Air Force News*, 6 June 2006, 2. In 2000, the flying hour quota [飞行时间指标] for one Shenyang MRAF air regiment was 2,400 hours. The regiment flew on only 110 days during the year. The total number of maintenance days (维修日) for the year reached 114, which included quarterly maintenance days at the changes of seasons and after holidays. In 2005, the number of flying hours in the quota was several hundred more hours than for 2000, but took only 70 flying days to meet the quota. Furthermore, maintenance personnel were at the airfield for 144 days during the year instead of 224 in 2000.
- 1309 A 25 April 2002 *Air Force News* article (page 2) stated that, according to the Commander of a Nanjing MRAF air regiment, he conducted 5 sorties on 29 March 2002, the last of which was a tactical reconnaissance mission. Over three days, his regiment flew 70 hours. This training was conducted under the new OMTE, which allows for more flying hours, and longer flying periods. Now, each pilot flies one or two more sorties per flying period than under the old guidelines. In addition, whereas the old guidelines allowed for each pilot to only fly 2 hours and 30 minutes, the new guidelines allows for pilots to fly 3 hours and 20 minutes or more for each pilot day (*feixingyuan ri*; 飞行员日). Compared to the same period in 2001, the regiment had flown 4 fewer flying periods, but had flown 330 hours more, which was 20 hours more per flying day than 2001.
- 1310 *Air Force News*, 11 February 2003, 2.
- 1311 On 19 January 2003 [Sunday], a Shenyang MRAF air regiment took the entire day off from flying, but the pilots were expected to use the simulators. This is a new regulation for the regiment. The regiment wants to have each new pilot to first conduct each new flying subject in a simulator before flying it in an aircraft. Each new pilot should receive training in a simulator once per week in the evening. *Air Force News*, 11 February 2003, 2.
- 1312 See [*Brief History of the PLAAF Second Aviation School*], [中国人民解放军第二航空学校简史], (Chengdu: Air Force Second Aviation School, August 1982). Wang, ed., *China Today: Air Force*, 299.
- 1313 Yao Jun, 376.
- 1314 Allen, Krumel, and Pollack, Chapter 4. In 1984, the PLAAF's serious aircraft accident rate was 2.04. The three categories of aircraft accidents are (1) aircraft and pilot lost; (2) aircraft lost, pilot safe; and (3) aircraft damaged, pilot safe.
- 1315 According to the May 1999 issue of *Air Force Magazine*, the U.S. Air Force Class-A accident rate (loss of life, permanent total disability, destroyed aircraft, or more than \$1 million in property damage) average for the ten year period of 1989-1998 was 1.4 accidents per 100,000 flying hours.
- 1316 *China Today: Aviation Industry* [当代中国的航空工业], (Beijing: China Academy of Social Science Press, 1988), 83.
- 1317 Allen, Krumel, and Pollack, *China's Air Force Enters the 21st Century*, 130.

- 1318 Yu Hao et al., *China Today: The PLA* [当代中国:中国人民解放军], two volumes, (Beijing: Renmin Chubanshe, 1994), 78. Found in You Ji, *The Armed Forces of China, Australia*, (Australia: Allen & Unwin, 1999), 119.
- 1319 ["PLAAF Participation in the PRC's 60th Anniversary"], *China Air Force*, November-December 2009, 56-57. ["Golden Helmet Winners"], *China Air Force*, June 2012, 41-45.
- 1320 ["Annual Pilot Training in the U.S. is 150 Hours, 50 Hours in Russia, How Much in China?"] [战机飞行员训练时间,美国150小时,俄罗斯50小时,中国是多少?], 8 July 2019, *Sina News Online; Military Highlights*, https://k.sina.com.cn/article_6646999815_18c312b0700100ohn3k.html?from=mil.
- 1321 ["China's Air Force Pilots Fly More Hours Per Year Than the U.S. Military? Can Be Cautiously Optimistic"] [我空军飞行员年飞行小时超过美军? 可以谨慎乐观], qun.com, accessed at https://k.sina.cn/article_6387833897_17cbe9c290010030sn.html.
- 1322 *Air Force News*, 5 December 2002, 1.
- 1323 Lu Wen, [*Strategic Logistics Support in Joint Operations*] [联合战役战略后勤支援], (Beijing, National Defense University Press, April 2000), 153. The paper did not identify which aircraft were being described as comparatively advanced, but most likely it was the J-8 and/or Su-27.
- 1324 Wen Guangchun, ed., [*Logistics Support for Mobile Operations*] [机动作战后勤保障], (Beijing: PLA General Logistics Department Headquarters Department, Liberation Army Publishers, January 1997), 196.
- 1325 *Air Force News*, 5 December 2002, 1.
- 1326 A page one article in the 17 October 2002 *Air Force News* noted that 100 percent of all PLAAF aircraft produced in China can now use jet fuel produced in China.
- 1327 *Air Force News*, 25 February 2003, 1.
- 1328 *Air Force News*, 24 June 2006, 1.
- 1329 Timothy R. Heath, "New Type Support Developments in PLAAF Air Station Logistics and Maintenance," in Edmund J. Burke, Astrid Stuth Cevallos, Mark R. Cozad, and Timothy R. Heath, *Assessing the Training and Operational Proficiency of China's Aerospace Forces: Selections from the Inaugural Conference of the China Aerospace Studies Institute (CASI)*, (Santa Monica, CA: RAND Corporation, Chapter 3, 2016).
- 1330 Han Yunlong and Feng Junjie, ["Ensuring That Every Drop of Fuel is Used Effectively"] [让每一滴油都有效燃烧], *Air Force News*, April 29, 2010.
- 1331 Ma Jun and Liu Shu, ["Western TCAF Airfield Station Supports Various Missions"], *Air Force News*, 17 September 2018, 2.
- 1332 Xu Yi, Liu Hanbao, and Wang Meng, ["Actual-Combat Training in a Northern TCAF Air Brigade"], *Air Force News*, 19 April 2018, 1.
- 1333 Fang Leilei and Wang Tianwei, ["Harbin Flight Academy Vehicle Unit Tailors Fuel Specifications"], *Air Force News*, 23 January 2018, 2.
- 1334 Man Wei and Chen Wenlong, ["Eastern TCAF airfield Civil-Military Fuel Partnership"], *Air Force News*, 30 March 2016.
- 1335 Chen Aizhu and Min Zhang, "China Plans to Cut Jet Fuel Prices to Aid Airlines, Consumers," *Reuters*, 17 May 2019, accessed at <s://www.reuters.com/article/us-china-aviation-fuel-prices/china-plans-to-cut-jet-fuel-prices-to-aid-airlines-consumers-idUSKCN1SN0DZ>.
- 1336 *Air Force News*, 28 February 2004, 1.
- 1337 *Air Force News*, 20 January 2004, 4.
- 1338 *Air Force News*, 19 February 2005, 1.
- 1339 *Air Force News*, 10 February 2004, 3.
- 1340 *Air Force News*, 10 February 2004, 1.
- 1341 Cao Fei and Yang Hua, ["Air Force Airfield Bird Strike Prevention Work Regulations"], *Air Force News*, 26 November 2019, 1.
- 1342 Xu Yi and Xing Bowen, ["PLAAF Holds Meeting with Civil Authorities to Manage Bird Collisions"], *Air Force News*, 22 November 2016, 2.
- 1343 Zhang Tao and Wang Xue, ["Central TCAF airfield station bird-strike prevention"], *Air Force News*, 3 July 2017, 2.
- 1344 Yi Jibin and Yang Hua, ["Air Force Logistics Department Holds Bird Migration Seminar"], *Air Force News*, 13 February 2018, 2.
- 1345 Lin Jing, Jiang Changrong, and Wu Kangshuai, ["An Eastern TCAF Airfield Station Explores Bird Strike Prevention Measures to Ensure Flight Safety"], *Air Force News*, 18 April 2018, 2.
- 1346 Yang Long and Jin Zhiqiang, ["Nanjing MRAF Airfield Station Anti-Bird Measures"], *Air Force News*, 13 January 2016, 1. Yang Junpeng and Kong Yaokun, ["Northern TCAF Airfield Station's Targeted Sound-Wave Bird-Repeller"], *Air Force News*, 13 June 2018, 2. Lin Jing, Jiang Changrong, and Wu Kangshuai, ["An Eastern TCAF Airfield Station Explores Bird Strike Prevention Measures to Ensure Flight Safety"], *Air Force News*, 18 April 2018, 2.
- 1347 Zeng Ke and Liu Mengye, ["Southern TCAF Aviation Regiment Bird Strike Prevention and Dispersal Training and Measures"], *Air Force News*, 10 October 2016, 1.
- 1348 Dong Bin, Zhang Lei, and Zhang Qinghong, ["Central TCAF Aviation Division Bird Strike and Crash Landing"], *Air Force News*, 19 October 2016, 1.
- 1349 Zhang Jinhua and Meng Qingbao, ["Northern TCAF Airfield Deals with Flaming Engines"], *Air Force News*, 20 July 2017, 1.
- 1350 Lin Jing, Jiang Changrong, and Wu Kangshuai, ["An Eastern TCAF Airfield Station Explores Bird Strike Prevention Measures to Ensure Flight Safety"], *Air Force News*, 18 April 2018, 2.
- 1351 Yang Songsong, Cao Chuanbiao, and Wang Li, "21 Minutes of Testing," *Air Force News*, 15 May 2012, 1. An Hongxin, Cao Chuanbiao, and Wang Li, "Lanzhou MRAF Base Pilots Zhang Jianxing and Zhu Zhenhua Successfully Deal with Serious In-Flight Malfunction: Part 1," *Air Force News*, 17 May 2012, 2. An Hongxin, Yang Songsong, and Cao Chuanbiao, "Lanzhou MRAF Base Pilots Zhang Jianxing and Zhu Zhenhua Successfully Deal with

Serious In-Flight Malfunction: Part 2,” *Air Force News*, 21 May 2012, 2. An Hongxin, Cao Chuanbiao, and Wang Li, “Lanzhou MRAF Base Pilots Zhang Jianxing and Zhu Zhenhua Successfully Deal with Serious In-Flight Malfunction: Part 3,” *Air Force News*, 22 May 2012, 2. <http://hi.baidu.com/%D3%C8%CA%AF%B3%F3%CA%AF/blog/item/87fadiabb9bod6294b36d6f1.html> and <http://news.jschina.com.cn/system/2012/05/15/013340592.shtml>.

- 1352 “Chinese Female J-10 Fighter Pilot Killed in an Air Accident,” *Global Times* (English), 12 November 2016, accessed at <http://www.globaltimes.cn/content/1017554.shtml>.
- 1353 Brian W. Everstine, “Report: Systemic Aircrew, Maintenance Issues Root Cause of DOD Mishap Rates,” *Air Force Magazine*, 3 December 2020, accessed at <https://www.airforcemag.com/report-systemic-aircrew-maintenance-issues-root-cause-of-dod-mishap-rates/>.
- 1354 “Aircraft Maintenance” [飞机维修] and “Flight Line Maintenance” [飞行机务准备] in [*Air Force Dictionary*], 318, 324. Wang Shangren, “Flight Line Maintenance” [飞行机务准备] in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 533-534.
- 1355 “Maintenance Pattern” [维修方式] in [*Air Force Dictionary*], Shanghai: Shanghai Dictionary Publishing House, September 1996, 319.
- 1356 “Scheduled Maintenance” [定期检修] in [*Air Force Dictionary*], 328.
- 1357 Ma Chaobin, [“Record of a Shenyang MRAF Flight Academy’s 1st Brigade’s Maintenance Group Chief Mechanic Zheng Chuanli”], *Air Force News*, 29 May 2013, 2.
- 1358 “Maintenance Day” [机械日] in [*Air Force Dictionary*], 328. Huang Tianpu, “Maintenance Day” [机械日] in Yao., ed., [*China Air Force Encyclopedia*], Volume 1, 536.
- 1359 “Aircraft Seasonal Maintenance” [飞机换季工作] in [*Air Force Dictionary*], 328. Fang Wenzhou, [“Jinan MRAF Air Regiment’s Aircraft Maintenance Group”], *Air Force News*, 29 May 2013, 2.
- 1360 *Air Force News*, 6 June 2006, 2.
- 1361 *Air Force News*, 1 September 2005, 4.
- 1362 *Air Force News*, 24 February 2004, 1.
- 1363 *Air Force News*, 6 January 2005, 1.
- 1364 *Air Force News*, 16 February 2006, 2.
- 1365 *Air Force News*, 25 July 2006, 2.
- 1366 *Air Force News*, 23 September 2006, 2.
- 1367 *Air Force News*, 23 February 2006, 2.
- 1368 The information for the 2010s comes primarily from Timothy R. Heath, “New Type Support: Developments in PLAAF Air Station Logistics and Maintenance” in Edmund J. Burke, Astrid Stuth Cevallos, Mark R. Cozad, and Timothy R. Heath, *Assessing the Training and Operational Proficiency of China’s Aerospace Forces: Selections from the Inaugural Conference of the China Aerospace Studies Institute (CASI)*, (Santa Monica, CA: RAND Corporation, 2016).
- 1369 “Nanjing MR AF Aviation Division Builds New Support Model for Fighters,” *PLA Daily Online* in Chinese, 26 May 2010.
- 1370 “PLA Air Force Builds Informatized Support Platform for New-Type Fighters,” Video, *CCTV-7* in Chinese, 29 June 2010.
- 1371 “PLA Air Force to Attain Epoch-Making Progress in Aviation Maintenance Support Model,” *PLA Daily Online* in English, 19 August 2010.
- 1372 “PRC TV Airs Report on PLA Air Force Division’s Flight Clearance Work,” *CCTV-Xinwen* in Mandarin, 17 September 2010.
- 1373 “PLA Air Force Builds New Models of Support for 3rd-Generation Fighters,” Video, *CCTV-7* in Mandarin, 21 September 2010.
- 1374 “PLAAF Adopts New Equipment Support Model, Reduces Aircraft Preparation Time, Video, *CCTV-7* in Mandarin, 13 July 2011.
- 1375 “PLA Aviation Repairs Plant Adopts Innovative Methods for Maintenance Support,” Video, Beijing *CCTV-7* in Mandarin, 19 October 2011.
- 1376 Fang Wenzhou, [“Jinan MRAF Air Regiment’s Aircraft Maintenance Group”], *Air Force News*, 29 May 2013, 2.
- 1377 Discussion with Jack Bianchi, Research Fellow, Center for Strategic and Budgetary Assessments (CSBA), June 2020.
- 1378 Yu Lei et al., [“Equipment Support Command: Change from Traditional Methods Toward Network-Centric Linkage”] [保障指挥: 由传统方式向网路链接转变], *Air Force News*, 25 October 2007.
- 1379 Liu Shenghui et al., [“Four Transformations: Erecting a Generation of New Ladders to Success”] [四个转变: 架起一代新天梯], *Air Force News*, 12 May 2010.
- 1380 The information concerning the four elements in this section on Maintenance Procedure Reforms came from Timothy R. Heath, “New Type Support Developments in PLAAF Air Station Logistics and Maintenance,” in Edmund J. Burke, Astrid Stuth Cevallos, Mark R. Cozad, and Timothy R. Heath, *Assessing the Training and Operational Proficiency of China’s Aerospace Forces: Selections from the Inaugural Conference of the China Aerospace Studies Institute (CASI)*, (Santa Monica, CA: RAND Corporation, Chapter 3, 2016).
- 1381 Meng Qingbao, [“A Shenyang Military Region Air Force Aviation Regiment Finds Solutions for Support Problems While Deployed”] [模块化配置解决导地保障难题], *Air Force News*, 18 November 2011.
- 1382 Li Guowen and Yan Guoyou, [“In Training Support, a Certain Nanjing MRAF Air Division Bids Farewell to Collective Maintenance”] [南空某航空兵师训练保障告别集体维护], *PLA Daily* [解放军报], June 1, 2011, 5.
- 1383 Liu Shenghui et al.

- 1384 Wang Xuegang and Chao Xiaoming, ["An Eyewitness Account of an Exercise for Comparing the Modes of Servicing, Repairing, and Providing Support"] [空军某飞院模型飞机维修保障对比演练现场见闻], *Air Force News*, 6 October 2010.
- 1385 Liu Shenghui et al.
- 1386 Lin Yuan and Su Xiao, ["An Eastern TCAF Air Brigade Learns from Its Actual-Combat Training"], *Air Force News*, 6 December 2017, 1-2.
- 1387 Cheng Guo, *Air Force News*, 29 December 2017, 3.
- 1388 Ma Xiaoyu, ["Western TCAF Aviation Unit New Development in Aircraft Maintenance Work"], *China Air Force*, 1 August 2017, 46-47.
- 1389 Yan Jin and Li Feng, ["Western TCAF aviation unit carries out new training regulations with new domestic combat aircraft"], *China Air Force*, March 2018, Issue 242, 10-27.
- 1390 Huang Chunyi, Chi Yuguang, Ding Yibo, and Dai Zhihua, "A Day in the Life of an Aircraft Maintenance Unit," *China Air Force*, April 2014, 12-19.
- 1391 *PLAAF 2010*, Chapter 8. Wang, ed., *China Today: Air Force*, 507. Of the 10,000 pilots in the entire PLAAF in 1989, 7 percent of the total and 15 to 20 percent of the fighter pilots were special grade. *Air Force News* and *China Air Force* have numerous biographies of pilots that include these four grades.
- 1392 Wang, ed., *China Today: Air Force*, 502-507.
- 1393 *PLAAF 2010*, Chapter 8.
- 1394 Wang, ed., *China Today: Air Force*, 507. "Grounding Regulations" [停飞制度] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 960. "Grounding" [停飞] in Zhu, ed., [*Air Force Dictionary*], 175.
- 1395 ["Li Hao: Behind the Drone Flight 'People Everywhere'"] [李浩: 无人机飞行背后"无处不在的人"], 81.cn, 24 May 2017, accessed at http://www.81.cn/2017/d96/2017-05/24/content_7658929.htm.
- 1396 *Air Force News*, 6 July 2017, 3.
- 1397 Xue Wenhai and Wang Gang, "Clicking on the Battlefield in the Air," *China Air Force*, July-August 2005, 36-37. The flight parameter recording system is usually noted as *feican* (飞参), which is short for *feixing canshu jilü xitong* (飞行参数记录系统) and *feican kongzhi xitong* (飞参控制系统). "Flight Parameter Recording System" (飞行参数记录系统/ 飞参) in Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 787.
- 1398 Ibid.
- 1399 Ibid.
- 1400 Ibid.
- 1401 Sun Lin and Yang Jin, ["Chengdu MRAF Air Division Overview"], *Air Force News*, 5 January 2016, 3.
- 1402 *Air Force News*, 30 May 2002, 1.
- 1403 Liu Shurui, ["Northern TCAF Air Brigade Flight Training Safety Measures"], *Air Force News*, 20 January 2017, 3.
- 1404 Ma Maorong and Chen Yang, ["An Eastern TCAF Air Brigade Developed a New Type of Aircraft Flight Data Management Platform"], *Air Force News*, 18 December 2017, 4.
- 1405 Wu Jie, ["A Central TCAF Air Brigade Managed Its Year-End Training"], *Air Force News*, 12 December 2017, 2.
- 1406 *Air Force News*, 19 June 2003, 1.
- 1407 Liu Xiaowei and Xu Xiaoyu, "Iron Wings are Sailing in the Wind: Western TCAF Aviation Unit Improves the Ability to Perform Diversified Missions" [铁翼乘风正远航: 西部战区空军航空兵某部提升遂行多样化任务能力纪实], *China Air Force*, November 2018, 56-58.
- 1408 See Cristina L. Garafola and Timothy R. Heath, *The Chinese Air Force's First Steps Toward Becoming an Expeditionary Air Force*, (Santa Monica, CA: RAND Corporation, 2017).
- 1409 Yang Tao, ed., "Chinese Y-20 Transport Aircraft Delivers Medical Supplies to Thailand," *China Military Online* (English), 13 May 2020, accessed at http://eng.chinamil.com.cn/view/2020-05/13/content_9812980.htm; "China PLA Sends Epidemic Prevention Supplies"; Huang Panyue, ed., "China's Y-20 Cargo Plane Sends Victory Day Paraders to Moscow in First Russia Visit," *Global Times*, 16 June 2020, http://eng.chinamil.com.cn/view/2020-06/16/content_9835602.htm.
- 1410 "Chinese Flankers Deployed Close to Indian Border," [blogspot.com](http://sajeevpearlj.blogspot.com/2016/04/chinese-flankers-deployed-close-to.html), 14 April 2016, accessed at <http://sajeevpearlj.blogspot.com/2016/04/chinese-flankers-deployed-close-to.html>. Huang Panyue, ed., "PLA Conducts Frequent Drills During Spring Festival Holiday," *Global Times*, 22 February 2018, accessed at http://english.chinamil.com.cn/view/2018-02/22/content_7948198.htm. Huang Panyue, ed., "PLA Training Hard for Potential Conflict," *China Military Online* (English), 12 January 2018, accessed at http://english.chinamil.com.cn/view/2018-01/12/content_7905443.htm.
- 1411 David Axe, "Chinese Stealth Fighters Head West to Confront India," *Forbes*, 17 August 2020, accessed at <https://www.forbes.com/sites/davidaxe/2020/08/17/chinese-stealth-fighters-head-west-to-confront-india/#6a19fff21b85>.
- 1412 Huang Panyue, ed., "PLA air force conducts successful live-fire exercise on high plateau," *Global Times*, 10 April 2018, accessed at http://english.chinamil.com.cn/view/2018-04/10/content_7998945.htm.
- 1413 Yang Jin, ["Western TCAF Radar Station in Tibet"], *Air Force News*, 15 February 2016, 1.
- 1414 "China Employs Hi-Tech Equipment in Training to Improve Air Force Fighting Capacity," *Hong Kong Sing Tao Jih Pao*, 18 July 1997. "Airborne Units Conduct Training Exercise in Tibet," *Xinhua* (English), 29 June 1999. The PLAAF has written several articles emphasizing that airborne forces have been training with a new type of parachute.
- 1415 Kenneth Allen, Brian Chao, and Ryan Kinsella, "China's Military Political Commissar System in Comparative Perspective," and Kenneth Allen, Morgan Clemens, Steven Glinert, and Daniel Yoon, "Assessing PLA Navy and Air Force Political Commissar Career Paths," (Washington, DC:

- Jamestown Foundation *China Brief*, Volume 13, Issue 5, 4 March 2013).
- 1416 Dao Zongfeng, Zhou Xiaodan, Lin Jian, and Xu Xiaosai, (“Eastern TCN Air Brigade Brings Political Cadres Into Operational Training”), 14 February 2018, *People’s Navy*, 3.
- 1417 Wang Tao, (“Northern TCAF Air Regiment Political Instructors and Pilots”), *Air Force News*, 4 February 2016, 1.
- 1418 Zhao Shuang and Liao Qirong, (“Eastern TCAF Air Regiment Emphasizes Flight Group Political Instructors”), *Air Force News*, 28 March 16, 1.
- 1419 Deng Dongzhi, (“Western TCAF Air Brigade Flight Training and Political Work”), *Air Force News*, 11 May 2017, 1.
- 1420 Zhang Li and Cao Chuanbiao “Changes in an Aviation Division’s Training Model to Enhance Training Effectiveness,” *PLA Daily* online, 18 March 2012. Li Tianxia, Jia Yanbin, and Huang Chun, “Transitioning from the Tower Begins,” *China Air Force*, April 2012, 26-28.
- 1421 Li Tianxia, Jia Yanbin, and Huang Chun, “Transitioning from the Tower Begins,” *China Air Force*, April 2012, 26-28.
- 1422 *Air Force News*, 13 June 2017, 1.
- 1423 Airborne troop (空降兵) is a type of military arm or unit. Lu, ed., *The PLA Air Force*, 102-105. Airborne force (空降兵) and airborne corps (空降兵军). *PLA Military Terminology* dictionary, 2nd ed., 2011, 959. Zhu Rongchang, ed. [*Air Force Dictionary*] [空军大辞典], (Shanghai: Shanghai Dictionary Press, September 1996, 160-161. Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 231, 569. Airborne force (空降兵部队) and airborne units (空降兵部队), 2002 *Defense White Paper*. Airborne force (空降兵部队), 2008 *Defense White Paper*. Airborne corps (空降兵军), 2010 *Defense White Paper*. Airborne arm (空降兵) and airborne corps (空降兵军), 2012 *Defense White Paper*. Airborne force (空降兵部队) and airborne corps (空降兵军), 2019 *Defense White Paper*.
- 1424 The information in this section comes primarily from *PLA Aerospace Power*, and *PLAAF 2010*, Chapter 11.
- 1425 *Ibid.*, 165.
- 1426 Cliff et al., *Shaking the Heavens and Splitting the Earth*, 22-23.
- 1427 He Zhiqin, [“Heroes Live Forever in the Fire”], *Air Force News*, 8 March 2018, 1. Note that this is an anomaly, because regiments are normally not subordinate to brigades.
- 1428 *China Military Report 2019*, 62.
- 1429 *PLAAF 2010*.
- 1430 “China Employs Hi-Tech Equipment in Training to Improve Air Force Fighting Capacity,” Hong Kong *Sing Tao Jih Pao*, 18 July 1997. “Airborne Units Conduct Training Exercise in Tibet,” *Xinhua* (English), 29 June 1999. The PLAAF has written several articles emphasizing that airborne forces have been training with a new type of parachute.
- 1431 Zhao Qihong, Duan Xianming, and Xu Yunpeng, [“Largest Force in Chinese Airborne History Participates in Exercise North Sword 2005”], *Air Force News*, 29 Sep 05, p 1.
- 1432 *PLAAF 2010*.
- 1433 *PLAAF 2010* and *PLA Aerospace Power*.
- 1434 *Air Force News*, 2 April 2002, 2.
- 1435 *Air Force News*, 11 October 2005, 1.
- 1436 A new conscript battalion in one airborne regiment in 2006 had 750 conscripts. *Air Force News*, 14 February 2006, 3.
- 1437 *Air Force News*, 30 March 2004, 4.
- 1438 *Air Force News*, 19 July 2005, 1.
- 1439 *Air Force News*, 30 April 2005, 1.
- 1440 *Air Force News*, 30 April 2004, 1.
- 1441 *Air Force News*, 17 September 2005, 1.
- 1442 Wen Huiming (文慧明), Yu Hongchun (余洪春), [“Airborne Unit New Soldiers First Large-Aircraft Parachute Training”], *Air Force News*, 22 Feb 2017, 2.
- 1443 Guo Mingming (郭明明), Yu Hongchun (余洪春), [“Airborne Division Final Parachute Training for New Soldiers”], *Air Force News*, 8 Feb 2017, 2.
- 1444 Chen Lichun (陈立春), [“Airborne Mechanized Regiment New Evaluation”], *Air Force News*, 28 Mar 2017, 2.
- 1445 Li Ming (李明), Qu Yi (曲艺), [“Air Force Training Base Basic Military Training”], *Air Force News*, 13 Apr 2017, 2.
- 1446 Bonny Lin and Cristina L. Garafola, *Training the People’s Liberation Army Air Force Surface-to-Air Missile (SAM) Forces* (Santa Monica, CA: RAND Corporation, 2016). Hereafter referred to as Lin and Garafola, *Training the PLAAF SAM Forces*.
- 1447 “Bonny Lin and Cristina L. Garafola, *Training the People’s Liberation Army Air Force Surface-to-Air Missile (SAM) Forces*, Santa Monica, Calif.: RAND Corporation, RR-1414-AF, 2016. Used with permission. Accessed at: https://www.rand.org/pubs/research_reports/RR1414.html.”
- 1448 National Air & Space Intelligence Center, *PLAAF 2010*, Ohio: Wright-Patterson Air Force Base, 2010, 17.
- 1449 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 133; [“Ground-to-Air Missile Unit: Establishing a Network in the Sky for Territorial Airspace Security”] [地空导弹部队: 构建领空安全的天网], *China Air Force*, November 2014. Accessed at: http://kj.81.cn/content/2014-11/04/content_6210580.htm.
- 1450 *PLAAF 2010*, 16-17.
- 1451 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 133.
- 1452 Teng Lianfu and Jiang Fusheng, ed., [*Air Force Operations Research*] [空军作战研究], (Beijing: National Defense University Publishers, May 1990).

- 1453 Lin and Garafola, *Training the PLAAF SAM Forces*, citing Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 133.
- 1454 Lin and Garafola, *Training the PLAAF SAM Forces*, citing Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 133.
- 1455 See *Sina News*, ["PLA's 'Three Attack Three Defenses' and New 'Three Attack Three Defenses'"] [解放军的'三打三防'和新'三打三防'], 13 October 2000. Accessed at: <http://mil.news.sina.com.cn/2000-10-13/6339.html>. See Xue Hailing, ["My opinion on the Strategic Practice of Our Military's Weaponry and Military Equipment Construction"] [我军武器装备建设战略实践刍议] in [*Military Historical Research*] [军事历史研究], 2011, No. 1, 135-137. In *Training the PLAAF SAM Forces* (8, footnote 28), Lin and Garafola note: "Since the late 2000s, official documents and media reports have rarely used the term to describe training foci, but PLAAF's [sic] air defense forces are likely to still identify the above as particular threats within a larger set of threats for which PLAAF SAM forces need to be prepared."
- 1456 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 133; *Research into the Kosovo War*, 148.
- 1457 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 63; *Research into the Iraq War*, 141.
- 1458 Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 287.
- 1459 ["The PLA's Military Training Has Been Transformed from Mechanization to Informatized Conditions"] [解放军军事训练由机械化向信息化条件全面转变], *Sina News*, 2 September 2009. Accessed at: <http://mil.news.sina.com.cn/2009-09-02/0737564438.html>. Kevin Lanzit, "Education and Training in the PLAAF," 249; ["MOD: Our Military Will Increase Its Modern Conflict Nighttime Combat and Training"] [国防部:我军将加强现代战争夜战夜训], *China Daily*, 29 January 2015. Accessed at: http://www.chinadaily.com.cn/micro-reading/dzh/2015-01-29/content_13138670.html.
- 1460 The available literature includes Xu Guocheng, Zhang Baoliang, Huang Mianming, [*High Technology Air Raid and Air Defense*] [高技术空袭与防空], (Beijing: National Defense University Press, 1999); Chen Hongjiu, Guo Youquan, and Wang Yinglong, [*People's Liberation Army Air Force Ground-to-air Missile Force Tactical Study*] [中国人民解放军空军地空导弹兵战术学], (Beijing: PLA Press, 2000); Peng Xiwen and Xue Xinglin, [*Air Raid and Anti-Air Raid*] [空袭于反空袭], (Beijing: China Youth Press, 2001); People's Liberation Army Mobilization Department of the General Staff Department (中国人民解放军总参谋部动员部), [*New Three Attack New Defenses Training Knowledge*] [新三打三防训练知识], (Beijing: Military Science Press, 2003); Zhong Mingfan and Liu Qianglin eds, [*Corps of Air Defense Operations: An Introduction to Typical Cases*] [防空兵作战典型案例介绍], (Beijing: Lantian Press, 2008); Zhong Mingfan and Liu Bingchu eds, [*Air Defense Operations*] [防空作战], (Beijing: Lantian Press, 2008); Wang Fengshan et al, [*Science of Modern Air Defense*] [现代防空学], (Beijing: China Aviation Industry Press, 2008); Chen Jiesheng, [*Air Defense Forces Tactical Composite Forces' Operations Research*] [地面防空战术混成群作战研究], Volume 1, (Beijing: Academy of Military Sciences Press, 2010). However, the 2000 study was not available for review by Lin and Garafola.
- 1461 Lin and Garafola, *Training the PLAAF SAM Forces*, 15, citing Yao, ed., [*China Air Force Encyclopedia*], Volume 1, 135-136.
- 1462 For more on their methodology and data set comparison, see Lin and Garafola, *Training the PLAAF SAM Forces*, 16-20.
- 1463 Zhao Hui, ed., ["The Conscription Policy Adjustment Has Many Benefits in Advance"] [征兵政策调整时间提前好处多多], *Xinhua*, 8 July 2013. Accessed at: http://news.xinhuanet.com/ziliao/2013-07/08/c_124973147.htm.
- 1464 ["Solving Battlefield Bottlenecks While Practicing Continuous Combat"] [解战场'瓶颈'练连续抗击], *Air Force News*, 1 August 2014, 2.
- 1465 ["'Saving Hassle': Disrupts Troops' Ability to Deal with Special circumstances"] ["省事":乱了特情处置阵脚], *Air Force News*, 7 July, 2014, 2; ["The Ability to Achieve Victory While Being Shaped by a Complex Environment"] ["在复杂环境中砥砺能打仗本领"], *Air Force News*, 18 February 2014, 1; ["Specializing in Refining the New Generation of Combat Power Puzzles"] [围绕新装战斗力生成难题专攻精练], *Air Force News*, 15 October 2014, 2; ["Move as Swift as Wind, Well-Trained and Prepared"] [动若风发,精练实备], *Air Force News*, 29 April 2014, 1; *Air Force News*, "Cutting Off the 'Tail' Helps Mobility" [砍掉尾巴'促机动'], 20 December 2013; *Air Force News*, ["'One Dragon' Style Military Movement Disappeared"] ["一条龙"式行军不见了], 23 July 2014, 1.
- 1466 Lin and Garafola, *Training the PLAAF SAM Forces*, 36, citing ["Skills Can Win The Battle in a Complex Environment"] [在复杂环境中砥砺能打仗本领], *Air Force News*, 18 February 2014, 1.
- 1467 Lin and Garafola, *Training the PLAAF SAM Forces*, 38-39.
- 1468 ["Integrated Joint Operations Starts from 'One'"] [一体化联合作战从"一"做起], *PLA Daily*, 20 November 2014. Accessed on 5 May 2015: http://jz.chinamil.com.cn/n2014/tp/content_6233318.htm.
- 1469 It is unclear if PLAAF SAMs were involved in this particular engagement in the exercise.
- 1470 Lin and Garafola, *Training the PLAAF SAM Forces*, 31.
- 1471 ["This Fight Does Not Leave 'Buffer' Time"] [这次战斗不留'缓冲'时间], *Air Force News*, 22 July 2014, 2.
- 1472 ["People's Sword Combined with the Sky"] [人剑合一指苍穹], *Air Force News*, 1 August 2014, 3.
- 1473 ["Stepping On the Journey Forever"] [脚下永踏征途], *Air Force News*, 6 December 2013, 3.
- 1474 ["Li Xinzheng: There Is Always a Battle in My Mind"] [李新征:脑中时刻有仗倚], *Air Force News*, 6 December 2013, 3.
- 1475 *PLAAF 2010*.
- 1476 *Air Force News*, 12 October 2004, 1.
- 1477 *Air Force News*, 29 September 2005, 2.
- 1478 *Air Force News*, 14 August 2004, 1.
- 1479 *Air Force News*, 19 July 2005, 2.
- 1480 *Air Force News*, 12 October 2004, 2.
- 1481 *Air Force News*, 18 November 2004, 2.
- 1482 *Air Force News*, 26 May 2005, 1.
- 1483 *Air Force News*, 26 July 2006, 3.

- 1484 2019 *Defense White Paper*.
- 1485 *PLA Aerospace Power*.
- 1486 *PLAAF 2010*, Chapter 12.
- 1487 Ibid.
- 1488 Ibid.
- 1489 Ibid.
- 1490 Ibid.
- 1491 “Chinese President Urges Stronger Air Force,” *Xinhua* (English), 14 April 2014, accessed at http://news.xinhuanet.com/english/china/2014-04/14/c_133261588.htm.
- 1492 [“Military Representatives Talk About the Air Force’s Actual-Combat Training”] [军队代表畅谈空军实战化训练], *Xinhua*, 11 March 2018, accessed at http://www.xinhuanet.com/mil/2018-03/11/c_129827188.htm.
- 1493 CASI has published papers that address some aspects of the four key training brands: Chase, Allen, and Purser, *Overview of PLAAF “Elite Pilots*,” and Garafola and Heath, *The PLAAF’s First Steps*. See also Nathan Beauchamp-Mustafaga, “The Four Key Training Brands’ Framework: Aligning PLAAF Training to the 2014 Military Strategic Guideline,” paper presented to the Fifth Global International Studies Conference of the World International Studies Committee (WISC) in Taipei, Taiwan, April 2017.
- 1494 The translation of “electron surge” can be found in Marcus Clay, Ph.D., “*Flying Twice’ No More: Assessing the Aerospace Component of the PLA Military Parade*,” (Montgomery, AL, China Aerospace Studies Institute, October 2019), accessed at https://www.airuniversity.af.edu/Portals/10/CASI/documents/2019_Oct_PRC_Parade_Aerospace_Power_Recap.pdf?ver=2019-11-01-114023-900.
- 1495 Zhang Mimi and Li Yan, [“Air Force Actual Combat Training Launched ‘Qingdian’ to Enhance Electronic Warfare Capabilities”] [空军实战化训练推出“擎电”提升电子战能力], *Xinhua*, 14 October 2019, accessed at http://www.xinhuanet.com/2019-10/14/c_1210311248.htm.
- 1496 The foundation for this section is Allen and Allen, *The PLA Air Force’s Four Key Training Brands and PLA Aerospace Power*.
- 1497 “Military Report” [军事报道], Beijing CCTV-7, 12 November 2016.
- 1498 Chase, Allen, and Purser, *Overview of PLAAF “Elite Pilots*.” Lu Donghui, 2016.
- 1499 Zhang Yuqing and Zhang Mimi, [“‘Golden Helmet’ Competition Pushes for Air Force’s Combat-Realistic Military Training Ahead Into a New Age”] [“金头盔”比武推动空军实战化军事训练迈进新时代], *Xinhua*, 12 November 2017, accessed at http://www.xinhuanet.com/mil/2017-11/12/c_1121943126.html. Michael S. Chase, Chase, Allen, and Purser, *Overview of PLAAF “Elite Pilots*.”
- 1500 Golden Helmet winner Wang Zhonghua (王仲化), who is a Su-30 pilot assigned to the Cangzhou Test and Training Base’s “Blue Force,” participated in the 2014 *Aviadarts* competition. No author, [“Chinese Pilots’ High Level of Training and High Technology Are Praised by Russian Generals”] [中国飞行员训练水平高技术过硬获俄军大将点赞], 27 July 2014, accessed at <http://mil.news.sina.com.cn/2014-07-27/1357792382.html>.
- 1501 Chen Xiang and Xu Dongliang, [“PLA Air Force’s 2014 Annual Fighter Unit Competitive Air Combat Confrontation Evaluations Successfully Completed: Six Pilots Win ‘Golden Helmets’; 5 Air Regiments Assessed as Superior Air Combat Units; Seven Personnel Assessed as Outstanding Air Combat Pilots”] [2014年度空军歼击机航空兵部队对抗空战竞赛性考核圆满结束, 6名飞行员赢得“金头盔”, 5个航空兵团被评为空战优胜单位, 7人获评空战优秀飞行员], *Air Force News*, 22 September 2014, 1.
- 1502 Zhang and Zhang, [“‘Golden Helmet’ Competition Pushes for Air Force’s Combat-Realistic Military Training Ahead Into a New Age”].
- 1503 Zhang Hao, Zhang Haishen, and Ding Yibo, [“Training for Combat – An Eastern Theater Command Air Force air brigade focuses on readiness training at the grassroots level”] [向战而练砺锋刃- 东部战区空军航空兵某旅坚持扭住战备训练抓基层纪实], *Air Force News*, 28 August 2017, 3.
- 1504 Huang Panyue, ed., “Splendid Moments in Golden Helmet – 2017 Competition,” mod.gov, 21 November 2017, accessed at http://eng.mod.gov.cn/news/2017-11/21/content_4797924.htm. Guo Hongbo and Hao Maojin, “PLAAF Kicks Off ‘Golden Helmet 2017’ Air Battle Contest,” *China Military Online* (English), 3 November 2017, accessed at http://eng.chinamil.com.cn/view/2017-11/03/content_7811945.htm. Xu Yi and Wang Zehua, [“Golden Helmet’ Air Combat Confrontation Competition Assessment”], *Air Force News*, 15 November 2017, 1.
- 1505 Peter Kay, “For the First Time, the Naval Air Force Sent Pilots to Participate in the Air Force Contest,” *China Military Online* (English) micro letter public, 12 December 2017, accessed at <http://www.sangbe.com/article/152295.html>.
- 1506 Zhao Haitao and Zhang Heng, [“Lay Firm Foundation for Joint Training, Deepen Degree of Joint Operation, and Raise Joint Combat Capability; Navy Will Jointly Organize with Air Force Free-Air War Confrontation Drill”] [海军将与空军联合组织自由空战对抗演练], *Renmin Haijun*, 20 August 2014, 1. Yin Kunze, Zhang Heng, and Zhao Haitao, [“A Duel of Heroes—Eyewitness to the First Navy and Air Force Free Aerial Warfare Confrontation Drill”] [双雄对决, 目击海、空军首次自由空战对抗演练], *Renmin Haijun*, 1 September 2014, 1. Liu Wenping, Zhao Haitao, and Ju Zhenhua, “Flying Against a ‘Golden Helmet,’” *China Armed Forces* magazine in Chinese and English, No. 32, Vol 2, 2015, 80-83. Information about the Heroic Eagle Regiment was accessed at www.baike.com/wiki/海空雄鹰团. Yin Kunze, Xu Xiaosai, Zhang Heng, and Zhao Haitao, [“Freestyle Air Combat, in Pursuit of the Real Meaning of Fighting Winning Wars – Record of Contemplations on a Certain Regiment of East Sea Fleet Navy Aviation Holding Live Combat Oriented Training”] [自由空战, 寻求打胜仗的真谛: 东航某团开展实战化训练问思录] *Renmin Haijun*, 16 September 2014, 2.
- 1507 Zhang Tao, “Golden Helmet Games Boosts PLAAF Combat-oriented Military Training,” *China Military Online* (English), 13 November 2017, accessed at http://eng.chinamil.com.cn/view/2017-11/14/content_7823318.htm.
- 1508 [“The Golden Helmet Is About to Start, the J-20 Appears On the Training Ground, the Chengdu Aircraft Corporation Fighter Will Return as the King”] [金头盔开战在即歼-20现身训练场成飞系战机将王者重返], *Sina.com*, 12 November 2019, accessed at https://k.sina.cn/article_5896803374_15f7a142e-00100j98m.html. [“Golden Helmet Competition Results Are Released: J-10C Wins the Championship in One Fell Swoop, Two Heavy-Duty Aircraft Both Lost”] [金头盔比武成绩出炉: 歼10C一举夺魁, 两款重型机双双败北], *Toutiao.com*, 8 March 2020, accessed at <https://www.toutiao.com/a6800383850183655939/>.

- 1509 “Military Report” [军事报道], Beijing CCTV-7, 30 December 2016.
- 1510 Xu Yi, [“Flying Toward a Strong Brand for Actual Combat – Observing ‘Golden Helmet-2017’ and Thoughts on Group Training Principles of Actual Combat”] [飞向实战强品牌-观战‘金头盔-2017’暨实战化组训规律思考], *Air Force News*, 24 November 2017, 3.
- 1511 Zhang and Zhang, [“‘Golden Helmet’ Competition Pushes for Air Force’s Combat-Realistic Military Training Ahead Into a New Age”].
- 1512 Xu Yi, 24 November 2017.
- 1513 Zhang and Zhang, [“‘Golden Helmet’ Competition Pushes for Air Force’s Combat-Realistic Military Training Ahead Into a New Age”].
- 1514 Ibid.
- 1515 Xue Wenhai and Wang Gang, [“Clicking on the Battlefield in the Air”], *China Air Force*, July-August 2005, 36-37.
- 1516 Ibid.
- 1517 Lei Yu and Yang Wenhui, [“Vowed to ‘Become the Toughest Steel’”] [誓做‘最咬人的钢’], *Air Force News*, 8 November 2017, 3.
- 1518 Ibid.
- 1519 Ibid.
- 1520 Wang Wei, [“Full Assurance of Success Is Based on Painstaking Study and Deep Reflection”] [细研方可稳操胜券], *Air Force News*, 8 February 2017, 3.
- 1521 Ibid.
- 1522 Xu Yi, 24 November 2017.
- 1523 While western states tend to describe fighter jet generations in terms of capabilities (See John Tripak’s, *The Sixth Generation Fighter*, accessed at [http://www.airforcemag.com/MagazineArchive/Pages/2009/October percent202009/1009fighter.aspx](http://www.airforcemag.com/MagazineArchive/Pages/2009/October%20percent202009/1009fighter.aspx) for examples), the Chinese tend to define them based on year reaching initial operating capability. I.E. 1st Gen 1950-60s, e.g. J-5, J-6; 2nd Gen 70’s-80’s, e.g. J-7, J-8; 3rd Gen 90’s-2000’s, e.g. J-10, J-11; 4th Gen 2010’s+, e.g. J-20.
- 1524 Huang Panyue, ed., 2017.
- 1525 [“Focus Today”] [今日关注], Beijing CCTV-4, 6 November 2017.
- 1526 Zhang Mimi and Guo Hongbo, [“Sixteen Elite Air Force Aviation Units Compete for ‘Golden Helmet’ in Gobi Desert of Northwestern China”] [空军16支航空兵劲旅西北大漠角逐‘金头盔’], *Xinhua*, 01 November 2017.
- 1527 “Focus Today” (近日关注), Beijing CCTV-4, 06 November 2017.
- 1528 Wang Wei, 2017, 3.
- 1529 Liu Jinyang and Li Jianwen, [“Four Key Brands’ Training Renowned the Aerospace Battlefield”] [‘四大品牌’训练享誉天空战场], *PLA Daily*, 20 May 2017.
- 1530 Zhang and Zhang, [“‘Golden Helmet’ Competition Pushes for Air Force’s Combat-Realistic Military Training Ahead Into a New Age”].
- 1531 “Focus Today” (近日关注), Beijing CCTV-4, 06 November 2017.
- 1532 Zhang Mimi and Guo Hongbo, 2017.
- 1533 No author, “PLAAF kicks off Golden Helmets 2017,” *Asian Defense News* in English, 4 November 2017, accessed at <http://asian-defence-news.blogspot.com/2017/11/plaaf-kicks-off-golden-helmets-2017-2017.html>.
- 1534 Zhang Mimi and Guo Hongbo [郭洪波], 2017.
- 1535 Zhang Tao, “Golden Helmet Games Boosts PLAAF Combat-oriented Military Training,” *China Military Online* (English), 13 November 2017, accessed at http://eng.chinamil.com.cn/view/2017-11/14/content_7823318.htm.
- 1536 Zhang and Zhang, [“‘Golden Helmet’ Competition Pushes for Air Force’s Combat-Realistic Military Training Ahead Into a New Age”].
- 1537 Zhang Tao, “Golden Helmet Games Boosts PLAAF Combat-oriented Military Training,” *China Military Online* (English), 13 November 2017, accessed at http://eng.chinamil.com.cn/view/2017-11/14/content_7823318.htm.
- 1538 Zhang and Zhang, [“‘Golden Helmet’ Competition Pushes for Air Force’s Combat-Realistic Military Training Ahead Into a New Age”].
- 1539 Ibid.
- 1540 Xu Yi, Wei Jiangtao, and Liang Xianglong, [“Thoughts on Chinese PLA Air Force ‘Red Sword-16’ System-of-Systems Confrontation Exercise”] [顺势而变‘谋战力’], *Air Force News*, 29 November 2016, 1.
- 1541 Chase, Allen, and Purser, *Overview of PLAAF “Elite Pilots.”*
- 1542 Huang Panyue, ed., “PLA Air Force Unveils ‘Golden Dart-2016’ Military Competition,” *mod.gov*, 22 July 2016, accessed at http://eng.mod.gov.cn/TopNews/2016-07/22/content_4699080.htm.
- 1543 Liu Jinyang and Li Jianwen, [“Four Key Brands’ Training Renowned the Aerospace Battlefield”] [‘四大品牌’训练享誉天空战场], *PLA Daily*, 20 May 2017.
- 1544 “Military Report” [军事报道], Beijing CCTV-7, 30 December 2016.
- 1545 Ibid.
- 1546 Liu Jinyang and Li Jianwen, 2017. [“Golden Helmet”] [“金飞镖”], accessed at <https://baike.baidu.com/item/金飞镖>. Li Qing [李清] ed., [“PLA Air Force Held Its First Ground Target Shooting ‘Golden Dart’ Competition”] [中国空军首次举行对地攻击‘金飞镖’大赛] *Xinhua*, accessed at <http://news.xinhuanet>.

- com/photo/2014-10/07/c_127069612.htm. No Author, ["PLAAF Four Key Training Brands: *Red Sword*, *Blue Shield*, Golden Helmet, Golden Dart"] [中国空军'四大品牌': 红剑, 蓝盾, 金头盔, 金飞镖], 12 May 2017, accessed at http://news.ifeng.com/a/20170512/51084986_0.shtml.
- 1547 Lu Guanqiong, ["PLA Air Force 2015 'Golden Dart' Competition Will Be Held Over Water for the First Time"] [中国空军2015 '金飞镖'比武将首次在海面上方向组织], *China Youth Net*, 9 September 2015, accessed at http://news.youth.cn/gn/201509/t20150909_7094102.htm.
- 1548 Yao Jianing, ed., "PLA Air Force pilots chase 'Golden Dart,'" *China Military Online* (English), 19 April 2018, accessed at http://english.chinamil.com.cn/view/2018-04/19/content_8009028.htm.
- 1549 Li Jianwen, ["'Golden Helmets' and 'Golden Dart' Pilots of the Chinese Air Force"] [中国空军飞行员涌现一批'金头盔' '金飞镖'], *PLAAF Website* [中国空军], 8 September 2015, accessed at http://kj.81.cn/content/2015-09/08/content_6671958.htm. "PLA Air Force made great strides in actual-combat training," 7 May 2017, accessed at <http://news.163.com/17/0507/03/CJQ7CDG600018AOP.html>.
- 1550 Niu Ruili and Lu Hui, ["'Golden Helmet:' the Ultimate Competition"] [巅峰对决'金头盔'] *PLAAF Website* [中国空军], 30 December 2015, accessed at http://kj.81.cn/content/201512/30/content_6837163.htm.
- 1551 Huang Panyue, ed., 2016.
- 1552 Yang Chenxiu, "'Golden Dart- 2016': Combat Aircraft Carried Out Precision Strikes At Low Altitude Despite the Fog" [金飞镖-2016: 战机低空穿雾实施精准火力打击], *CCTV Military*, 25 July 2016, accessed at http://military.cnr.cn/jstp/jstph/20160725/t20160725_522775812.html.
- 1553 Huang Panyue, ed., 2016.
- 1554 Huang Panyue, ed., "Camera Records Moments of Golden Dart - 2018 Competition," *mod.gov*, 27 April 2018, accessed at http://eng.mod.gov.cn/news/2018-04/27/content_4811595.htm. "The Chinese Air Force's Recent Annual Exercise 'Golden Dart 2018' Honed Pilots' Actual Combat Capabilities," *CCTV* video, accessed at <https://www.youtube.com/watch?v=lmzKvhAGz-M>.
- 1555 Yao Jianing, ed., 2018.
- 1556 Yao Jianing, ed., 2018.
- 1557 ["The Chinese Air Force's Recent Annual Exercise 'Golden Dart 2018' Honed Pilots' Actual Combat Capabilities"], *CCTV* video, accessed at <https://www.youtube.com/watch?v=lmzKvhAGz-M>.
- 1558 Xu Yi, ["What Is the Gold Content of the 'Golden Shield' Award? On-the-Scene Report from the First Round of Competition in Air Force Exercise '17' (Part 1)"] [金盾牌'含金几何':空军'蓝盾-17'演习首期比武竞赛观战报告(上篇)], *Air Force News*, 24 April 2017, 3a.
- 1559 Zhang Yuqing and Zhang Lei, ["Chinese Air Force Accelerates Air-Defense Antimissile Capability Construction, Forms Combat System That Integrates Long, Medium and Short Ranges with High, Medium and Low Altitudes"] [空军地面防空兵在创新驱动发展中形成了远中近程,高中低空相结合的作战体系], *Xinhua*, 28 August 2016.
- 1560 Zhang Yuqing and Zhang Lei, 2016. "Military Report" [军事报道], Beijing *CCTV-7*, 30 December 2016.
- 1561 Xu Yi, ["Air Force 'Blue Shield-17' Exercise Detailed on-the-scene Reports"], *Air Force News*, 24 Apr 2017, 3. Zhang Li, Li Hongpeng, and Liu Chuan, ["PLAAF 'Blue Shield-17' Exercise/Four Major Training Brands"], *PLA Pictorial*, 1 May 2017, 58-62. Li Hongpeng and Zhang Li, ["Blue Shield-17 Exercise"] [“蓝盾-17”演习], *China Air Force*, May 2017, 58-62.
- 1562 "Military Report," [军事报道], Beijing *CCTV-7*, 15 April 2017.
- 1563 From "Live News," Beijing *CCTV-Xinwen*, 16 April 2017.
- 1564 Ibid.
- 1565 "Military Report," [军事报道], Beijing *CCTV-7*, 15 April 2017.
- 1566 Ibid.
- 1567 From "Live News," Beijing *CCTV-Xinwen*, 13 October 2017.
- 1568 "Military Report" [军事报道], Beijing *CCTV-7*, 27 October 2017.
- 1569 The FN-6 or Feinu-6 is a third-generation passive infrared homing (IR) man portable air defense system (MANPADS).
- 1570 Accessed at <https://www.globalsecurity.org/military/world/china/fn-6.htm>.
- 1571 "Military Report" [军事报道], Beijing *CCTV-7*, 27 October 2017.
- 1572 "Military Report" [军事报道], Beijing *CCTV-7*, 29 October 2017.
- 1573 Yao Jianing, ed., "PLA Air Force 'Blue Shield-18' joint air defense exercise kicks off," *China Military Online* (English), 6 June 2018, accessed at http://eng.chinamil.com.cn/view/2018-06/06/content_8054096.htm.
- 1574 "PLA kicks off drills on northern coast," *Global Times*, 15 May 2020, accessed at <http://en.people.cn/n3/2020/0515/c90000-9690702.html>.
- 1575 Ria Novosti and Evgeny Biyatov, ["Russia, China Teams Leading After 6 Days of Army Games 2016"], 5 August 2016, accessed at https://www.rbth.com/news/2016/08/05/russia-china-teams-leading-after-six-days-of-army-games-2016_618359.
- 1576 Ria Novosti and Evgeny Biyatov, 2016. Xu Yi, 24 April 2017.
- 1577 Xu Yi, 24 April 2017.
- 1578 Ibid.
- 1579 "Military Report" [军事报道], Beijing *CCTV-7*, 29 October 2017.
- 1580 "Military Report" [军事报道], Beijing *CCTV-7*, 27 October 2017.

- 1581 Xu Yi, 24 April 2017.
- 1582 Ibid.
- 1583 “Military Report” [军事报道], Beijing CCTV-7, 04 May 2017. The event was also identified simply as *Blue Shield-17*.
- 1584 “Military Report” [军事报道], Beijing CCTV-7, 15 April 2017.
- 1585 Xu Yi, 24 April.
- 1586 Xu Yi, Wei Jiangtao, and Liang Xianglong, 2016. “Military Report” [军事报道], Beijing CCTV-7, 29 November 2016. *Red Sword-2016* is also noted as *Red Sword-16* in some articles.
- 1587 Xu Yi, Wei Jiangtao, and Liang Xianglong, 2016.
- 1588 Guo Yunfei, [“Combat Drums and Bugles Sound Again over the Vast Desert - Accounts of Involvement in the ‘Red Sword-16’ System-of-Systems Confrontation Exercise by Exercise Participants”] [大漠又闻鼓用声; ‘红剑-16’体系对抗演习参演手记], *Air Force News*, 2 December 2016, 3.
- 1589 Ibid.
- 1590 Yang Jun and Yao Chunming, [“‘Direct the Blue Force and Practice the Red,’ Focus On System-of-Systems Confrontation Combat All the Way Through – the Air Force ‘Red Sword-2017’ System-Of-Systems Confrontation Exercise Explores the Way to Integrate Forces for Combat”] [‘导蓝练红’, 注重体系, 全程对抗- 空军‘红剑-2017’体系对抗演习探索作战融合之道], *Air Force News*, 5 December 2017, 4.
- 1591 “Military Report” [军事报道], Beijing CCTV-7, 29 November 2016.
- 1592 “Military Report” [军事报道], Beijing CCTV-7, 17 November 2016; Li Guowen and Deng Lekun, [“PLAAF ‘Red-Sword 16’ Exercise Model Fires Off”] [空军红剑-16体系对抗硝烟浓], *Air Force News*, 27 November 2016, 1.
- 1593 “Military Report” [军事报道], Beijing CCTV-7, 30 December 2016.
- 1594 Ibid.
- 1595 Xu Yi, Wei Jiangtao, and Liang Xianglong, 2016.
- 1596 “Military Report” [军事报道], Beijing CCTV-7, 12 November 2016.
- 1597 Ibid.
- 1598 Xu Yi, Wei Jiangtao, and Liang Xianglong, 2016.
- 1599 Zhang Jiansong and Zhu Zhanghu, [“The PLA Air Force holds rank promotion ceremony for new generals”], *Air Force News*, 18 January 2017, 1.
- 1600 “Military Report” [军事报道], Beijing CCTV-7, 12 November 2016.
- 1601 Xu Yi, Wei Jiangtao, and Liang Xianglong, 2016.
- 1602 *PLA Military Terminology* dictionary, 2nd ed., 2011, 46.
- 1603 Xu Yi, Wei Jiangtao, and Liang Xianglong, 2016.
- 1604 Ibid.
- 1605 Ibid.
- 1606 Ibid.
- 1607 Ibid.
- 1608 Huang Panyue, ed., “Moments in ‘Red Sword-2018’ Confrontation Training,” *China Military Online* (English), 18 July 2018, accessed at http://eng.chinamil.com.cn/view/2018-07/18/content_8092753.htm. The article also uses “systemic confrontation training. “Force-on-Force Exercise” (对抗演习) in *PLA Military Terminology* dictionary, 2nd ed., 2011, 314.
- 1609 “Military Report” [军事报道], Beijing CCTV-7, 28 November 2017. Huang Panyue, “‘Red Sword-2018’ exercise held in deep desert,” *China Military Online* (English), 28 May 2018, accessed at http://eng.chinamil.com.cn/view/2018-05/28/content_8043530.htm.
- 1610 “Military Report,” [军事报道], Beijing CCTV-7, 29 November 2017.
- 1611 Ibid.
- 1612 Liao Qirong and Wang Boqian, [“Apply the Principles, Reinforce the Mindset of System-of-Systems Combat – An Eastern TCAF Air Brigade Explores the Principles for Confrontation Combat Training”] [运用规律, 强化体系作战思维- 东部战区空军航空兵某旅探索体系对抗演训规律纪实] *Air Force News*, 5 December 2017, 3.
- 1613 Zeng Ke and Xie Ruofei, [“Overcome the Data Adaptability Problem – A Southern TCAF Air Regiment Complies with the Principles and Uses Combat Data to Improve Its System-of-Systems Combat Capability”] [克服数据的‘水土不服’ - 南部战区空军某团遵循规律善用作战数据提升体系作战能力], *Air Force News*, 5 December 2017, 3.
- 1614 Ibid.
- 1615 “Military Report,” [军事报道], Beijing CCTV-7, 29 November 2017.
- 1616 Ibid.
- 1617 Ibid.
- 1618 *PLA Aerospace Power*.

- 1619 Cheng Fuming, Fu Xuecheng, and Guo Huarong, ["Airborne 'Command Post'"], *China Air Force*, January 2013, 39-43.
- 1620 *PLA Aerospace Power*.
- 1621 "Military Report" [军事报道], Beijing CCTV-7, 29 November 2017.
- 1622 Ibid.
- 1623 Liu Jinyang and Li Jianwen, ["Four Key Brands' Training Renowned the Aerospace Battlefield"] ["四大品牌'训练享誉空天战场"], *PLA Daily*, 20 May 2017. Fu Zhen, Yang Jin, Yang Jun, Wen Zhijun, Xi Bobo, and Che Mengtao, ["'Red Sword-2018' Exercise Overview"], *PLA Pictorial*, 15 July 2018, accessed at http://www.plapic.com.cn/pub/2018-07/20/content_8094696.htm. Ren Daguang and Yao Chunming, ["'Red Sword-2018' SOS confrontation exercise information (Part 1)"], *Air Force News*, 14 August 2018, 1. Hu Zewen, ["A PLAAF Pilot's View On 'Information Support' in Air Combat"], *Air Force News*, 14 August 2018, 3. Yu Hongchun, ["Air Force Air Units: Growth via new breakthroughs"], *China Air Force*, August 2018, 16-19. Meng Qingbao, ["Northern TCAF Base Conducts Unscripted Combined-Arms Training"], *Air Force News*, 27 July 2018, 2. Meng Qingbao and Liu Hanbao, ["Details on Northern TCAF aviation brigade 1st Flight Group 'Vanguard Flight Group' preparation and participation in 'Red Sword-2018' exercise"], *Air Force News*, 27 September 2018, 1. ["The Air Force Assumed That the Enemy 'Orange Force' Appeared and the J-20 Was Actually an 'Enemy Aircraft'"] ["空军假想敌部队"橙军"现身, 歼-20身份竟是"敌机"], *Sina.com*, 15 October 2018, accessed at <http://mil.news.sina.com.cn/2018-10-15/doc-ixeuwws4399749.shtml>.
- 1624 ["Gaining Victory in Air and Space: Achieving New Advances in the Capability for System-of-Systems Operations"], *Military Report*, 4 November 2019, on *China Central Television* 7, accessed 6 January 2020 at <http://tv.cctv.com/2019/11/04/VIDE5QCCjDLY8LaAEUyZ9r2f191104.shtml>.
- 1625 "Military Report" [军事报道], Beijing CCTV-7, 28 November 17.
- 1626 Ibid.
- 1627 Ibid.
- 1628 Peter Kay, "For the First Time, the Naval Air Force Sent Pilots to Participate in The Air Force Contest," 12 December 2017 in English, accessed at <http://www.sangbe.com/article/152295.html>.
- 1629 Wu Xinxu and Ding Yibo, ["Eastern TCAF Aviation Brigade Deals with Contradictions in Combat Training"], *Air Force News*, 12 December 2016, 2.
- 1630 Chase, Allen, and Purser, *Overview of PLAAF "Elite Pilots."*
- 1631 Golden Helmet winner Wang Zhonghua, who is a Su-30 pilot assigned to the Cangzhou Test and Training Base's "Blue Force," participated in the 2014 Aviadarts competition. No author, ["Chinese Pilots' High Level of Training and High Technology Are Praised by Russian Generals"] [中国飞行员训练水平高技术过硬获俄军大将点赞], 27 July 2014, accessed at <http://mil.news.sina.com.cn/2014-07-27/1357792382.html>.
- 1632 Lu Donghui, ["'Golden Helmet' Pilot Opposition Air Combat Experience"] [金头盔飞行员对抗战斗经验], *Air Force News*, 12 July 2016, 3.
- 1633 *PLA Aerospace Power*.
- 1634 Ibid.
- 1635 Chase, Allen, and Purser, *Overview of PLAAF "Elite Pilots."*
- 1636 Although some Western analysts have translated this term as "opposition force" and the acronym OPFOR, no official Chinese sources were found using this translation; however, some Chinese sources have translated it as "Maneuver." "Force-on-force training" [对抗训练] and "Force-on-Force Exercise" [对抗演习] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 310, 314. "Maneuvers" [对抗演习] in Zhu, ed., [*Air Force Dictionary*], 189. "Confrontation; Countermeasure; Counter" [对抗] in Pan Xiangting, ed., *A New English-Chinese Chinese-English Dictionary of Military Terms* [新编英汉汉英军事词典], (Beijing: National Defense Industry Press, October 1999), 289, and in *The Chinese-English English-Chinese Military Dictionary* [英汉汉英军事大辞典], (Beijing: Xuewan Press, November 2011), 131. "Confrontation Maneuver" (对抗演习) in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 260, and in *The Chinese-English English-Chinese Military Dictionary* [英汉汉英军事大辞典], (Beijing: Xuewan Press, November 2011), 131. *Annual Report to Congress 2019*. PRC 2006, 2012, and 2015 *Defense White Paper*.
- 1637 *Air Force News*, 16 March 2004, 1. *Air Force News*, 14 January 2006, 1.
- 1638 Zhang He, Chen Chunsheng, and Yang Cun, ["Central TCAF Unit Confrontation Air Combat"], *China Air Force*, February 2016, 34-35.
- 1639 Yang Jin and Cao Chuanbiao, ["Western TCAF Milestones"], *Air Force News*, 15 June 2017, 3.
- 1640 Cui Zenghui and Chen Minglin, ["Northern TCAF Air Brigade Confrontation Training with Other Branches/Arms"], *Air Force News*, 30 May 2018, 1.
- 1641 Chen Chengya, ["Western TCAF Radar Brigade Mobility Battalion At Foothills of Tianshan Mountains Holds Actual-Personnel Confrontation Training Assessment"], *Air Force News*, 29 August 2019, 2.
- 1642 Wang Xiangke, Deng Zhiqiang, Liu Zhixin, Zhang Lei, and Li Dongdong, ["Airborne Brigade Air Defense Fendui Holds Actual-Combat Confrontation Assessment Drill"], *Air Force News*, 2 August 2018, 4.
- 1643 Zeng Ke and Fan Yishu, ["Southern TCAF and Navy Forces Hold Joint Confrontation Drill"], *China Air Force*, 1 December 2017, 36-39.
- 1644 Zhang Li and Huang Ziyue, "The First Special Duty J-10 'Blue Force' Gives an Extraordinary Performance," *PLA Daily*, 20 October 2012.
- 1645 Allen, "PLA Air Force Operations and Modernization," 189-254.
- 1646 *Air Force News*, 30 November 2002, 1. *Air Force News*, 26 August 2003, 4. Huang Ziyue, Zhang Xifeng, and Peng Fang, ["When Free-handed Aerial Combats Are Carried Out"], *Air Force News*, 7 September 2011, 3.
- 1647 *Air Force News*, 25 January 2005, 1.
- 1648 Chase, Allen, and Purser, *Overview of PLAAF "Elite Pilots."*
- 1649 "Military Report" [军事报道], Beijing CCTV-7, 12 November 2016.

- 1650 Liu Jinyang and Li Jianwen, [“‘Four Key Brands’ Training Renowned the Aerospace Battlefield”] [“四大品牌”训练享誉天空战场], *PLA Daily*, 20 May 2017. Fu Zhen, Yang Jin, Yang Jun, Wen Zhijun, Xi Bobo, and Che Mengtao, [“‘Red Sword-2018’ Exercise Overview”], *PLA Pictorial*, 15 July 2018, accessed at http://www.plapic.com.cn/pub/2018-07/20/content_8094696.htm. Ren Daguang and Yao Chunming, [“‘Red Sword-2018’ SOS confrontation exercise information (Part 1)”], *Air Force News*, 14 August 2018, 1. Hu Zewen, [“A PLAAF pilot’s view on ‘information support’ in air combat”], *Air Force News*, 14 August 2018, 3. Yu Hongchun, [“Air Force Air Units: Growth Via New Breakthroughs”], *China Air Force*, August 2018, 16-19. Meng Qingbao, [“Northern TCAF Base Conducts Unscripted Combined-Arms Training”], *Air Force News*, 27 July 2018, 2. Meng Qingbao and Liu Hanbao, [“Details on Northern TCAF Aviation Brigade 1st Flight Group ‘Vanguard Flight Group’ preparation and participation in ‘Red Sword-2018’ exercise”], *Air Force News*, 27 September 2018, 1. [“The Air Force Assumed That the Enemy ‘Orange Force’ Appeared and the J-20 Was Actually an ‘Enemy Aircraft’”] [空军假想敌部队“橙军”现身, 歼-20身份竟是“敌机”], *Sina.com*, 15 October 2018, accessed at <http://mil.news.sina.com.cn/2018-10-15/doc-ifxeuws4399749.shtml>.
- 1651 *PLA Aerospace Power*. Garafola and Heath, *The PLAAF’s First Steps*.
- 1652 Kenneth Allen, Phillip C. Saunders, and John Chen, *Chinese Military Diplomacy, 2003-2016*, (Washington, D.C.: National Defense University, Institute for National Strategic Studies (INSS), China Strategic Perspectives 11, July 2017). Hereafter referred to as Allen, Saunders, and Chen, *Chinese Military Diplomacy*.
- 1653 2019 Defense White Paper.
- 1654 2019 Defense White Paper.
- 1655 2012 Defense White Paper.
- 1656 Martin Andrew, “Power Politics: China, Russia, and *Peace Mission* 2005,” Jamestown Foundation *China Brief*, Volume: 5, Issue 20, September 2005. “*Peace Mission* 2005,” *Wikipedia*, last edited on 10 July 2020, accessed at http://en.wikipedia.org/wiki/Peace_Mission_2005.
- 1657 “All Chinese Exercise Troops Return Home from Russia,” *PLA Daily*, 27 August 2007, accessed at http://english.chinamil.com.cn/site2/special-reports/2007-08/27/content_931264.htm.
- 1658 “‘*Peace Mission-2009*’ Improves Anti-terror Response: Chinese Military Officer,” *Xinhua* (English), 24 July 2009, accessed at http://news.xinhuanet.com/english/2009-07/24/content_11765127.htm. “Backgrounder: China-Russia Joint Military Exercises since 2003,” *Xinhua* (English), 6 July 2013, accessed at <http://english.peopledaily.com.cn/90786/8313722.html>.
- 1659 “Russia and China Hold *Peace Mission* Drills to Show USA Its Place,” *Pravda* in English, 20 July 2009, accessed at http://english.pravda.ru/russia/politics/20-07-2009/108250-russia_china-0/.
- 1660 Paul Goble, “Military Suffering Casualties in War Games,” *Moscow Times*, 12 August 2009, accessed at www.militaryphotos.net/forums/showthread.php?p=163042-Bad-maps-kill-60-Chinese-15-Russian-soldiers-during-Peace-Mission-2009.
- 1661 “Agenda,” mod.gov *Peace Mission-2010* website, accessed at <http://eng.mod.gov.cn/SpecialReports/SCO%20Joint%20Military%20Exercises.htm>. “Chinese Troops for SCO Anti-terror Exercise Hold Departure Ceremony,” *PLA Daily*, 3 September 2010, accessed at http://eng.mod.gov.cn/SpecialReports/2010-09/03/content_4191002.htm. Yang Lina, ed., “*Peace Mission* 2010 Concludes. Opens New Page for SCO Cooperation,” *Xinhua* (English), 25 September 2010, accessed at http://news.xinhuanet.com/english/2010/world/2010-09/25/c_13529321.htm. Roger McDermott, “PLA Displays Network-Centric Capabilities in *Peace Mission* 2010,” *Eurasia Daily Monitor*, Volume 7, Issue 180, 6 October 2010, accessed at http://www.jamestown.org/programs/edm/single/?tx_ttnews%5Btt_news%5D=37001&cHash=ff5fd5240d#_U_oxmbloy9l.
- 1662 “About *Peace Mission* 2012,” *China Military Online* (English) *Peace Mission-2012* website, accessed at http://eng.chinamil.com.cn/special-reports/node_54180.htm. Roger N. McDermott, “SCO ‘*Peace Mission*’ 2012 Promotes Security Myths,” FOI Memo 4040, July 2012, accessed at www.foi.se/Global/V%C3%A5r%20okunskap/S%C3%A4kerhetspolitiska%20studier/Ryssland/Briefings/RUF%20Briefing%20No.%2014%20-%2012070.
- 1663 Chinamil.com hosted an official English-language website (http://eng.chinamil.com.cn/special-reports/node_60757.htm) devoted solely to *Peace Mission-2013*, which also had links to the previous exercises. Several other Chinese and Russian English-language articles provided information about the exercise. Pavel Lisicin, “*Peace Mission* 2013 Russian-Chinese Anti-terror Exercise,” *RIA Novosti*, 14 August 2013, accessed at <http://en.ria.ru/photolents/20130814/182739162/Peace-Mission-2013-Russian-Chinese-Anti-Terror-Exercise.html>. “*Peace Mission-2013* China-Russia Joint Drill Ends,” *Xinhua* (English), 16 August 2013, accessed at http://news.xinhuanet.com/english/video/2013-08/16/c_132635278.htm. “‘*Peace Mission-2013*’: China-Russia Relations in New Context,” ITAR-TASS, 20 August 2013, accessed at http://rbth.asia/world/2013/08/20/peace_mission-2013_china-russia_relations_in_new_context_48549.html. “China Carry out 1st Reconnaissance Mission in Joint Military Drills,” *Global Times*, 7 August 2013, accessed at www.globaltimes.cn/content/802152.shtml.
- 1664 The PLA’s official website for the exercise is http://eng.chinamil.com.cn/special-reports/node_72113.htm. Guo Renjia, ed., “Joint Tactical Coordination Conducted in ‘*Peace Mission - 2014*’ Exercise,” *China Military Online* (English), 22 August 2014, accessed at http://eng.chinamil.com.cn/news-channels/china-military-news/2014-08/22/content_6107131.htm. Yao Jianing, ed., “PLA Air Force Troops in ‘*Peace Mission - 2014*’ Show 4 Main Features,” *China Military Online* (English), 21 August 2014, accessed at http://eng.chinamil.com.cn/news-channels/china-military-news/2014-08/21/content_6105578.htm. Zhang Tao, ed., “Chinese Troops Participating in ‘*Peace Mission-2014*’ Take Mass Pledge in Zhurhe,” *China Military Online* (English), 7 August 2014, accessed at http://eng.chinamil.com.cn/news-channels/china-military-news/2014-08/07/content_6084068.htm. “SCO Exercise *Peace Mission* 2014 to Involve 7,000 troops,” ITAR-TASS, 19 August 2014, accessed at <http://en.itar-tass.com/world/745617>. Wang Xu, “Joint Military Drill to Hone Anti-terror Capacity,” *China Daily* in English, 19 August 2014, accessed at http://usa.chinadaily.com.cn/china/2014-08/19/content_18444004.htm. Yao Jianing, ed., “Ten Breakthroughs of China’s Military Diplomacy in 2014 (1),” *China Military Online* (English), 26 December 2014, accessed at http://english.chinamil.com.cn/news-channels/2014-12/26/content_6286046.htm.
- 1665 Zhang Tao, ed., “*Peace Mission-2016* Joint Anti-terror Exercise is Around the Corner,” *China Military Online* (English), 12 September 2016, accessed at http://eng.chinamil.com.cn/view/2016-09/12/content_7253947.htm. Yao Jianing, ed., “*Peace Mission-2016* Joint Anti-terror Exercise is Around the Corner,” *mod.gov*, 12 September 2016, accessed at http://eng.mod.gov.cn/DefenseNews/2016-09/12/content_4729411.htm. Zhang Tao, ed., “*Peace Mission* 2016’ Ends Live-fire Exercise Stage,” *mod.gov*, 22 September 2016, accessed at http://eng.mod.gov.cn/DefenseNews/2016-09/22/content_4735375.htm. Wang Ning, ed., “‘*Peace Mission - 2016*’ Concluded,” *China Military Online* (English), 22 September 2016, accessed at http://english.pladaily.com.cn/view/2016-09/22/content_7272461_3.htm.

- 1666 Huang Panyue, ed., “SCO ‘Peace Mission 2018’ Anti-terrorism Exercise Kicks Off in Russia,” *mod.gov*, 27 August 2018, accessed at http://eng.mod.gov.cn/news/2018-08/27/content_4823426.htm. Huang Panyue, ed., “‘Peace Mission 2018’ Joint Anti-terrorism Military Exercise Kicks Off in Russia,” *China Military Online* (English), 31 August 2018, accessed at http://english.chinamil.com.cn/view/2018-08/31/content_9268816.htm.
- 1667 Zhang Tao, “China, Russia to Hold Joint Navy Drill in Sea of Japan,” *Global Times*, 20 August 2015. Michael S. Chase, Dave Ochmanek, Lyle J. Morris, Cristina L. Garafola, Timothy R. Heath, Kenneth Allen, Mark Cozad, Nathan Beauchamp-Mustafaga, Edmund Burke, Astrid Stuth Cevallos, Eric Heginbotham, and Kevin Pollpeter, *Chinese Aerospace Power Projection Development and Execution: Proceedings from the Second Annual China Aerospace Studies Institute (CASI) Conference*, RAND, 2016. Mark R. Cozad and Nathan Beauchamp-Mustafaga, *People’s Liberation Army Air Force Operations over Water: Maintaining Relevance in China’s Changing Security Environment*, RAND, 2017. Huang Rui, [“Military Experts Explain Sino-Russian ‘Joint Sea-2015 (II)’ Exercise Highlights”] [军事专家详解中俄“海上联合-2015 (II)”演习亮点], *Xinhua*, 24 August 2015, accessed at http://www.xinhuanet.com/world/2015-08/24/c_1116357242.htm.
- 1668 Sam LaGrone, “China, Russia Land 400 Marines in First Joint Pacific Amphibious Exercise,” *USNI*, August 26, 2015, accessed at <https://news.usni.org/2015/08/26/china-russia-land-400-marines-in-first-joint-pacific-amphibious-exercise>; Liu Guangzhi, Tian Xuhui, and Liu Daquan, [中国空军出动3型5架战机参加中俄海空联合军演], *China Military Online*, 24 August 2015, accessed at http://kj.81.cn/content/2015-08/24/content_6646892.htm; Ren Xu and Xu Yeqing, [中俄两军联合立体登陆演习成功举行], *PLA Daily*, 26 August 2015, accessed at http://jz.chinamil.com.cn/n2014/tp/content_6648617.htm. Zhang Zhongkai and Wu Dengfeng, [“Military Experts Explain the Highlights of the Sino-Russian ‘Sea Joint-2015(II)’ Exercise”] [军事专家详解中俄“海上联合-2015(II)”演习亮点], *Xinhua Net*, 24 August 2015, accessed at http://news.xinhuanet.com/mil/2015-08/24/c_1116357242.htm. Li Dapeng, [“海上联合-2015”中俄联演实现了哪些新突破], *China Youth Daily Online*, 09 October 2015, accessed at http://zqb.cyol.com/html/2015-10/09/nw.D110000zqgnb_20151009_2-09.htm. Chen Haifeng, [“What New Breakthroughs Have Been Achieved in the ‘Sea Joint-2015’ Sino-Russian Joint Exercise”] [海上联合-2015(II)军演今起举行中俄将在日本海联演], *China News Service*, 20 August 2015, accessed at <http://www.chinanews.com/mil/2015/08-20/7477927.shtml>. Yu Hongwei, [“Guangzhou MRAF H-6K Troops Have All-Weather Long-Range Precision Strike Capabilities Across the Territory”] [广空委-6K部队具备全疆域全天候远程精确打击能力], *China Military Online*, 12 October 2015, accessed at http://www.81.cn/kj/2015-10/12/content_6719151.htm. Yao Jianing, “China’s Warships Arrive in Russia for Joint Sea-2015 (II) Military Exercise,” *mod.gov*, 21 August 2015, accessed at http://eng.mod.gov.cn/DefenseNews/2015-08/21/content_4615235.htm.
- 1669 Liu Guangzhi, Tian Xuhui, Liu Daquan, [中国空军出动3型5架战机参加中俄海空联合军演], *China Military Online*, 24 August 2015, accessed at http://kj.81.cn/content/2015-08/24/content_6646892.htm.
- 1670 Li Dapeng, [“海上联合-2015”中俄联演实现了哪些新突破], *China Youth Daily Online*, 09 October 2015, accessed at http://zqb.cyol.com/html/2015-10/09/nw.D110000zqgnb_20151009_2-09.htm.
- 1671 Ibid.
- 1672 Ibid.
- 1673 Ibid.
- 1674 Kirti Pandey, “Kavkaz 2020: 10 Things to Know about International Military Exercise India Will Attend At Russia’s Invite,” *Times Now News*, 25 August 2020, accessed at <https://www.timesnownews.com/india/article/kavkaz-2020-10-things-to-know-about-international-military-exercise-india-will-attend-at-russias-invite/642529>.
- 1675 Mark Galeotti, “Russia’s Latest Military Exercise Highlights Its Strengths and Limitations as a Regional Hegemon,” *www.mei.edu*, 4 November 2020, accessed at <https://www.mei.edu/publications/kavkaz-2020-russias-latest-military-exercise-highlights-its-strengths-and-limitations>.
- 1676 [“Battle of Tsugol, ‘East 2018’ Strategic Exercise Enters Climax”] [鏖战楚戈尔, “东方-2018”战略演习进入高潮], *China Military Online*, September 14, 2018, accessed at http://www.mod.gov.cn/action/2018-09/14/content_4824917_2.htm. Dave Johnson, “VOSTOK 2018: Ten years of Russian strategic exercises and warfare preparation,” *NATO Review*, 20 December 2018, accessed at <https://www.nato.int/docu/review/articles/2018/12/20/vostok-2018-ten-years-of-russian-strategic-exercises-and-warfare-preparation/index.html>.
- 1677 Huang Panyue, ed., “China Sends H-6K Bombers to Russia for Strategic Drills,” *China Military Online* (English), 9 September 2019, accessed at http://english.chinamil.com.cn/view/2019-09/09/content_9614996.htm. Huang Panyue, ed., “China Sends Strategic Bombers, Tanks and 1,600 Troops to Russia for Large Military Drill,” *China Military Online* (English), 18 September 2019, accessed at http://english.chinamil.com.cn/view/2019-09/18/content_9627820.htm (Note: The original source for both of these articles was *The Diplomat*). Sergey Sukhankin, “What Did Russia’s Strategic Military Exercise Tsentr-2019 Reveal?,” *TASS*, 24 October 2019, accessed at <https://icds.ec/en/what-did-russias-strategic-military-exercise-tsentr-2019-reveal/>.
- 1678 Xu Tongxuan, Jia Erbing, Gao Di, and Li Yinghui, [“Notes on the ‘Model Bomber Group’”], *Air Force News*, 15 November 2019, 1.
- 1679 “Pak, China engage in joint air exercise Shaheen-V,” *Bignewsnetwork.com*, 14 April 2016, issued at <https://www.bignewsnetwork.com/news/243161267/pak-china-engage-in-joint-air-exercise-shaheen-v>.
- 1680 Yang Zhen and Yang Jin, [“PLAAF and Pakistan ‘Shaheen VI’”], *Air Force News*, 11 Sept 2017.
- 1681 Yang Yi, ed., “Chinese, Pakistani Air Forces Conduct Joint Drill,” *Xinhua* (English), 23 September 2017, accessed at http://www.xinhuanet.com/english/2017-09/23/c_136630864.htm.
- 1682 Yao Jianing, “Army Chief Witnesses Pak-China International Air Exercise,” *China Military Online* (English), 13 December 2018, accessed at http://english.chinamil.com.cn/view/2018-12/13/content_9377328.htm.
- 1683 Xu Yi, ed., “Expert: China-Pak ‘Shaheen (Eagle)’ Joint Air Exercises Conducive to Double Win,” *China Military Online* (English), 28 August 2019, accessed at http://eng.chinamil.com.cn/view/2019-08/28/content_9604588.htm.
- 1684 Li Kaiqiang and Zhang Lei, [“Chinese, Thai Air Forces Conduct Combined Training”], *China Air Force*, September 2017. Li Jiayao, “China, Thailand Host Joint Air Force Exercise ‘Falcon Strike 2018,’” *China Military Online* (English), 7 September 2018, accessed at http://english.chinamil.com.cn/view/2018-09/07/content_9275202.htm.

- 1685 Li Jiayao, "China, Thailand Host Joint Air Force Exercise 'Falcon Strike 2018,'" *China Military Online* (English), 7 September 2018, accessed at http://english.chinamil.com.cn/view/2018-09/07/content_9275202.htm. Huang Panyue, ed., "China-Thailand Air Forces' Joint 'Falcon Strike 2019' Exercise Wraps Up," *China Military Online* (English), 2 September 2019, accessed at http://eng.chinamil.com.cn/view/2019-09/02/content_9608399.htm.
- 1686 Garafola, Heath; *China's First Steps toward becoming an Expeditionary Air Force*, RAND, 2017.
- 1687 *PLA Aerospace Power*. Kenneth Allen, "Trends in People's Liberation Army International Initiatives under Hu Jintao," in Roy Kamphausen, David Lai, and Travis Tanner, eds., *Assessing the People's Liberation Army in the Hu Jintao Era*, (Carlisle, PA: United States Army War College Press, April 2014). Hereafter referred to as Allen, "Trends in PLA International Initiatives under Hu Jintao." Allen, Saunders, and Chen, *Chinese Military Diplomacy*.
- 1688 PRC 2012 *Defense White Paper*; Garafola and Heath, "The PLAAF's First Steps," 19.
- 1689 "Chinese, Belarusian Airborne Troops Hold Joint Exercise in China," *Xinhua* (English), 27 November 2012, accessed at <http://english.peopledaily.com.cn/90786/8035739.html>. "China-Belarus 'Condor 2012' Joint Anti-terrorism Training Wrapped Up," 6 December 2012, accessed at http://eng.chinamil.com.cn/special-reports/2007zgjdgjtm/2012-12/06/content_5140507.htm. "China-Belarus 'Condor 2012' Joint Anti-terrorism Training Wrapped Up," Chinamil.com, 6 December 2012, accessed at http://eng.chinamil.com.cn/special-reports/2007zgjdgjtm/2012-12/06/content_5140507.htm. Zhang Xuefeng, "The Thunderers" ["雷神"突击队], *China Armed Forces*, No. 15, Volume 3, 2012, 42-47.
- 1690 "China, Indonesia Airborne Troops Complete Anti-terrorism Exercise," *Xinhua* (English), 11 November 2013, accessed at www.globaltimes.cn/content/824095.shtml#.UvPw2PoZlYV. This was a follow-up to *Sharp Knife 2011* in Bandung, Indonesia, and *Sharp Knife 2012* in Jinan, China. See "China-Indonesia Joint Training for Special Forces Ends in Bandung," 18 June 2011, accessed at <http://english.peopledaily.com.cn/90001/90776/90883/7413666.html>, and "China and Indonesian Armies Complete Anti-terrorism Exercise," 18 July 2012, accessed at www.army-technology.com/news/newschina-indonesian-armies-complete-anti-terrorism-exercise. Each of these involved special forces.
- 1691 Guo Renjie, ed., "Chinese, Indonesian Airborne Forces Hold Joint Anti-terror Drill," *China Military Online* (English), 27 October 2014, accessed at http://eng.mod.gov.cn/DefenseNews/2014-10/27/content_4547351.htm.
- 1692 "Russian Airborne Troops to Visit China for Skills Exchange," *Xinhua* (English), 27 May 2014, accessed at www.chinadaily.com.cn/china/2014-05/27/content_17545229.htm. Also accessed at ["Russian Airborne Troop Delegation and China's Counterpart Exchange Experiences"] [俄空降兵代表团与中国同行交流经验], *RUSNEWS.con*, 27 May 2014, accessed at http://rusnews.cn/eguoxinwen/eluosi_anquan/20140527/44075833-print.html. Note: The PLAAF's Airborne Troop College began in the 1950s as an antiaircraft artillery school and later became the Guilin Air Force College. Until 1999, the PLAAF's airborne troops received their cadet education and training in ground forces colleges; however, in 1999 the Guilin Air Force College took over those responsibilities. In 2001, the college changed its name to the Air Force Airborne Troop College.
- 1693 Xu Yi, "China-Australia-US Joint Exercise 'KOWARI 2019' Held," *China Military Online* (English), 5 September 2019, accessed at http://english.chinamil.com.cn/view/2019-09/05/content_9611995.htm.
- 1694 Hua Xueyu, ed., "Chinese Military Transport Planes Carry Ammunitions to Russia for Int'l Games," *China Military Online* (English), 30 July 2015, accessed at http://english.chinamil.com.cn/news-channels/china-military-news/2015-07/30/content_6606037.htm. "Highlights of Aviadarts 2015 in Russia," *Guangming Online*, 11 August 2015, accessed at http://en.gmw.cn/2015-08/11/content_16624234.htm.
- 1695 Liu Xiaowei and Xu Xiaoyu, "Iron Wings are Sailing in the Wind: Western TCAF Aviation Unit Improves the Ability to Perform Diversified Missions" [铁翼乘风正远航: 西部战区空军航空兵某部提升遂行多样化任务能力纪实], *China Air Force*, November 2018, 56-58.
- 1696 The information in this background section comes primarily from Heidi Holz and Kenneth W. Allen, "Military Exchanges with Chinese Characteristics: The People's Liberation Army Experience with Military Relations," in Roy Kamphausen, David Lai and Andrew Scobell, eds., *The PLA at Home and Abroad: Assessing the Operational Capabilities of China's Military*, Strategic Studies Institute, Army War College Press, June 2010, and Allen, "Trends in PLA International Initiatives under Hu Jintao." The information is still relevant today.
- 1697 [*China Military Encyclopedia*] [中国军事百科全书], Supplemental Volume, (Beijing: Academy of Military Science Press, November 2002), 280-282.
- 1698 David Finkelstein and Michael McDevitt, "Engaging DOD: Chinese Perspectives on Military Relations with the United States," (Alexandria, VA: The CNA Corporation, 1999), 6. Hereafter referred to as Finkelstein and McDevitt, *Engaging DOD*.
- 1699 Kristen Gunness, "China's Military Diplomacy in an Era of Change," presented at National Defense University's Pacific Symposium, June 2006, 2.
- 1700 A good source for examining all of the PRC's diplomacy is the annual publication *China's Diplomacy* (中国外交), PRC Ministry of Foreign Affairs Policy Research Office.
- 1701 Kenneth W. Allen, "PLA Diplomacy in Asia: Content and Consequences," which was presented at the 18th annual PLA conference in Taipei, Taiwan, from 8-10 December 2006 and co-hosted by the Chinese Council for Advanced Policy Studies (CAPS), RAND and the Carnegie Endowment for International Peace (CEIP). This paper was not published.
- 1702 Ibid.
- 1703 "China's Military Diplomacy Forging New Ties," *Xinhua* (English), 28 October 2002. Emphasis added.
- 1704 Finkelstein and McDevitt, 10. Liang Guanglie, "Chinese Military Foreign Diplomacy Is in Step with the Times," *PLA Daily* in Chinese, 23 December 2006, accessed at www.pladaily.com.cn/site1/big5/./content_1594931.htm. In his article, Liang states that military foreign diplomacy is, from beginning to end, launched under the correct leadership of the CCP Central Committee and the Central Military Commission.
- 1705 [*China Military Encyclopedia*] [中国军事百科全书], Supplemental Volume, (Beijing: Academy of Military Science Press, November 2002), 280-282.
- 1706 Chen Zhiyong, "Retrospect and Thinking of the 60 Years of Military Diplomacy in the New China," *China Military Science*, (Beijing, Academy of Military Science Press, Number 5, 2009, Issue 107), 34-39. See also Allen, "Trends in PLA International Initiatives under Hu Jintao."
- 1707 2008 *Defense White Paper*.

- 1708 *PLAAF 2010*, Chapter 14.
- 1709 1998, 2000, 2002, and 2004 *Defense White Paper*; interviews; various *PLA Daily* articles, plus articles from *Air Force News* and *People's Navy*.
- 1710 Allen, Saunders, and Chen, *Chinese Military Diplomacy*.
- 1711 “State Councillor Tells Negroponte China ‘Hopes for Healthy Ties with US,’” *Xinhua* (English), 7 January 2009. A search of *Xinhua* articles indicates that China has established strategic dialogues with at least the following countries and organizations: Japan, the United States, Brazil, India, South Africa, Singapore, Germany, Mexico, Pakistan, France, Australia, the United Kingdom, the Republic of Korea, Israel, and the European Union. Most of these were established in 2008.
- 1712 “USPACOM Representatives Work with Chinese Counterparts at Military Maritime Consultative Agreement Working Group and Annual Meeting,” U.S. Indo-Pacific Command Public Affairs, 17 November 2017, accessed <https://www.pacom.mil/Media/News/News-Article-View/Article/1376493/uspacom-representatives-work-with-chinese-counterparts-at-military-maritime-con/>. *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, (U.S. Department of Defense, 1 September 2020), 157.
- 1713 Shirley A. Kan, *U.S.-China Military Contacts: Issues for Congress*, (Congressional Research Service, 27 October 2014), accessed at <https://fas.org/sgp/crs/natsec/RL32496.pdf>. *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, (U.S. Department of Defense, 1 September 2020), 157.
- 1714 “First Chinese Military Official Attends China-US Strategic Dialogue,” *Xinhua* (English), 17 January 2008.
- 1715 “U.S.-China Strategic and Economic Dialogue 2011 Outcomes of the Strategic Track,” U.S. Department of State Media Note, Office of the Spokesman, 10 May 2011, accessed at <http://www.state.gov/r/pa/prs/ps/2011/05/162967.htm>.
- 1716 “US-China Hold Inaugural Diplomatic and Security Dialogue (D&SD) in Washington D.C.,” U.S. Embassy & Consulates in China, 21 June 2017, accessed at <https://china.usembassy-china.org.cn/us-china-hold-inaugural-diplomatic-security-dialogue-dsd-washington-d-c/>.
- 1717 Zhang Tao, ed., “Defense Ministry’s Regular Press Conference on November 30,” *China Military Online* (English), 30 November 2017, accessed at http://eng.chinamil.com.cn/view/2017-11/30/content_7851251.htm.
- 1718 Robert G. Sutter, *Chinese Foreign Relations: Power and Policy Since the Cold War* (New York: Rowman & Littlefield Publishers, Inc., 2008), 37; Phillip C. Saunders, *China's Global Activism: Strategy, Drivers, and Tools*, (Washington, D.C.: Institute for National Strategic Studies, National Defense University, October 2006), 1, 3.
- 1719 Saunders, *China's Global Activism: Strategy, Drivers, and Tools*, 3.
- 1720 Evan S. Medeiros and M. Taylor Fravel, “China’s New Diplomacy,” *Foreign Affairs*, New York: Nov/Dec 2003, Volume 82, Issue 6, 22.
- 1721 Simon Rabinovitch, “The Rise of an Image Conscious China,” *China Security*, Volume 4, Number 3, World Security Institute, Summer 2008, 33-47; David M. Lampton, *The Three Faces of Chinese Power: Might, Money, and Minds*, (Berkeley, CA: University of California Press, 2008), 61.
- 1722 2015 *Defense White Paper*.
- 1723 2019 *Defense White Paper*.
- 1724 The PRC Embassy in the United Kingdom has the following website that lists the PRC’s 135 embassies and 49 consulates abroad and each of their own websites accessed in 2016 at <http://uk.china-embassy.org/eng/yqlj/zgqztzwsjg/t25286.htm>; however, although this website no longer exists, most of the websites that were originally listed on this website still exist. Some of the websites have an English tab and some of them include information about their military attachés.
- 1725 Information about the number of attaché offices in 1988 comes from the files of Ken Allen, who was assigned to the U.S. Defense Attaché office in Beijing at the time. In 1998, China reportedly had military attaché offices in more than 90 Chinese embassies abroad, and approximately 60 countries had military attaché offices in China. For information on the number of attaché offices in 1998, see 1998 *Defense White Paper*; Information Office of the State Council of the People’s Republic of China, July 1998. For a list of the foreign military attaché offices in Beijing in 1988 and 1998, see Kenneth W. Allen and Eric A. McVadon, *China's Foreign Military Relations*, Appendix B (Washington, D.C.: The Henry L. Stimson Center, October 1999), 95. Based on correspondence with the U.S. Embassy in Beijing, 100 countries had attaché offices in Beijing in early 2009.
- 1726 2019 *Defense White Paper*.
- 1727 Information is based on correspondence with the U.S. Embassy in Beijing in April 2009.
- 1728 “Chinese Navy over Past Six Decades,” Consulate General of the People’s Republic of China in Cape Town, accessed at <http://capetown.china-consulate.org/eng/zt/navy60/t575981.htm>. “China in Photos - Chinese Navy over Past Six Decades,” Embassy of the People’s Republic of China in the Republic of Albania, accessed at <http://al.china-embassy.org/eng/xwdt/t575287.htm>.
- 1729 “People’s Liberation Army Delegation Visits Latvia,” Embassy of the People’s Republic of China in Latvia, 14 June 2006, accessed at <http://fmprc.gov.cn/cc/celv/chn/xwdt/t257939.htm>. “People’s Liberation Army Delegation Visits Grenada,” Embassy of the People’s Republic of China in Grenada, 9 August 2006, accessed at <http://gd.china-embassy.org/chn/sbgx/t266852.htm>.
- 1730 1998 *Defense White Paper*.
- 1731 Ibid.
- 1732 2019 *Defense White Paper*.
- 1733 Allen, Saunders, and Chen, *Chinese Military Diplomacy*.
- 1734 The information concerning a regulation comes from discussions with PLA officers over several years. A search for an actual regulation did not find it.
- 1735 In this case, “mid-level officers” refers to officers from the rank of lieutenant colonel to major general (1 star).

- 1736 Interviews with PLA officers over several years.
- 1737 1998 *Defense White Paper*.
- 1738 2002 *Defense White Paper*.
- 1739 2012 *Defense White Paper*.
- 1740 2019 *Defense White Paper*.
- 1741 Andrew Scheineson, "The Shanghai Cooperation Organization," Council on Foreign Relations, 24 March 2009. www.cfr.org/publications/10883/. Other countries have observer status, including Mongolia, Iran, Pakistan, and India.
- 1742 2019 *Defense White Paper*.
- 1743 2008 *Defense White Paper*.
- 1744 "A Quick Guide to SCO and Its Military Cooperation," The PRC's State Council Information Office, 5 June 2018, accessed at http://english.scio.gov.cn/infographics/2018-06/05/content_51673238.htm.
- 1745 "China, Russia Conclude Joint Military Drills," *Xinhua* (English), 26 August 2005, accessed at <http://english.sina.com/china/p/1/2005/0826/43761.html>. "China, Russia Kick Off Joint Anti-terror Exercise," *Xinhua* (English), 22 July 2009, accessed at <http://english.sina.com/china/p/2009/0721/257432.html>.
- 1746 2012 *Defense White Paper*.
- 1747 Zhang Tao, ed., "China Sends First Infantry Battalion for UN peacekeeping," *Xinhua* (English), 22 December 2014, accessed at http://english.chinamil.com.cn/news-channels/2014-12/22/content_6280182.htm. "China to Send First Infantry Battalion for UN peacekeeping," *China Daily*, 23 December 2014, accessed at http://english.chinamil.com.cn/news-channels/2014-12/23/content_6281041.htm. 2012 *Defense White Paper*.
- 1748 2019 *Defense White Paper*.
- 1749 Allen, Saunders, and Chen, *Chinese Military Diplomacy*.
- 1750 2019 *Defense White Paper*.
- 1751 2019 *Defense White Paper*.
- 1752 "Xiangshan Forum Upgraded to High-End Security and Defense Forum Held in Beijing in November," *Wantinews.com*, 28 August 2014, accessed at www.wantinews.com/news-8796433-Xiangshan-Forum-upgraded-to-high-end-security-and-defense-forum-held-in-Beijing-in-November.html. "Chinese DM Addresses Fifth Xiangshan Forum," *China Military Online* (English), 21 November 2014, accessed at http://english.chinamil.com.cn/news-channels/2014-11/21/content_6235185.htm.
- 1753 Ankit Panda, "China Creates New Asia for Asians Security Forum," *The Diplomat*, September 2014, accessed at <http://thediplomat.com/2014/09/china-creates-new-asia-for-asians-security-forum/>.
- 1754 Dai Kaiyi, "Beijing Xiangshan Forum Calls for Solidarity to Combat Global Challenges," *CGTN*, 2 December 2020, accessed at <https://news.cgtn.com/news/2020-12-02/Beijing-Xiangshan-Forum-calls-for-solidarity-to-combat-challenges-VTLxQPFRuE/index.html>.
- 1755 Yao Jianing, ed., "7th Xiangshan Forum to Kick Off in Beijing," *Ministry of National Defense*, 9 October 2016, accessed at http://eng.mod.gov.cn/DefenseNews/2016-10/09/content_4743514.htm.
- 1756 Yao Jianing, ed., "Q&A about 8th Beijing Xiangshan Forum," *China Military Online* (English), 24 October 2018, accessed at http://english.chinamil.com.cn/view/2018-10/24/content_9321951.htm. 2019 *Defense White Paper*.
- 1757 Huang Panyue, ed., "Focusing on Beijing Xiangshan Forum: Maintaining the International Order with the UN Charter at its Core," *China Military Online* (English), 11 October 2019, accessed at http://english.chinamil.com.cn/view/2019-10/11/content_9648923.htm.
- 1758 The information for all PLAAF Commander and Political Commissar visits abroad and foreign air force Commander visits to China is compiled from numerous articles from the Internet, including *Xinhua* News Agency in English and Chinese, *PLA Daily* in English and Chinese, *China Air Force* magazine, and China's biannual *Defense White Paper* since 1998, as well as reporting by host country news agencies. The individual articles are too numerous to include every item in this article. Due to lack of information, this list may not reflect all such visits.
- 1759 The base for the information on the PLAAF's military diplomacy comes from Kenneth W. Allen, "China's Air Force Foreign Relations Program and Implications for Interaction with the U.S. Air Force," *Foreign Area Officer Association Journal of International Affairs*, Volume XVII, Number 3, Winter 2014; Hereafter referred to as Allen, "China's Air Force Foreign Relations Program and Implications." Kenneth W. Allen and Emma Kelly, "Assessing the Growing PLA Air Force Foreign Relations Program," (Washington, D.C.: Jamestown Foundation *China Brief*, Volume 12, Issue 9, 26 April 2012); Hereafter referred to as Allen and Kelly, "Assessing the Growing PLA Air Force Foreign Relations Program"; *PLAAF 2010*, Chapter 14; Allen, "PLA Air Force Foreign Relations"; and Allen, Saunders, and Chen, *Chinese Military Diplomacy*. The information has been updated through 2019.
- 1760 Allen, "PLA Air Force Foreign Relations."
- 1761 "China International Aviation & Aerospace Exhibition," *Wikipedia*, accessed on 27 August 2020 at https://en.wikipedia.org/wiki/China_International_Aviation_%26_Aerospace_Exhibition.
- 1762 Huang Panyue, ed., "Airshow China 2018 Closed in Zhuhai" *China Military Online* (English), 12 November 2018, accessed at http://english.chinamil.com.cn/view/2018-11/12/content_9342180.htm.
- 1763 Yao Jianing, ed., "Systematic Equipment of PLA Air Force on Show for First Time in Zhuhai," *China Military Online* (English), 6 November 2014, accessed at <http://www.defense-aerospace.com/article-view/release/158665/pla-to-show-aircraft,-army-equipment-at-zhuhai-show.html>.
- 1764 Rick Joe, "China's Air Force on the Rise: Zhuhai Airshow 2018," *The Diplomat*, 13 November 2018, accessed at <https://thediplomat.com/2018/11/>

- chinas-air-force-on-the-rise-zhuhai-airshow-2018/ "China International Aviation & Aerospace Exhibition," *Wikipedia*.
- 1765 Huang, ed., "Airshow China 2018 Closed in Zhuhai."
- 1766 *Ibid*.
- 1767 Yao Jianing, ed., "PLAAF Commander Meets with Air Force Leaders from 30 Countries," *Ministry of National Defense*, 2 November 2016, accessed at http://eng.mod.gov.cn/DefenseNews/2016-11/02/content_4757291.htm.
- 1768 Matthew Bossons, "China's Largest Airshow Launches in Zhuhai," *Thatsmags.com*, 7 November 2018, accessed at <https://www.thatsmags.com/china/post/25681/china-s-largest-airshow-launches-in-zhuhai>. Air Staff, "Air Chief Attends Zhuhai Air Show Inauguration," *Nation.com.pk* (Pakistan) (English), 7 November 2018, accessed at <https://nation.com.pk/07-Nov-2018/air-chief-attends-zhuhai-air-show-inauguration>.
- 1769 Huang Panyue, ed., "Military Flight Training Conference 2018 Concludes in Zhuhai, China," *China Military Online* (English), 6 November 2018, accessed at http://english.chinamil.com.cn/view/2018-11/06/content_9334111.htm.
- 1770 Of note, the official *PLAAF Website* www.plaaf.com.cn did not have any articles about these visits. The information was accessed at https://www.weibo.com/5704916395/GbAQ3aZtq?type=comment#_rnd1562957313627 and the *Pakistan Daily Times*' "PLAAF Commander Addresses PAF Graduation Parade," 14 April 2018, accessed at <https://dailytimes.com.pk/227907/plaaf-Commander-addresses-paf-graduation-parade/>.
- 1771 *PLAAF 2010*, Chapter 14. Allen and Kelly, "Assessing the Growing PLA Air Force Foreign Relations Program." Allen, "China's Air Force Foreign Relations Program and Implications." The information for Ma Xiaotian and Ding Laihang came from multiple sources.
- 1772 The lead author of this book was an escort for both Zhu Guang's and Pete Aldridge's visits. Several late-night discussions were held with Zhu.
- 1773 *PLAAF 2010*, Chapter 14. No information was found for the remaining years from 2010 to 2019.
- 1774 Huang Panyue, "Chinese Air Force Chief Meets with Bulgarian Counterpart," *China Military Online* (English), 28 November 2017, accessed at http://english.chinamil.com.cn/view/2017-11/28/content_7847062.htm. Li Jiayao, "Chinese Air Force Chief Meets with Zambian Counterpart," *China Military Online* (English), 17 November 2017, accessed at http://english.chinamil.com.cn/view/2017-11/17/content_7831111.htm.
- 1775 Liao Xiangwu and Zhang Donghe, ["Ding Lai Hang Meets with Commander of Mexican Air Force"], *Air Force News*, 15 May 2018, 1. Zhang Donghe, ["Ding Laihang Meets with Pakistan's Chief of Air Staff"], *Air Force News*, 17 July 2018, 1.
- 1776 "China Military Delegation Leaves for Europe," 8 May 2005, accessed at www.china.org.cn/english/international/127999.htm.
- 1777 See www.gov.cn/misc/2006-09/22/content_396208.htm.
- 1778 The 1997 *Directory of PRC Military Personalities* (45) identified He for the first time as a Deputy Chief of Staff with the rank of major general. Yu Yang, ["Zheng Shengxia Hosts Korean Air Force Chief of Staff"], *Air Force News*, 29 January 2002, 1. Identified as a Deputy Chief of Staff. Wrote a lengthy article on PLAAF training deficiencies in ["Evaluating Foreign Air Force Training"], *Air Force News*, 15 August 2002, 4. He Weirong biography, *Air Force News*, 5 June 2003, 4. Identified as the Jinan MRAF Commander. This article has a short bio on He. Because He held this position for only six months, none of the *Directories of PRC Military Personalities* list him in this position. Liu Xiaowei, ["2004 Air Force Military Training Conference Held in Beijing"], *Air Force News*, 13 January 2004, 1. Identified as the Chief of Staff. Liu Xiaowei, ["Air Force Holds 2006 Military Training Conference"], *Air Force News*, 29 December 2005, 1. Identified as a Deputy Commander.
- 1779 Hou Huiqi, "Chilean Air Force Commander Hosts Chinese Air Force Delegation," *Xinhua* (English), 2 April 2002, accessed at <http://jczs.sina.com.cn/2002-04-02/61159.html>.
- 1780 "Romanian Leaders Meet DM Cao to Discuss Bilateral Relations," *Xinhua* (English), 12 September 2006, accessed at http://china.org.cn/international/2006-09/12/content_1180779.htm. Chen Jin, "Cao Gangchuan Meets with Romanian President, Premier, and Minister of Defense," *Xinhua* (English), 27 October 2006, accessed at http://salon.chinamil.com.cn/site/2006ztpd/2006-10/27/content_627136.htm.
- 1781 Allen, Saunders, and Chen, *Chinese Military Diplomacy*.
- 1782 Zhang Tao, ed., "Senior Chinese Military Official Visits Ethiopia," *Ministry of National Defense*, 23 November 2016, http://eng.mod.gov.cn/DefenseNews/2016-11/23/content_4764451.htm.
- 1783 Zhang Tao, ed., "Senior Military Leader Visits Spain, Finland and Vietnam," *China Military Online* (English), 12 June 2017, accessed at http://english.chinamil.com.cn/view/2017-06/12/content_7635250.htm.
- 1784 Yao Jianing, ed., "Senior Chinese Military Official Visits Italy," *Ministry of National Defense*, 17 May 2016, http://eng.mod.gov.cn/DefenseNews/2016-05/17/content_4659953.htm.
- 1785 Zhang Tao, ed., "Senior Chinese Military Official Starts Visit to Belarus, Hungary," *China Military Online* (English), 18 May 2017, accessed at http://english.chinamil.com.cn/view/2017-05/18/content_7607981.htm.
- 1786 The information in this section comes from Allen, "China's Air Force Foreign Relations Program and Implications"; *PLAAF 2010*, Chapter 14; and Allen, Saunders, and Chen, *Chinese Military Diplomacy*.
- 1787 "Chinese Air Force Modernization Drive," *Xinhua* (English), *BBC*, 7 August 1993.
- 1788 Fu Zhenguo, ["PLAAF Pilot Studies Abroad in Paris"], *China Air Force*, January-February 1995, 22-24. In the late 1990s, Hu Xiao became the PLAAF's Assistant Air Attaché to the United States.
- 1789 Wang Dianli, ["I Flew in Italy"], *China Air Force*, July-August 2002, 32-32. Wang is a special-grade pilot at an unidentified PLAAF unit.
- 1790 Xu Xiliang, ["I Flew a Mirage-2000 in France"], *China Air Force*, September-October 2004, 16-17.
- 1791 "China Air Force Learns from Foreign Countries," *Xinhua* (English), 5 February 1999.

- 1792 *China Air Force*, May 2011, 42-43; September-October 2004, 16-17; January-February 2006, 70; March-April 2005, 27. In June 2011, another pilot visited Norway, Finland, and Sweden, where he flew in a Swedish L-39 trainer (*China Air Force*, January 2012, 71-73).
- 1793 Guo Chengliang, ["French Air Force: Basic Laws for Pilot Recruitment and NCO Training"], *China Air Force*, 2003-6, 21-23.
- 1794 Zhang Jinyu and Liu Xingan, "PLAAF Organized Senior and Middle-Rank Officers on Foreign Study Tour," *PLA Daily in English*, 8 January 2007.
- 1795 Yu Hongchun, ["Opening: Flying High and Far in Confidence"] [开放: 在自信中高飞远航], *China Air Force*, November 2014, 28-29.
- 1796 Allen, "China's Air Force Foreign Relations Program and Implications."
- 1797 Yao Jianing, ed., "Ma Xiaotian Meets with Portuguese Air Force Chief of Staff," *China Military Online* (English), 9 December 2014, accessed at http://english.chinamil.com.cn/news-channels/china-military-news/2014-12/09/content_6261756.htm.
- 1798 The information in this section comes from Allen, "China's Air Force Foreign Relations Program and Implications"; *PLAAF 2010*, Chapter 14; and Allen, Saunders, and Chen, *Chinese Military Diplomacy*.
- 1799 *World Military Yearbook 2000*, 706. "My Impression of the Training System of the Indian Air Force," *PLA Daily*, 4 November 2003, accessed at <http://vayu-sena.tripod.com/today-PLAAF-impression-of-the-iaf.html>.
- 1800 The lead author of this book had the opportunity to participate in the annual visit to the United States from 2014 to 2019, which resulted in some very detailed discussions about the PLAAF.
- 1801 *Air Force News*, 19 July 2005.
- 1802 Guo Kai and Wang Caishan, ["Air Force Command College Grants 20 Foreign Students Master's Degree"] [空军指挥学院授予20名外军留学生硕士学位], *Air Force News*, 17 July 2014, 1.
- 1803 Li Yipeng and Chen Zhuo, ["Female Cadets as International Model Children"] (女学员的国际范儿), *China Air Force*, March 2013, 26-29.
- 1804 *2000 Defense White Paper*.
- 1805 *2008 Defense White Paper*.
- 1806 Zhang Jinyu and Liu Xingan, "PLA Air Force Officers' Foreign Study Tours Represent 'New Openness,'" *PLA Daily*, 8 January 2007. The length of study abroad was not identified.
- 1807 *2019 Defense White Paper*.
- 1808 *China Air Force*, September-October 2003, 19-20; *China Air Force*, July-August 2007, 17; *China Air Force*, September-October 2004, 16-17. *Air Force News*, 10 February 2004.
- 1809 See <http://english.cri.cn/6909/2009/03/05/1781s460876.htm>.
- 1810 Li Jiayao, "Chinese Air Force Aerobatics Team Departs for Performance in Russia," *Xinhua* (English), 16 August 2018, accessed at http://english.chinamil.com.cn/view/2018-08/16/content_9255259.htm.
- 1811 Garafola, Heath; *China's First Steps toward becoming an Expeditionary Air Force*, RAND, 2017.
- 1812 Yao Jianing, "Chinese Bayi Aerobatic Team Makes Debut in Thailand," *China Military Online* (English), 27 November 2015, accessed at http://english.chinamil.com.cn/news-channels/china-military-news/2015-11/27/content_6789790.htm.
- 1813 Li Jiayao, "Four Spotlights in Dubai Airshow," *China Military Online* (English), 14 November 2017, accessed at http://english.chinamil.com.cn/view/2017-11/14/content_7825193.htm.
- 1814 Li Jiayao, "Bayi Aerobatics Team Performs at High Altitude for First time," *China Military Online* (English), 21 November 2017, accessed at http://english.chinamil.com.cn/view/2017-11/21/content_7835530.htm.
- 1815 Chen Zhuo, "Chinese Fighter Jets Arrive in Pakistan for Its National Day Parade," *Global Times* (English), 17 March 2019, http://english.chinamil.com.cn/view/2019-03/17/content_9451597.htm.
- 1816 Li Jiayao, "Chinese Air Force's Aerobatics Team to perform at Singapore Airshow," *China Military Online* (English), 5 February 2020, accessed at http://english.chinamil.com.cn/view/2020-02/05/content_9733702.htm.
- 1817 Wang Shuo, He Jiantao, and Zhang Xuefeng, ["Fly to Karachi"], *China Air Force*, December 2012, 28-31. Accessed at <http://china-defense.blogspot.com/2011/10/china-airlifts-third-batch-of-flood.html>, and www.defence.pk/forums/china-defence/130971-chinese-air-force-il-76-aircrafts-pakistan-humanitarian-aid.html.
- 1818 Wang Shuo, et al, *China Air Force*, December 2012, 28-31.
- 1819 Xu Feng, et al, *China Air Force*, July 2012, 18-19.
- 1820 Zhao Zhen, ["Central Theater Command Air Force Transport Air Division"], *Air Force News*, 3 November 2017, 3.
- 1821 "PLA Air Force Strategic Airlift, *PLA Pictorial*, October 2017, Second Half, 36-49.
- 1822 Zhao Chen, Lin Kangjun, and Man Mingming, ["Central TCAF Aviation Unit Goes to South Korea for 4th Time to Retrieve Korean War Remains"] [中部战区空军航空兵某部连续4次赴韩接运志愿军烈士], *China Air Force*, 1 April 2018, 43-45.
- 1823 *PLA Aerospace Power*.
- 1824 "The AMR Regional Air Force Directory 2012," *Asian Military Review*, February 2012.
- 1825 *Annual Report to Congress: Military Power of the People's Republic of China, 2003*, (Washington, D.C.: Office of the Secretary of Defense, 2003). Hereafter referred to as *Annual Report to Congress 2003*.

- 1826 *Annual Report to Congress: Military Power of the People's Republic of China, 2011*, (Washington, D.C.: Office of the Secretary of Defense, 2011). Hereafter referred to as *Annual Report to Congress 2011*.
- 1827 Correspondence with DAO Beijing.
- 1828 A list of PLA attachés abroad was accessed at ["Military Attachés Stationed Abroad"] [驻外武官], *Baidu*, undated, accessed at <https://baike.baidu.com/item/驻外武官>. This list includes 19 Army Attachés who serve concurrently as the Air Attaché.
- 1829 Information from U.S. Army Lt Col-Ret. Christopher Pultz, who served as the Assistant Army Attaché in Mongolia at that time. He was of Uighur descent. No information was found concerning an Air Attaché in Mongolia after that time.
- 1830 "The Road to Becoming an Air Force China IAS and Attaché," Mt. Vernon, VA: *Foreign Area Officer Association Journal of international Affairs*, June 2012. Correspondence with DAO Beijing in 2020.
- 1831 A list of all PRC embassy and consulate officials in the UK can be accessed at <https://www.gov.uk/government/publications/foreign-embassies-in-the-uk>.
- 1832 Prior to 2005, the newspaper did not have an official English name. The name *Air Force News* was added in 2005.
- 1833 The primary sources for this section include Allen and Kelly, "Assessing the Growing PLA Air Force Foreign Relations Program." Hereafter referred to as Allen, "China's Air Force Foreign Relations Program and Implications"; and a project the lead author of this book did for OSD Policy in 2015.
- 1834 Viola Gienger, "China-U.S. Defense Hotline Shows Gulf Between Nations," *Bloomberg News*, 13 May 2011, accessed at <http://www.bloomberg.com/news/2011-05-13/china-u-s-defense-hotline-shows-gulf.html>.
- 1835 David Brunnstrom, "China's Military Secrecy Justifies Surveillance Flights – U.S. Official," *Reuters*, 13 September 2014, accessed at <http://www.reuters.com/article/2014/09/13/us-usa-china-surveillance-idUSKBN0H72KN20140913>.
- 1836 Quotations in this section come from *Annual Report to Congress 2019*, 95.
- 1837 "Remarks by President Obama and President Xi of the People's Republic of China in Joint Press Conference," 25 September 2015, accessed at <https://obamawhitehouse.archives.gov/the-press-office/2015/09/25/remarks-president-obama-and-president-xi-peoples-republic-china-joint>.
- 1838 *Annual Report to Congress 2019*, 66.
- 1839 Ibid. Lt. Gen. Robert P. Ashley, Jr., "Remarks at the Hudson Institute: Russian and Chinese Nuclear Modernization Trends," Hudson Institute, 29 May 2019, accessed at <https://www.dia.mil/News/Speeches-and-Testimonies/Article-View/Article/1859890/russian-and-chinese-nuclear-modernization-trends/>.
- 1840 Ibid., 20. This is a common theme in every DOD report.
- 1841 *Annual Report to Congress: Military Power of the People's Republic of China, 2017*, (Washington, D.C.: Office of the Secretary of Defense, 2017), 42. Hereafter referred to as *Annual Report to Congress 2017*. "Fact Sheet: President Xi Jinping's State Visit to the United States," The White House Office of the Press Secretary, 25 September 2015, accessed at <https://obamawhitehouse.archives.gov/the-press-office/2015/09/25/fact-sheet-president-xi-jinpings-state-visit-united-states>.
- 1842 Zhang Tao, ed., "Interview with Guan Youfei, Director of Foreign Affairs Office of MND," *China Military Online* (English), 17 April 2013, accessed at http://eng.chinamil.com.cn/special-reports/2013-04/17/content_5303997.htm.
- 1843 Guo Renjie, ed., "Chinese Military Exercises Create Records in 2014," *China Military Online* (English), 17 December 2014, accessed at http://english.chinamil.com.cn/news-channels/china-military-news/2014-12/17/content_6273930.htm.
- 1844 Guo Renjie, ed., "Chinese Military Exercises Create Records in 2014."
- 1845 *Annual Report to Congress: Military Power of the People's Republic of China, 2010*, (Washington, D.C.: Office of the Secretary of Defense, 2010), 56. Hereafter referred to as *Annual Report to Congress 2010*.
- 1846 This website kj.81.cn is also known as *Air Force News Net* (空军新闻网) and *China Air Force Network* (中国空军网).
- 1847 James Mann, *About Face: A History of America's Curious Relationship with China, From Nixon to Clinton*, 141-142.
- 1848 USAF Chiefs of Staff from "Chief of Staff of the United States Air Force," *Wikipedia*, last edited on 6 December 2020, accessed at https://en.wikipedia.org/wiki/Chief_of_Staff_of_the_United_States_Air_Force. The information for the visits in columns three and four come from Shirley A. Kan, *U.S.-China Military Contacts: Issues for Congress*, Congressional Research Service, 5 January 2015.
- 1849 "U.S Air Force Chief of Staff Gen. Charles Gabriel Visits China," *UPI*, 4 October 1985, accessed at www.upi.com/Archives/1985/10/04/US-Air-Force-Chief-of-Staff-Gen-Charles-Gabriel/1340497246400/. "Wickham to Be First Army Chief to Visit China," *UPI*, 14 November 1986, accessed at www.upi.com/Archives/1986/11/14/Wickham-to-be-first-Army-chief-to-visit-China/7221532328400/.
- 1850 "Nanjing Regional Air force Command Visits Pacific Air forces," 25 September 2014, accessed at www.pacaf.af.mil/news/story.asp?id=123426183. "US open to the People's Liberation Army for the first time visited F22," 27 September 2014, accessed at www.szbuzz.com/2014/09/27/us-open-to-the-peoples-liberation-army-for-the-first-time-visited-f22/.
- 1851 Accessed at 13af.pacaf.af.mil, 12 November 2009.
- 1852 Discussion with USAF personnel.
- 1853 Office of Secretary of Defense, *Military and Security Developments Involving the People's Republic of China 2020*, September 2020.
- 1854 Guo Hongbin and Zhang Hongwei, ["American Military Personnel Enter China's Air Force Aviation University"], *China Air Force*, May-June 2005, 22-23.
- 1855 Correspondence with USAFA.
- 1856 Correspondence with USAFA personnel. "Air Force Second International Cadet Conference Held at the Air Force Aviation University," kj.81.cn, 21

- October 2014, accessed at http://kj.81.cn/content/2014-10/21/content_6189851.htm.
- 1857 Correspondence with LtCol Barry Savage, Director of International Programs, Assistant Professor of Chinese, U.S. Air Force Academy, 2 April 2009.
- 1858 Correspondence with USAFA on 11 January 2021.
- 1859 Correspondence with DOD personnel in February 2020.
- 1860 United States Air Force International Affairs Specialist Program,” accessed at <https://www.thefreelibrary.com/United+States+Air+Force+International+Affairs+Specialist+program.-a0142386677>. *Air Force Instruction*, 16-109, Office of the Secretary of the Air Force, 11 July 2017, accessed at https://www.safia.hq.af.mil/Portals/72/documents/AFI_16-109.pdf?..#:~:text=The%20Air%20Force%20established%20the,%2C%20and%20political%2Dmilitary%20savvy. Robin L. Kaiser, “International Affairs Program: The Air Force Versus the Army,” Air Command and Staff College, Air University, October 2015, accessed at <https://apps.dtic.mil/dtic/tr/fulltext/u2/1040708.pdf>.
- 1861 Kat Bailey, “Foreign Area Officer Program Chooses 57 New Cadre,” Air Force’s Personnel Center Public Affairs, 14 February 2018, accessed at <https://www.afpc.af.mil/News/Article-Display/Article/1441710/foreign-area-officer-program-chooses-57-new-cadre/>.
- 1862 CASI’s official website can be accessed at <https://www.airuniversity.af.edu/CASI/>.
- 1863 *Annex 3-01 Counterair Operations: Counterair Operations*, Curtis E. LeMay Center for Doctrine Development and Education, 6 September 2019, accessed at https://www.doctrine.af.mil/Portals/61/documents/Annex_3-01/3-01-ANNEX-Do2-AIR-Counterair-Operations.pdf. Wang Houqing and Zhang Xingye, eds. [*Science of Campaigns 2006*] [战役学]. Beijing: National Defense University, 2006
- 1864 *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2020* (U.S. Department of Defense, 1 September 2020).
- 1865 Retired GSD Army Major General Xu Guangyu published an article in July 2010 stating the PLA will reduce its force in stages over the next 20 years to about 1.5 million. Major General Xu Guangyu, “Evolution of China’s Military over the Next 20 Years,” (Beijing: *Chinese Academy of Social Sciences Journal*, July 27, 2010), accessed at <http://theory.people.com.cn/GB/12365190.html>.
- 1866 Allen, “China Announces Reform of Military Ranks.”
- 1867 This analysis is based on interviews with various PLA and foreign officers over several years.
- 1868 Garafola and Heath, *The Chinese Air Force’s First Steps*, 33-34. 2002 was the earliest found overseas operation in the study.
- 1869 The Y-20 participated in a paradrops exercise in 2018, but its role was not highlighted in other large-scale activities again until 2020, when it conducted COVID-19-related missions to Wuhan and later to other countries. Huang Panyue, ed., “Paratroops Jump Out of Y-20 Transport Aircraft,” *China Military Online* (English), 10 May 2018, accessed at http://eng.chinamil.com.cn/view/2018-05/10/content_8028273.htm; Li Qiang, “Y-20’s Completion of First Heavy Equipment Airdrop is of Great Significance,” *China Military Online* (English), 12 June 2018, accessed at http://english.pladaily.com.cn/view/2018-06/12/content_8059912.htm; Zhao Lei, “1,400 Military Medics Arrive in Wuhan to Fight Epidemic,” *China Daily* (English), 13 February 2020, accessed at <https://www.chinadaily.com.cn/a/202002/13/WS5e44f7a5a310128217277562.html>.
- 1870 Yang Tao, ed., “Chinese Y-20 Transport Aircraft Delivers Medical Supplies to Thailand,” *China Military Online* (English), 13 May 2020, accessed at http://eng.chinamil.com.cn/view/2020-05/13/content_9812980.htm; “China PLA Sends Epidemic Prevention Supplies”; Huang Panyue, ed., “China’s Y-20 Cargo Plane Sends Victory Day Paraders to Moscow in First Russia Visit,” *Global Times*, 16 June 2020, accessed at http://eng.chinamil.com.cn/view/2020-06/16/content_9835602.htm.
- 1871 [“Xi Jinping Presents Special Discussion at Opening Ceremony and Issues Important Speech to Provincial Level Principal Leading Cadres; Persevere with Bottom Line Thinking, Put Effort into and Be on Guard to Neutralize Major Risks”] [习近平2019年1月21日出席省部级主要领导干部坚持底线思维着力防范化解重大风险专题研讨班开班式并发表重要讲话]. *Xuexi.cn* [学习强国], 22 January 2019, accessed at <https://www.xuexi.cn/b2afcc18e0068a-6c4aee4ff43d85d2f6/e43e220633a65f9b6d8b53712cba9caa.html>.
- 1872 “China to Deepen Military Cooperation with Caribbean Countries, Pacific Island Countries: Defense Minister,” *Xinhua* (English), 8 July 2019, accessed at http://www.xinhuanet.com/english/2019-07/08/e_138209338.htm.
- 1873 Elsa B. Kania, “Battlefield Singularity: Artificial Intelligence, Military Revolution, and China’s Future Military Power,” Center for a New American Security, 28 November 2017, accessed at <https://www.cnas.org/publications/reports/battlefield-singularity-artificial-intelligence-military-revolution-and-chinas-future-military-power>.
- 1874 Chen Zhuo, “China’s Military to Recruit Twice a Year from 2020,” *Xinhua* (English), 16 January 2020, accessed at http://www.china.org.cn/china/2020-01/16/content_75620242.htm.
- 1875 Chen Zhuo, “Postponement of Military Recruitment to Have No Impact on Results: Expert,” *China Military Online* in English, 7 February 2020, accessed at http://english.chinamil.com.cn/view/2020-02/07/content_9735243.htm.
- 1876 [“2021 Conscription Network Registration Begins”] [2021年度征兵网络报名开始], *The Paper*, 10 December 2020, accessed at https://www.thepaper.cn/newsDetail_forward_10350814.
- 1877 Marcus Clay and Dennis J. Blasko. “People Win Wars: The PLA Enlisted Force, and Other Related Matters.” *War on the Rocks*, 31 July 2020 accessed at <https://warontherocks.com/2020/07/people-win-wars-the-pla-enlisted-force-and-other-related-matters/>.
- 1878 Clay and Blasko. “People Win Wars.”
- 1879 This calculation is conservative and was derived with the following information: The PLAAF recruited and trained over 500 female aviators between 1951 and 2012, and from 2013 to 2019 it has recruited another 115 (75 of those were prior to 2018). In contrast, the PLAAF recruited about 38,000 new pilot cadets (mostly male) from 1987 to 2018 alone. PLAAF female aviator recruits include both pilots and air crews, but a generous estimate would posit roughly 300 female pilots were recruited between 1987 and 2018 (the reality is likely significantly lower). Assuming the proportion between female and male pilots from 1987-2018 is roughly 300 to 37,700, less than 0.1% of recruited pilots have been women. Data from Elsa Kania and Kenneth W. Allen, “Holding Up Half the Sky? (Part 2)—The Evolution of Women’s Roles in the PLA,” (Washington, D.C.: Jamestown

- Foundation *China Brief*, Volume 16, Issue 16, 26 October 2016); [“The Tenth Group of Female Pilots March 50 Kilometers through the Wild”] (我军第十批女飞行员亮相野外求生徒步近百里), 15 September 2014, accessed at <http://mil.chinaiss.com/html/20149/15/peb6e.html>. [“2013 Recruitment Plan Includes 40 Women for the Air Force’s 10th Group of Female Pilots”] (2013年空军第十批女飞行员计划招收40名), 15 December 2012, accessed at www.liuxue86.com/a/738709.html; Du Haifeng (杜海丰), [“Air Force to Recruit the 11th Batch of 35 Female Pilot Cadets”] [空军将招收第11批35名女飞行学员], *China Military Online*, 7 June 2017, accessed at http://jz.chinamil.com.cn/n2014/tp/content_7630130.htm. “Chinese Air Force to Recruit 40 Female Student Pilots in 2019,” Ministry of Defense in English, 11 November 2018, accessed at http://eng.mod.gov.cn/news/2018-11/11/content_4829203.htm; “2019 Air Force Recruitment of Flight Cadets Brochure” [2019年空军招收飞行学员简章], 7 September 2018, accessed at https://gaokao.eol.cn/zhaofei/fxy/201809/t20180907_1624047.shtml.
- 1880 [“Air Force One-Half on New Cadre Come from National Defense Student Program”] [空军一半新干部来自国防生], *Sina*, 1 September 2006, accessed at <http://edu.sina.com.cn/exam/2006-09-01/111652631.html>. Li Xuanqing and Hu Chunhua, “Whole Military Sees Good Trend of Development in Relying on Ordinary Colleges, Universities to Cultivate National Defense Students,” *PLA Daily*, 14 December 2007.
- 1881 [“Teenagers Aviation School of the Air Force Welcomes Its First Graduates: Some Cadets Will Become ‘Preparatory Pilots’”] [空军青少年航校迎首届毕业生: 部分学员将成“准飞行员”], *The Paper*, 2 August 2018, accessed at https://www.thepaper.cn/newsDetail_forward_2310141.
- 1882 MSGT Eric Griffin from CASI provided most of the material on the OMTE in this section.
- 1883 Min Yuxiang and Jiang Long, [“Airborne Corps Transport Air Brigade, New-Aircraft High-Intensity Day-into-Night Flight Training”], *Air Force News*, 26 April 2017, 1.
- 1884 *2019 Defense White Paper*.
- 1885 Wang Xinjuan, “PLA Sends Materials to Help Cambodian Military Battle COVID-19,” *Xinhua* (English), 26 April 2020, http://eng.mod.gov.cn/news/2020-04/26/content_4864142.htm. Wang Xinjuan, “Chinese Military Sends Medical Teams, Aid to Myanmar, Pakistan and Laos to Fight COVID-19,” *Xinhua* (English), 24 April 2020, accessed at http://eng.mod.gov.cn/news/2020-04/24/content_4864096.htm.
- 1886 Keoni Everington, “Chinese Fighter Jets Cross Taiwan Strait Median Line Amid US Official Visit,” *Taiwan News*, 10 August 2020, accessed at <https://www.taiwannews.com.tw/en/news/3984224>. Brad Lendon, “Almost 40 Chinese Warplanes Breach Taiwan Strait Median Line; Taiwan President Calls It a ‘Threat of Force,’” *CNN*, 21 September 2020, accessed at <https://www.cnn.com/2020/09/21/asia/taiwan-china-warplanes-median-line-intl-hnk-scli/index.html>. See also Taiwan’s MND website, which has several articles, accessed at <https://www.mnd.gov.tw/PublishTable.aspx?Types=即時軍事動態&title=國防消息> that identify the type aircraft and their flight route. Ben Blanchard, “Taiwan’s Armed Forces Strain in Undeclared War of Attrition with China,” *Reuters*, 26 September 2020, accessed at <https://news.yahoo.com/taiwans-armed-forces-strain-undeclared-055941506.html>.
- 1887 Ding Yang, (“MND: Will Never Tolerate Any Form of ‘Taiwan Independence’ Separatist Plots and Actions”) [国防部: 绝不容忍任何形式的“台独”分裂图谋和行径], *mod.gov*, 26 March 2020, accessed at http://www.mod.gov.cn/jzhzt/2020-03/26/content_4862676.htm. Kelvin Chen, “China Denies Existence of Median Line in Taiwan Strait,” *Taiwan News*, 22 September 2020, accessed at <https://www.taiwannews.com.tw/en/news/4014231>.
- 1888 Ralph Jennings, “Why US Lawmakers Introduce Bill After Bill to Help Taiwan,” *VOA News*, 4 August 2020, accessed at <https://www.voanews.com/east-asia-pacific/why-us-lawmakers-introduce-bill-after-bill-help-taiwan>.
- 1889 Mike Stone and Patricia Zengerle, “U.S. Pushes Arms Sales Surge to Taiwan, Needling China,” *Reuters*, 16 September 2020, accessed at <https://www.reuters.com/article/us-usa-taiwan-arms-exclusive-idUSKBN2671M4>. Ryan Browne and Jennifer Hansler, “Trump administration Reads Major Arms Sale to Taiwan,” *CNN*, 17 September 2020, accessed at <https://www.cnn.com/2020/09/17/politics/us-taiwan-arms-sale/index.html>.
- 1890 “MND Website Makes Chinese Military Intrusions Public,” *Focus Taiwan*, 17 September 2020, accessed at <https://focustaiwan.tw/cross-strait/202009170005>. The MND website link is <https://www.mnd.gov.tw/PublishTable.aspx?Types=即時軍事動態&title=國防消息>.
- 1891 DP Staff Writer, “Chinese Fighters, Bombers Cross Midline of Taiwan Strait, Enter Taiwan’s Southwest ADIZ,” *DEFPOST*, 19 September 2020, accessed at <https://defpost.com/chinese-fighters-bombers-cross-midline-of-taiwan-strait-entered-taiwans-southwest-adiz/>.
- 1892 Matt Yu and Joseph Yeh, “Chinese Warplanes Make Most Median Line Crossings in 30 Years,” *Focus Taiwan*, 7 October 2020, accessed at <https://focustaiwan.tw/cross-strait/202010070024> and updated at <https://www.eyentaiwan.com/chinese-warplanes-make-most-median-line-crossings-in-30-years-update>.
- 1893 Emerson Lim, “Three Chinese Military Planes Enter Taiwan’s ADIZ,” *Focustaiwan.com*, 20 October 2020, accessed at <https://focustaiwan.tw/cross-strait/202010200018>. Flor Wang and Lai Yen-his, “Chinese Electronic Warfare Aircraft Enters Taiwan’s ADIZ,” *Focustaiwan.com*, 27 October 2020, accessed at <https://focustaiwan.tw/politics/202010270020>. Eric Chang, “China Aircraft Intrusions Deemed to Constrict Taiwan’s Drill Space,” *Focustaiwan.com*, 28 October 2020, accessed at <https://focustaiwan.tw/cross-strait/202010280018>. Matt Yu and Matthew Mazzetta, “Three Chinese Military Planes Enter Taiwan’s ADIZ,” *Eyentaiwan.com*, 30 October 2020, accessed at <https://www.eyentaiwan.com/three-chinese-military-planes-enter-taiwans-adiz>.
- 1894 Emerson Lim and Matt Yu, “Chinese Anti-Submarine Plane Enters Taiwan’s ADIZ,” *focustaiwan.tw*, 6 December 2020, accessed at <https://focustaiwan.tw/politics/202012060015>.
- 1895 The source for this information comes from <https://www.mnd.gov.tw/PublishTable.aspx?Types=即時軍事動態&title=國防消息>.
- 1896 Matt Yu and Joseph Yeh, “Experts Urge Taiwan to Prepare for War of Attrition with China,” *Focus Taiwan*, 4 October 2020, accessed at <https://focustaiwan.tw/cross-strait/202010040011>.
- 1897 Xu Tongxuan, Jia Erbing, Gao Di, and Li Yinghui, [“Notes on the ‘Model Bomber Group’”], *Air Force News*, 15 November 2019, 1.
- 1898 “Russian and Chinese Bombers Fly Joint Patrol over Pacific,” *AP News*, 22 December 2020, accessed at <https://apnews.com/article/beijing-vladimir-putin-moscow-russia-east-china-sea-dfe0b31a067cea631109922c1c263aa>.
- 1899 *Air Force News*, 9 June 2005, 1.
- 1900 “Xu Xueqiang” [许学强], *Wikipedia*, last edited 24 December 2020, accessed at <https://zh.wikipedia.org/wiki/许学强>. “Xu Xueqiang” [许学强], *Baidu*,

accessed at <https://baike.baidu.com/item/许学强/17194138>.

- 1901 According to the *PLAAF Officers' Handbook*, the Chinese characters for C4ISR are 指挥, 控制, 通信, 计算机, 情报, 监视和侦查一体系统, which is sometimes simplified as 作战指挥信息系统. *People's Liberation Army Air Force Officer's Handbook* (中国人民解放军空军军官手册), (Beijing: Blue Sky Press, November 2006), 358.
- 1902 ["Category: PLA Air Force Generals"] [分类:中国人民解放军空军上将"中的页面], *Wikipedia*, last edited on 7 March 2015, accessed at <https://zh.wikipedia.org/wiki/Category:中国人民解放军空军上将>.
- 1903 One *Wikipedia* article has a list of 57 PLAAF officers who received the rank of major general, including in 1955 and 1988 when ranks were established and then reestablished. See ["Category: PLA Air Force Major Generals"] [分类:中国人民解放军空军少将"中的页面], *Wikipedia*, last edited on 12 November 2017, accessed at <https://zh.wikipedia.org/wiki/Category:中国人民解放军空军少将>.
- 1904 *Directory of PRC Military Personalities 2018*. "List of 43 Military Academies and Distribution Areas Announced after the Military Reforms" [军改后43所军队院校名单及分布区公布], *Sohu*, 5 January 2018, accessed at www.sohu.com/a/214861084_184797.
- 1905 Sun, ed., [A *Brief History*], 659-711.
- 1906 ["The Seventh Plenary of the Seventeenth Central Committee Decided to Add Fan Changlong and Xu Qiliang as Vice Chairmen of the Central Military Commission"] [十七届七中全会决定增补范长龙许其亮为中央军委副主席], *Xinhua*, 4 November 2011, accessed at http://news.xinhuanet.com/politics/2012-11/04/m_113600838.htm. [Dictionary of China's Communist Party Central Committee Members for 1921-2003] [中国共产党历届中央委员大辞典], (Beijing: Chinese Communist Party History Press, 2004), 908. *Air Force News*, 26 November 2017, 4.
- 1907 Sun, ed., [A *Brief History*], 648-711.
- 1908 Sun, ed., [A *Brief History*], 648-711.
- 1909 Unless noted, the primary source for this data is Sun, ed., [A *Brief History*], 648-711. This book has very detailed information for each academic institution, including the changes in name, location, and organizational structure, as well as number of cadets who graduated for some institutions. The other two primary sources are Yao, ed., [China Air Force Encyclopedia] and Dong and Mou, eds., *Dictionary of Modern Military Education* (sic).
- 1910 "Air Force Flight Preparatory School" [空军航空预备学校] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1249. Each of the seven flight preparatory schools began in 1951 as a preparatory *zongdui* (预备总队) for different specialties and were renamed as flight preparatory schools in 1954. They supported their respective Military Regions at that time.
- 1911 "General Corps" [总队] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 331.
- 1912 "Air Force Engineering University" [空军工程大学] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1243-1244.
- 1913 "Air Force Missile School" [空军第二高射炮兵学校], "Air Force Missile School" [空军第二高射炮兵学校], and "Air Force Ground-to-Air Missile College" [空地空导弹学院] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1245. As noted in the Organization Chapter, when the PLAAF created the SAM branch in 1958, it tried to hide its existence by identifying all of its units and academic institutions as "2nd Antiaircraft Artillery" [第二高射炮兵]. This continued until the 1990s.
- 1914 Unless noted, the primary source for this data is Sun, ed., [A *Brief History*], 648-711. This book has very detailed information for each academic institution, including the changes in name, location, and organizational structure, as well as number of cadets who graduated for some institutions. The other two primary sources are Yao, ed., [China Air Force Encyclopedia] and Dong and Mou, eds., *Dictionary of Modern Military Education* (sic).
- 1915 "Air Force College" [空军学院] and "Air Force Command College" [空军指挥学院] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1243.
- 1916 "Air Force Meteorology College" (空军气象学院) in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1246-1247. Note that the PLA's official dictionary translates *qixiang* [气象] as weather. "Chinese Liberation Army University of Science Technology National Defense College of Engineering" [中国人民解放军理工大学国防工程学院], *Baidu*, accessed 14 November 2019 at <https://baike.baidu.com/item/中国人民解放军理工大学国防工程学院>.
- 1917 "Air Force Politics College" [空军政治学院] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1247.
- 1918 "Nanjing Political Institute" [解放军南京政治学院] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 469.
- 1919 "Air Force Commander Training Course" [空军指挥员训练班] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1246.
- 1920 "Air Force Logistics College" [空军后勤学院] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1250.
- 1921 Xiong et al., "Tribological Study." "Service" [勤务] in *PLA Military Terminology* dictionary, 2nd ed., 2011, 67. There are also separate entries for "POL Service" [油料勤务], "Health Service" [卫生勤务], and "Vehicle Transport Service" [汽车运输勤务], etc., all of which are part of logistics support. In addition, an entry for "Air Force Duty College" was found in the PLA's *Dictionary of Modern Military Education* (sic), but this does not appear to be correct. Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 480.
- 1922 "Air Force Radar College" [空军雷达学院] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1247.
- 1923 "Chinese People's Liberation Army Air Force Early Warning Academy" [中国人民解放军空军预警学院], *Baidu*, accessed 29 November 2019 at <https://baike.baidu.com/item/中国人民解放军空军预警学院>. Yu Chen-long, Tan Xian-si, and Li Fan, "Study on Search Performance of Long Range Early-Warning Phased Array Radar" (2016 CIE International Conference on Radar (RADAR), Guangzhou, China, 2016), accessed at <https://doi.org/10.1109/RADAR.2016.8059313>. Note that the institution does not have an official website, so the name was found in a *Baidu* website as well as in information concerning three speakers from the institution in a conference report. In addition, the Academy publishes a quarterly journal with the official English name of *Journal of the Air Force Radar Academy* [空军雷达学院学报]. For the website, see <http://navi.cnki.net/KNavi/JournalDetail?pcode=CJFD&pykm=KLDX&Year=&Issue=&Entry=>. "Air Force Prewarning College" [空军预警学院] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 480.
- 1924 "Air Force Antiaircraft Artillery School" [空军高射炮兵学校] and "Guilin Air Force College" [桂林空军学校] in Yao, ed., [China Air Force Encyclopedia], Volume 2, 1250.

- 1925 “Air Force Telecommunication School” [空军通信学校] and “Air Force Telecommunication Engineering College” [空军电讯工程学院] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1246. Note: The PLAAF normally translates tongxin as communications.
- 1926 “Air Force Medical School” [空军军医学校], “Air Force Medical Professional School” [空军医学专科学校], and “Air Force Medical Academy” [空军医学高等专科学校] in Yao, ed., [*China Air Force Encyclopedia*], Volume 2, 1251.
- 1927 “Air Force Medical University,” Air Force Medical University website, accessed 4 December 2019 at <https://www.fmmu.edu.cn/en/>. “Air Force Medical University,” *Wikipedia*, accessed 4 December 2019 at https://en.wikipedia.org/wiki/Air_Force_Medical_University. “Fourth Military Medical University of the PLA” [中国人民解放军第四军医大学] in Zhao et al., [*PLA Military History*], Volume 3, 723-724. “The Fourth Military Medical University” [第四军医大学] in Dong and Mou, eds., *Dictionary of Modern Military Education* (sic), 473.
- 1928 *CCP Dictionary*, 465. *Air Force Dictionary*, 799.
- 1929 *CCP Dictionary*, 824. *Air Force Dictionary*, 819.
- 1930 *CCP Dictionary*, 523. *Air Force Dictionary*, 842.
- 1931 *CCP Dictionary*, 1052-1053. *Air Force Dictionary*, 836.
- 1932 *CCP Dictionary*, 734. *Air Force Dictionary*, 844-845.
- 1933 *CCP Dictionary*, 27. *Air Force Dictionary*, 848-849.
- 1934 *CCP Dictionary*, 977. *Air Force Dictionary*, 850.
- 1935 *CCP Dictionary*, 587-588. *Air Force Dictionary*, no entry.
- 1936 *CCP Dictionary*, 908. *Air Force Dictionary*, no entry. Chin Chien-li, “One of the Key People in the Chinese Communist Combat Operations Against Taiwan: Critical Biography of Deputy Chief of the General Staff, Lieutenant General Xu Qiliang,” *Hong Kong Chien Shao*, 1 June 2005, No. 172, 71-75.
- 1937 At the 19th Party Congress in November 2017, Xu moved from being number two in protocol order to being number one in protocol order for the two vice chairman positions.
- 1938 *CCP Dictionary*, 862. *Air Force Dictionary*, 824.
- 1939 *CCP Dictionary*, no entry. *Air Force Dictionary*, 809.
- 1940 *CCP Dictionary*, 740-741. *Air Force Dictionary*, 803-804.
- 1941 *CCP Dictionary*, 144. *Air Force Dictionary*, 811.
- 1942 *CCP Dictionary*, 152. *Air Force Dictionary*, 819.
- 1943 *CCP Dictionary*, 1150. *Air Force Dictionary*, 842.
- 1944 *CCP Dictionary*, 119-120. *Air Force Dictionary*, 852.
- 1945 *CCP Dictionary*, 103-104. *Air Force Dictionary*, no entry.
- 1946 *Air Force News*, 19 June 2014, 1. “Chinese People’s Liberation Air Force” [中国人民解放军空军], *Wikipedia*, last edited on 9 January 2021, accessed at <https://zh.wikipedia.org/wiki/中国人民解放军空军>.
- 1947 Allen, *PRC PLAAF*, 1991.
- 1948 “BAND IS BOFFO’ On Far East Tour,” *Airman* magazine, Volume 31, No. 10, October 1987, 28-31.
- 1949 Jim Mann, “China Cancels U.S. Deal for Modernizing F-8 Jet: Military: Shelving the \$550-million Program Signals an Important Break in the Two Nations’ Strategic Ties,” *Los Angeles Times*, 15 May 1990, accessed at <https://www.latimes.com/archives/la-xpm-1990-05-15-mn-161-story.html>.
- 1950 Discussion with USDAO Beijing attachés during the early 1990s.
- 1951 “USA Cancels Defunct Chinese Contracts,” *Flight International*, 6 January 1993.
- 1952 Wang, ed., *China Today: Air Force*.
- 1953 Allen, *PRC PLAAF*, 1991; Richard Latham and Kenneth W. Allen, *Chinese Defense Reform: The Air Force as a Case Study*, (Washington, D.C.: State Department Problems of Communism, May-June 1991).
- 1954 Allen, Krumel, and Pollack, *China’s Air Force Enters the 21st Century*.
- 1955 Kenneth W. Allen, “U.S.-China Relationship: Economics and Security in Perspective,” testimony before the U.S.-China Economic and Security Commission, 2 February 2007, accessed at https://www.uscc.gov/sites/default/files/2.1.2007allen_kenneth_statement.pdf.

