HEARING ON CHINA'S EVOLVING COUNTER INTERVENTION CAPABILITIES AND IMPLICATIONS FOR THE UNITED STATES AND INDO-PACIFIC ALLIES AND PARTNERS

HEARING

BEFORE THE

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

ONE HUNDRED EIGHTEENTH CONGRESS
SECOND SESSION

THURSDAY, MARCH 21, 2024

Printed for use of the
U.S.-China Economic and Security Review Commission
Available online at: www.USCC.gov

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

WASHINGTON: 2024

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

ROBIN CLEVELAND, *CHAIRMAN*
REVA PRICE, *VICE CHAIR*

Commissioners:
AARON FRIEDBERG
KIMBERLY T. GLAS
JACOB HELBERG
LELAND R. MILLER
HON. RANDALL SCHRIVER
CLIFF SIMS
HON. JONATHAN N. STIVERS
MICHAEL R. WESSEL

The Commission was created on October 30, 2000 by the Floyd D. Spence National Defense Authorization Act of 2001, Pub. L. No. 106–398 (codified at 22 U.S.C. § 7002), as amended by: The Treasury and General Government Appropriations Act, 2002, Pub. L. No. 107–67 (Nov. 12, 2001) (regarding employment status of staff and changing annual report due date from March to June); The Consolidated Appropriations Resolution, 2003, Pub. L. No. 108–7 (Feb. 20, 2003) (regarding Commission name change, terms of Commissioners, and responsibilities of the Commission); The Science, State, Justice, Commerce, and Related Agencies Appropriations Act, 2006, Pub. L. No. 109–108 (Nov. 22, 2005) (regarding responsibilities of the Commission and applicability of FACA); The Consolidated Appropriations Act, 2008, Pub. L. No. 110–161 (Dec. 26, 2007) (regarding submission of accounting reports; printing and binding; compensation for the executive director; changing annual report due date from June to December; and travel by members of the Commission and its staff); The Carl Levin and Howard P. ''Buck'' McKeon National Defense Authorization Act for Fiscal Year 2015, Pub. L. No. 113–291 (Dec. 19, 2014) (regarding responsibilities of the Commission).

The Commission's full charter and statutory mandate are available online at: https://www.uscc.gov/charter.

CONTENTS

THURSDAY, MARCH 21, 2024

HEARING ON CHINA'S EVOLVING COUNTER INTERVENTION CAPABILITIES AND IMPLICATIONS FOR THE UNITED STATES AND INDO-PACIFIC ALLIES AND PARTNERS

Opening Statement of Vice Chair Reva Price
(Hearing Co-Chair) 1
Prepared Statement.....3
Opening Statement of Commissioner Randall Schriver
(Hearing Co-Chair) 6
Prepared Statement.....8

Panel I: China's Capabilities and Concepts for "Counter-Intervention"

Panel I Introduction by Commissioner Randall Schriver
(Hearing Co-Chair) 11
Statement of Thomas Shugart
Adjunct Senior Fellow, Center for a New American Security (CNAS) 12
Prepared Statement.....14
Statement of J. Michael Dahm
Senior Resident Fellow for Aerospace and China Studies, Mitchell Institute for Aerospace Studies 39
Prepared Statement.....41
Statement of Cristina L. Garafola
Policy Researcher, RAND Corporation 93
Prepared Statement.....96
Panel I: Question and Answer.....115

Panel II: Countering China's Military Strategy in the Indo-Pacific Region

Panel II Introduction by Vice Chair Reva Price
(Hearing Co-Chair) 133
Statement of Maryanna Kivlehan-Wise
Director, China Studies Program, Center for Naval Analyses (CNA).....134
Prepared Statement.....136
Statement of Christopher Johnstone
Senior Adviser and Japan Chair, Center for Strategic and International Studies (CSIS) 146
Prepared Statement.....148
Statement of Caitlin Lee
Director, Acquisition and Technology Policy Program; Senior Political Scientist,

RAND Corporation 157
Prepared Statement.....160
Panel II: Question and Answer 178

Panel III: Regional Views on China's Capabilities and Implications for Regional Security Architecture

Panel III Introduction by Commissioner Randall Schriver
(Hearing Co-Chair) 193
Statement of Tetsuo Kotani
Professor, Meikai University and Senior Fellow, Japan Institute of International Affairs (JIIA), Japan 194
Prepared Statement.....196
Statement of Edcel John A. Ibarra
Assistant Professor, Department of Political Science, University of the Philippines Diliman, Phillipines.....205
Prepared Statement.....207
Statement of Bec Shrimpton
Director, Defense Strategy and National Security, Australian Strategic Policy Institute (ASPI), Australia.....219
Prepared Statement.....222
Panel III: Question and Answer.....233

HEARING ON CHINA'S EVOLVING COUNTER INTERVENTION CAPABILITIES AND IMPLICATIONS FOR THE UNITED STATES AND INDO-PACIFIC ALLIES AND PARTNERS

THURSDAY, MARCH 21, 2024

U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

Washington, DC

The Commission met in Room 406 of Dirksen Senate Office Building, Washington, DC and via videoconference at 9:30 a.m., Vice Chair Reva Price and Randall Schriver (Hearing Co-Chairs) presiding.

OPENING STATEMENT OF VICE CHAIR REVA PRICE HEARING CO-CHAIR

VICE CHAIR PRICE: Good morning, and welcome to the third hearing of the U.S.-China Economic and Security Review Commission's 2024 annual report cycle. This hearing will explore the evolving counter-intervention capabilities of China's military and its implications for the United States and our Indo-Pacific allies and partners.

I would like first -- I would like to first thank all of our witnesses for joining us today and providing their time and expertise as we examine these issues. I would also like to thank the Senate Committee on Environment and Public Works for allowing us to use their hearing room and the Senate Recording Studio for their assistance live streaming this event. And lastly, I'd like to thank our USCC staff, particularly Rachael Burton and Sierra Janik, for their hard work in preparation for today's hearing.

In 1996, the United States leveraged credible military threats to deter further escalation of China's military aggression during the Third Taiwan Strait Crisis. As a result, the desire to restrict future U.S. military influence in the region was among the factors which spurred Chinese leadership to invest in the buildup and modernization of their military capabilities.

Today, the People's Liberation Army, or the PLA, has developed a wide range of capabilities that could be used to counter U.S. military operations should Beijing attempt to forcibly unify Taiwan with the mainland or to assert control over territorial features and waters in the South and East China Seas. China's effort to quote, unquote, alter the map in the region could directly challenge U.S. allies and partners' sovereignty, potentially trigger U.S. alliance or defense commitments, and erode the international rules-based order.

There are reasons to be concerned about how Chinese leaders could employ their military capabilities in the future. This Commission has consistently reported on China's aggressive use of military coercion and pressure against its neighbors in the region. In 2023, our annual report noted at least 1,390 incursions by PLA aircraft in Taiwan's air defense identification zone, and

we have seen China's aggression continue to play out this year. Earlier this month, dangerous maneuvers conducted by the Chinese Coast Guard resulted in a collision with Philippine Coast Guard vessels in the South China Sea.

China's military modernization and aggressive military posture present a range of security challenges to other countries with an interest in maintaining regional stability, including U.S. allies in the Indo-Pacific. Our hearing today will look first at China's evolving capabilities and concepts to restrict U.S. operations in the Indo-Pacific, often referred to as counter-intervention or anti-access/area denial capabilities. The hearing's second panel will examine U.S. efforts to defeat China's counter-intervention capabilities and China's view of these efforts. Our final panel will hear perspectives from U.S. allies on the intensifying security threats posed by China and areas for continued cooperation among our allies.

Our witnesses today have deep knowledge and expertise in these issues. We hope this hearing will better inform policymakers of China's capabilities that aim to complicate U.S. efforts to defend its allies and interests in the region. In addition, we wish to better understand the challenges the United States currently faces in addressing these capabilities. And finally, we hope it will illuminate the challenge that China would face from the United States and its allies should it choose a path toward conflict. I look forward to insights and perspectives from our panelists on these important issues. I will now hand it over to my co-chair for the hearing, Commissioner Schriver.

PREPARED STATEMENT OF VICE CHAIR REVA PRICE
HEARING CO-CHAIR

Hearing on "China's Evolving Counter-Intervention Capabilities and Implications for the United States and Indo-Pacific Allies and Partners"

March 21, 2024

Opening Statement of Vice Chair Reva Price

Good morning, and welcome to the third hearing of the U.S.-China Economic and Security Review Commission's 2024 Annual Report Cycle. This hearing will explore the evolving counter-intervention capabilities of China's military and its implications for the United States and our Indo-Pacific allies and partners. I would like to first thank all of our witnesses for joining us today and providing their time and expertise as we examine these issues. I would also like to thank the Senate Committee on Environment and Public Works for allowing us to use their hearing room and the Senate Recording Studio for their assistance livestreaming this event. And lastly I would like to thank our USCC staff, particularly Rachael Burton and Sierra Janek for their hard work in preparation for today's hearing.

In 1996, the United States leveraged credible military threats to deter further escalation of China's military aggression during the "Third Taiwan Strait Crisis." As a result, the desire to restrict future U.S. military influence in the region was among the factors which spurred Chinese leadership to invest in the buildup and modernization of their military capabilities. Today, the People's Liberation Army, or the PLA, has developed a wide-range of capabilities that could be used to counter U.S. military operations should Beijing attempt to forcibly unify Taiwan with the Mainland or to assert control over territorial features and waters in the South and East China Seas. China's efforts to "alter the map" in the region could directly challenge U.S. allies and partners' sovereignty, potentially trigger U.S. alliance or defense commitments, and erode the international rules-based order.

There are reasons to be concerned about how Chinese leaders could employ their military capabilities in the future. This Commission has consistently reported on China's aggressive use of military coercion and pressure against its neighbors in the region. In 2023, our Annual Report noted at least 1,390 incursions by PLA aircraft in Taiwan's Air Defense Identification Zone, and we have seen China's aggression continue to play out this year. Earlier this month, dangerous maneuvers conducted by the Chinese Coast Guard resulted in a collision with Philippine Coast Guard vessels in the South China Sea. China's military modernization and aggressive military posture present a range of security challenges to other countries with an interest in maintaining regional stability, including U.S. allies in the Indo-Pacific.

Our hearing today will look first at China's evolving capabilities and concepts to restrict U.S. operations in the Indo-Pacific, often referred to as "counter-intervention" or "anti-access/area-denial" capabilities. The hearing's second panel will examine U.S. efforts to defeat China's counter-intervention capabilities and China's views of these efforts. Our final panel will hear perspectives from U.S. allies on the intensifying security threats posed by China and areas for continued cooperation among allies. Our witnesses today have deep knowledge and expertise in these issues. We hope this hearing will better inform policy-makers of China's capabilities that aim to complicate U.S. efforts to defend its allies and interests in the region. In addition, we wish to better understand the challenges the United States currently faces in addressing these capabilities. Finally, we hope it will illuminate the challenge that China would face from the United States and its allies should it choose a path toward conflict. I look forward to insights and perspectives from our panelists on these important issues.

I will now hand it over to my co-chair for the hearing, Commissioner Schriver.

OPENING STATEMENT OF COMMISSIONER RANDALL SCHRIVER
HEARING CO-CHAIR

COMMISSIONER SCHRIVER: Thank you very much, Madam Vice Chair. And let me add my thanks to our terrific staff and to the witnesses. We know you spent a lot of time and put energy into these statements. The compensation is not great financially, but we benefit tremendously as a Commission and, by extension, the U.S. Congress.

The Chinese Communist Party just announced another significant increase in its funding for the armed wing of the party, the People's Liberation Army, or PLA. And this is further evidence that the CCP sees military modernization, and in particular development of power projection capabilities, as -- as key to its ability to achieve its national ambitions.

PLA power projection across services and across all military domains has been the primary focus of China's military modernization for nearly three decades. And most prominent among those capabilities, they've developed massive numbers of ballistic and cruise missiles that are increasingly lethal and accurate and the associated C4ISR architecture. And much of this weaponry, of course, targets U.S. forward-deployed forces.

Our U.S.-forward deployed forces in the Western Pacific largely remain in a legacy posture from World War II and the Korean War. Though the Department of Defense cites often that we have 100,000 forward-deployed force on a given day, if you count forces afloat, the fact of the matter is these forces still remain highly concentrated due to this legacy posture. And in fact, between one-fourth and one-third of U.S. Forces alone are in one place, in Okinawa. So this has created a opportunity for China to develop a strategy that essentially will hold our forward-deployed -- to -- forward-deployed forces at risk.

So not surprisingly, they have developed this strategy. And as Vice Chair Price mentioned, American analysts refer to this often as A2/AD, anti-access/area denial. But perhaps the more useful interpretation is counter-intervention because I think it is more descriptive of what the Chinese have in mind with this strategy. They want to keep us out should there be a military conflict, should there be use of military means to try to affect a number of known contingencies in the region, whether that be East China Sea, South China Sea, or Taiwan.

Recently, the U.S. has engaged in efforts to mitigate against these vulnerabilities and deal with the counter-intervention strategy and try to create posture opportunities that would be more resilient and allow us to fight in sustained combat in a contested environment. And so this need -- this belief that we need to be able to fight in a dispersed distributed manner has become something that's widely endorsed, and the Department of Defense is actively working at implementing such a strategy.

Important political and military initiatives have been developed, such as additional sites in the Philippines for the Enhanced Defense Cooperation Agreement, or EDCA. We've seen more training in Japanese southwest island chain areas where previously we had not trained. We have more posture opportunities in Australia. We see the development of airstrips for diversion opportunities in the Pacific Islands.

So all of this is designed to complicate the battlespace for China, but, of course, China is watching these developments, and they have the opportunity to evolve their own strategy. Given the timelines associated with these initiatives, there's potentially an opportunity for the PLA to adapt to our moves even while we're still at the very early stages of implementation.

So this raises a number of questions which we look forward to exploring today. Is there a PLA counter-intervention strategy 2.0? And what are its contours? Are the posture initiatives

we're implementing moving a pace quickly enough and staying ahead of the Chinese action-reaction cycle that -- that they are able to engage in, given the -- given the very transparent nature our initiatives are -- are being conducted in?

Are we developing capabilities beyond posture to deal with Chinese counter-intervention strategies, things associated with their kill chain, and maybe some of the most vulnerable nodes there? And how are our partners and allies themselves adapting as we see greater access opportunities, particularly since -- if some of our posture ambitions are realized that puts more allied territory in harm's way in the event of a conflict?

So we have three excellent panels, as was stated, with outstanding witnesses to help us unpack this and more. And very much look forward to that -- this hearing and -- and those discussions.

PREPARED STATEMENT OF COMMISSIONER RANDALL SCHRIVER
HEARING CO-CHAIR

Hearing on "China's Evolving Counter-Intervention Capabilities and Implications for the United States and Indo-Pacific Allies and Partners"

March 21, 2024

Opening Statement of Commissioner Randall Schriver

Thank you, Vice Chair Price. And let me add my thanks to all the witnesses who will testify today. We know you put a great deal of time and effort into your statements and we very much appreciate that. I know our Commission—and by extension, the U.S. Congress—benefit tremendously from your expertise.

The Chinese Communist Party just announced another significant increase in the annual budget that funds the armed wing of the party, the People's Liberation Army, or PLA. Such a budgetary commitment at a time of economic distress for China is further evidence that the CCP sees military modernization and the further development of a more lethal, offensive minded PLA as key to achieving its' national ambitions.

PLA power projection across services and military domains has been a primary focus of China's military modernization for nearly three decades. Most prominent among the capabilities the PLA has developed to project power are the lethal and highly accurate ballistic and cruise missiles, and the associated C4ISR architecture that the PLA has fielded. And much of this weaponry targets U.S. forward deployed forces in the region.

U.S. forward deployed forces in the Western Pacific largely remain in a legacy posture from World War Two and the Korean War. Though the Defense Department can claim nearly 100,000 forward deployed forces on a given day counting forces afloat, the fact of the matter is our forces are highly concentrated in a handful of locations. Between one quarter and one third of U.S. forces forward deployed in the Western Pacific are stationed in Okinawa alone. Such a concentrated posture makes us highly vulnerable to Chinese missile strikes.

Not surprisingly, the PLA has developed a strategy to hold our forward deployed forces at risk to deter us from potential involvement in a range of known contingencies. American analysts often refer to the Chinese strategy as Anti-Access, Area Denial or A2/AD. But a more useful description of China's approach is "counter-intervention." I think this description is more telling of their objectives. They seek to keep us out of the fight if they decide to employ military means for territorial grabs whether that be in the East China Sea, Taiwan, or the South China Sea.

Recent U.S. efforts to mitigate the vulnerabilities the Chinese counter intervention strategy creates have focused on plans to expand regional access so that we can fight and sustain combat in a contested environment. The concept that we need the ability to fight from a dispersed, distributed posture is now widely endorsed. And important political-military initiatives have followed to serve as enablers for such a posture in the early stages of conflict. Initiatives such additional EDCA sites in the Philippines, construction of air strips for diversion opportunities in the Pacific Islands, greater presence in Australia, and expanded training at more sites throughout Japan's Southwest Island chain all represent progress for the United States toward realizing its goal of complicating the battle space for China.

But China is watching these developments and can evolve their own strategy. This potentially creates an opportunity for the PLA to adapt to our moves at a time when the United States and allies are still in the early stages of implementing a variety of posture initiatives. Several important questions thus need to be explored. Is there a PLA counter-intervention strategy 2.0, and what are its contours? Are the posture initiatives being implemented in a timely manner, or do they appear to be agreements on paper only? Are we developing other capabilities to complicate the battle space for China beyond posture, for example, disaggregating the PLA kill chain and having the ability to disrupt at key nodes? And how are partners and allies themselves adapting as we seek greater access opportunities which, if realized, would potentially put more allied territory in harm's way in the event of a conflict.

We have three excellent panels with outstanding witnesses to help us unpack these issues and more, and I very much look forward to this hearing today.

PANEL I INTRODUCTION BY COMMISSIONER RANDALL SCHRIVER

COMMISSIONER SCHRIVER: We will kick off with a first panel. And the first panel, as Vice Chair Price mentioned, will examine China's military capabilities and concepts to threaten foreign military forces and restrict them from operating in the Indo-Pacific.

We'll start with Mr. Thomas Shugart. He's an adjunct senior fellow at the Center for a New American Security. Mr. Shugart's testimony will provide an overview of China's military objectives and address its development of counter-intervention capabilities.

Next, we'll hear from Mr. Mike Dahm. He's a senior resident fellow for Aerospace and China Studies at the Mitchell Institute for Aerospace Studies. Mr. Dahm will examine the development of China's command, control, communications, computers, intelligence, surveillance and reconnaissance, C4ISR capabilities, and electronic warfare capabilities.

And finally, we'll hear from Ms. Cristina Garafolo -- Garafola, the one person I know best. I'm sorry I butchered the name. She's a policy researcher at the RAND Corporation. And she will help us assess recent improvements to China's logistics and sustainment capabilities. Thank you all very much for your testimony. The Commission is looking forward to your remarks. And I ask that our witnesses please keep their opening statements to seven minutes. Mr. Shugart, we'll begin with you.

OPENING STATEMENT OF THOMAS SHUGART, ADJUNCT SENIOR FELLOW, CENTER FOR A NEW AMERICAN SECURITY (CNAS)

MR. SHUGART: Thank you, Commissioner Schriver. For you, Vice Chair Price, and the distinguished members of the community or the Commission, I again thank you for the opportunity to participate in today's hearing. It is a privilege to testify here on what I think is the most important issue of the day: how to prevent a major war with China.

I will specifically address the concept of counter-intervention that Commissioner Schriver mentioned within Chinese military doctrine and the substantial capabilities it has developed to support this concept, then areas of Chinese vulnerability and points of uncertainty. Finally, I'll offer policy recommendations that might be considered to help deter China's leadership from making the decision to engage in large-scale military aggression against us or our allies.

Now, turning first to doctrine. Understanding China's counter-intervention concept is central to understanding China's plans to conduct military operations. Now, counter-intervention is not a strategy or a campaign on its own but is rather interwoven into the PLA's joint-level campaigns, such as naval and air blockades, island landings, and anti-air raid campaigns, all of which require elements to counter potential U.S. and allied military interventions.

Now, publicly available military writings by the Chinese frequently refer to intervention by what they call a powerful enemy, a clear allusion to the United States and its allies. Chinese military planners in these documents are instructed to prepare for deterring or denying such an intervention, particularly in scenarios involving forced reunification with Taiwan.

The -- this doctrine suggests also that a decision of the United States to intervene would largely depend on an assessment by the United States of the risks and costs involved, a calculation that Beijing believes can be influenced by its military capabilities and preparations. In support of its ability to deter or deny a U.S. intervention, the PLA has embarked upon the development of broad capabilities that, to me, seem clearly intended to counter one through the imposition of threat or prohibitive costs.

These are most visible in the form of China's deployment of truly breathtaking numbers of long-range precision strike ballistic and hypersonic missiles, its growing long-range bomber force, and its very rapidly growing blue-water navy. All three of these are detailed in my written testimony.

Put simply, the PLA has been engaged in what could be accurately described as the largest and most rapid expansion of maritime and aerospace power in generations. Now, that being said, engaging in aggression against our allies and partners, who are backed by what is still the world's most powerful military for now, will remain a high bar.

As the PLA stretches its capabilities further from its shores, it is in turn gaining its own new vulnerabilities as it begins to mimic, in some ways, the traditional American markers of world-class military capability. The U.S. military has hard-won advantages over the PLA that will take time for China to erode, though we should remain watchful given recent indications of focused Chinese efforts to do so.

Now, considering all of these factors, as I said, what I'm left with is a humbling sense of uncertainty as to the state of regional deterrence. For me, the following unanswered questions come to the fore. First, will the PLA navy close its apparent gap and cross-strait -- cross-Taiwan Strait sealift capacity, or is it already doing so through the use of dual-use, ostensibly civilian shipping?

While some of us have been beating this drum - and I would see here -- Mike Dahm here, superb series on this topic - there may be a lack of appreciation for the potential scale of such integration within some parts of the foreign policy community. For perspective, China's shipbuilding industry routinely builds more tonnage of ships annually than the United States did at the peak of the Emergency Shipbuilding Program of World War II. And China's merchant fleet totals more than ten times the size of our merchant fleet at the end of that war when it was supporting huge armies thousands of miles from home.

Next, in a conflict, would the PLA strike U.S. forces preemptively and at scale, degrading their ability to respond? Some analysts assess China is unlikely to do so out of a concern of widening a conflict. And I understand this. However, such an interpretation minimizes a number of factors in Chinese strategic thought as well as real-world evidence, which indicates they have built a force to be able to do so at enormous expense and are practicing using it in that way. These factors and the evidence for their applicability are also discussed in more detail in my written testimony.

As a final unanswered question, how would key weapon systems interactions play out in a conflict? To a far greater extent than in major power wars in the past -- in the past, the resolution of such a conflict in the precision strike era may be dramatically affected by individual weapon sensor and information system interactions whose resolution may not be truly known until the shooting actually starts.

Given all of this and China's desire to ensure what they call war control prior to escalation, our deterrent efforts must focus on amplifying uncertainty, as it is a desire to avoid uncertainty and ensure continued internal stability that is most likely to deter China from engaging in armed conflict. Efforts to merely impose costs and provide off-ramps may not be enough to deter Chinese military aggression.

With this in consideration, my specific recommendations for how to ensure continued deterrence by attacking the PLA's theory of victory, what they call System Destruction Warfare, are as follows. First, we should undermine China's potential plans to strike a key U.S. and allied capabilities at the start of a conflict by denying China easy targets within the region and by building resilience against command and control disruption.

Next, we and our allies should visibly prepare for protracted war. This should -- this could include measures such as stockpiling critical supplies, conducting joint and combined exercises focusing on interdiction of Chinese maritime commerce, designing common and easy-to-produce weapons and platforms whose production could be rapidly increased, and improving the state of our defense industrial base, which has unfortunately been much in the news recently.

Last, we should ensure that our allies and partners' populaces fully appreciate the threat posed by the grading -- growing capabilities of the PLA and the consequences for them of a failure -- a failure of deterrence. Now, despite the scale of the challenge laid out above, our combined economic output, demographic advantages, and sources of technological innovation should suffice to maintain at least an uneasy peace, if we collectively and urgently apply ourselves, but this will require greater effort and focus than have been apparent in recent years.

Thank you for the opportunity to speak with you today. I look forward to your questions.

COMMISSIONER SCHRIVER: Thank you very much. Mr. Dahm.

PREPARED STATEMENT OF THOMAS SHUGART, ADJUNCT SENIOR FELLOW, CENTER FOR A NEW AMERICAN SECURITY (CNAS)

Center for a New American Security

MARCH 21, 2024

TESTIMONY BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

Hearing on China's Capabilities and Concepts for "Counter-Intervention"

Deterring the Powerful Enemy: China's Counter-Intervention Capability in a Regional Conflict

BY

Thomas H. Shugart III

Adjunct Senior Fellow, Defense Program
Center for a New American Security

I. Introduction

Vice-Chair Price, Commissioner Schriver, distinguished members of the Committee, thank you for the opportunity to participate in today's hearing. It is a privilege to testify here on matters that are important to the vital national security interests of the United States, as well as those of our other allies and partners.

I will specifically address China's military doctrine regarding the concept of "counter-intervention" within its military operations. I will then examine PRC capabilities to deter or deny U.S. and allied military intervention, points of vulnerability for China, and important points of uncertainty. Finally, I will offer policy recommendations about some of the steps that might be considered to help maintain a U.S. capability for effective military intervention.

II. "Counter-intervention" as a concept in PRC Doctrine

Chinese military doctrine identifies three primary joint-level campaigns that could trigger a U.S. (and allied) military intervention: the Joint Blockade Campaign (such as a naval and air blockade isolating Taiwan), the Landing Campaign (such as a landing on Taiwan), and the Anti-Air Raid Campaign (a defensive campaign, with offensive elements, intended to prevent strikes into the PRC from forces such as Taiwan, Japan, or the United States).[1] PLA doctrine also identifies service-level campaigns that could support or supplement these joint-level campaigns, such as campaigns for offensive anti-ship operations, sea line of communication (SLOC) interdiction, SLOC guarding, naval base defense, coral reef seizure, air offense and defense, and conventional missile assault operations.[2] While the concept of countering an outside military intervention against a Chinese military operation does not exist as a distinct campaign or strategy on its own, the need to be able to do so while executing the other campaigns is discussed within Chinese doctrine.

On a broader level, the PRC's strategic documents identify key national defense objectives which could be supported by these and other campaigns, to include deterring and resisting aggression, opposing and containing "Taiwan independence", and safeguarding what China sees as its national sovereignty and territorial integrity (though this may include territories currently disputed by or even under the control of other states), maritime rights and interests (which may include expansive maritime claims not recognized by international law), and its overseas interests.[3]

Within publicly known PRC military doctrine, intervention against a Chinese military campaign is stated as likely to be conducted by a "powerful enemy" which, based on descriptions within the texts, can be easily understood to mean the United States and its allies.[4] Chinese military planners are repeatedly instructed to plan to deter or deny such an intervention, particularly within the context of a campaign of forced Taiwan reunification.[5] Chinese writings indicate a belief that whether or not the United States intervenes will largely be determined by a U.S. assessment of likely risks and costs—and that this assessment can be affected by effective Chinese war preparation and strong military capabilities.[6] Given the possibility of such an intervention, Chinese doctrine advocates launching a war when an opponent is unprepared, and the operation is unexpected.[7]

If deterrence of U.S. and allied intervention fails, Chinese doctrine advocates achieving "operational suddenness" against a powerful enemy, catching it by surprise to gain campaign initiative "in one blow" via asymmetric means using the "elite strengths" of China's naval, air, and missile forces.[8] Understanding that U.S. intervention may result in a protracted conflict, China's planners are instructed to see a quick decision as the most important goal of a campaign, but to ready to be locked in a stalemate if necessary.[9] If a PRC military operation has already achieved its goals at the time of a large-scale external intervention, PRC doctrine recommends terminating combat operations immediately to achieve war termination, but to continue to fight if necessary.[10]

III. PRC "counter-intervention" capabilities

In support of deterring or denying a U.S. intervention in the region, the PLA has been engaged in what could be accurately described as the largest and most rapid expansion of maritime and aerospace power in generations. Based on its scope, its scale, and the capabilities being developed, this buildup appears to be intended to threaten U.S. forces across the Indo-Pacific, with a goal to force U.S. leaders to conclude that intervention against PRC military operations would be too risky or costly to pursue. Some of the most obvious manifestations of this can be seen in three specific areas:

1) **The rapid growth of the PLA's long range missile force:** Probably the most well-known threat to U.S. and allied forces in the western Pacific is the huge arsenal of precision-strike conventionally-armed ballistic missiles fielded by the Chinese PLA Rocket Force (PLARF). Already by far the world's largest, this force continues to grow at a rate that only makes sense for the purpose of threatening U.S. forces throughout the region. This is most apparent in China's force of medium- and intermediate-range ballistic missiles (MRBMs and IRBMs), arguably one of the crown jewels of the Chinese military. Specifically, the Department of Defense's 2023 China Military Power report recently revealed that China's rocket force now deploys 300 MRBM launchers with 1000 missiles, and 250 IRBM launchers with 500 missiles.[11] This constitutes a more than four-fold expansion in these missile inventories in just a few years: in 2018, China was assessed to have at most 125 MRBM launchers with 300 missiles, and 30 IRBM launchers with 30 missiles.[12] China's MRBM inventory includes both land-attack and anti-ship missiles, and nearly all of China's IRBMs are configurable to anti-ship or land-attack missions, including nuclear strike.

   Given that China's conventional MRBM/IRBM missile capability has been known about for years, one might be tempted consider its deployment to be already "baked in" to considerations of regional deterrence, and of the U.S.'s ability to intervene in a conflict at acceptable risk and cost. But the apparent scale of the Chinese rocket force's expansion matters: going from what had been probably dozens of medium-range missiles a decade ago, to a force that now includes *hundreds* of much longer-range ones, will drive changes on a number of different levels. Quantitative changes of this magnitude will drive qualitative effects in a number of ways.

   First, the number of available Anti-ship Ballistic Missiles (ASBMs) has likely already broadened the PLARF's anti-ship mission from what has been thought of as a "carrier-killer" role to a broader and more generic "ship-killer" mission. China itself describes the DF-26 as capable against large *and medium-size* ships, and we have now seen what look like mockups of U.S. guided missile destroyers on China's ballistic missile testing ranges.[13] With so many more ASBMs at hand, smaller groups or individual warships–and especially logistics ships–could become "ASBM-worthy".

   Another way in which a PLARF equipped with large numbers of longer-range IRBMs could change things would be through its much greater reach, and in particular specific additional areas that it could strike. In the Philippine Sea, areas of relative sanctuary beyond the range of China's shorter-range MRBMs lie well within range of the DF-26 IRBM (See Figure 1). These areas have mattered in how American and allied defense thinkers have looked at China's counter-intervention capability, having previously posited the ability to operate forces reasonably safely outside the First Island Chain as a means to enable episodic operations closer-in to defend locations such as Taiwan. Looking further southwest, Chinese strategists have obsessed since the early 2000s over the "Malacca dilemma", referring to the vulnerability to interception of China's oil imports from the Middle East. With large numbers of IRBMs, the PLA could have the ability to strike U.S. and allied warships attempting to intervene by maintaining such a blockade across southeast Asia. Similar missile coverage could extend across the vital sea lanes leading from the Middle East to Asia and Europe, with coverage extending from PLARF bases in western China (see Figure 2).

One related factor that may be supporting the PLARF's growth in long range missiles is the apparent deployment by the PLA Ground Force (PLAGF) of a new long-range Multiple Launch Rocket System, the PCL-191, that appears capable of ranging either much or all of Taiwan, depending on the variant. By putting weapons in the hands of the PLAGF that are capable of conducting strikes across Taiwan, some of the shorter-range units of the PLARF may have converted to longer-range missiles, accelerating the transition of the PLARF from a force mostly focused on striking Taiwan with short range ballistic missiles (SRBMs) to one capable of broader goals such as deterring or denying U.S. intervention in potential conflicts across the Indo-Pacific.

To be sure, as has been discussed by U.S. leadership before, the range arcs of the PLA's missiles are not impenetrable, and the PLARF is not the first area denial challenge that the Navy and Marines have dealt with. There will, without a doubt, be a back-and-forth between seeker and jammer, hider and finder, that will mitigate—to a degree—the threat of the PLARF's long range missiles. But it is hard to deny a substantially increased level of risk, and over a much larger area.

The challenges to U.S. and allied intervention are by no means restricted to U.S. maritime power projection, as the story is perhaps even worse for land-based tactical aircraft and bombers. Ships are at least moving targets, whereas fixed land bases exist at a known latitude and longitude, only a few keystrokes away from targeting. In 2017, a colleague of mine and I at the Center for a New American Security estimated that a pre-emptive Chinese missile strike on U.S. bases in Asia could crater every runway and runway-length taxiway at every major U.S. air base in Japan, and destroy more than 200 aircraft on the ground. We also estimated that, in addition to shorter-range missiles, an inventory of approximately 60 DF-21 medium-range ballistic missiles would be necessary to conduct such a strike.[14] Considering the scale of the inventory of medium and intermediate range ballistic missiles discussed above, the missile threat has become far graver than we estimated at that time.

In addition, since we issued our report in 2017, open-source imagery now indicates that China's ballistic missile forces may be developing the ability to target specific U.S. and allied high value aircraft. Imagery from the PLARF's ballistic missile impact range in western China (see Figure 3), shows the use of what appears to be a mock target specifically designed to imitate a parked E-3 Sentry airborne early warning aircraft (AWACS). Similarly, a test target seen in 2022 seems to represent an E-767 AWACS aircraft, an aircraft type only operated by Japan (see Figure 4). While previous aircraft targets at this test range were mostly older Chinese models, sufficient to test the efficacy of ballistic missile warheads targeted at a specific location, the use of a mock target built to represent specific U.S. and Japanese aircraft types (no other nation in the region operates them) may indicate the development of a warhead with the capability to recognize and home in on specific aircraft, rather than having to blanket an entire airfield with munitions.

Further backstopping its conventional ballistic missile, China is now engaged in a massive expansion of its nuclear force, including the construction of hundreds of intercontinental ballistic missile (ICBM) silos, construction of additional ballistic missile submarines. In a fairly short amount of time, China's missile has gone from having a "minimal deterrent" force structure with perhaps dozens of ICBM launchers to a force with more than the United States possesses. While there has been much ongoing speculation about China's reasons for commencing this nuclear force expansion (China has been largely quiet on the topic), one clear possibility is that by having a survivable and robust nuclear deterrent force, China may feel empowered to take more aggressive conventional action against U.S. forces and bases in the region, with less worry of U.S. nuclear retaliation.

2) **The modernization and growth of China's long-range bomber force:** In recent years, China has also dramatically increased the capability of its force of long-range strike aircraft, producing brand-new, long-range aircraft seemingly purpose-built to strike American and allied bases well away from China's borders, and to overwhelm U.S. carrier strike groups.

Before the last decade, China's bomber force had fairly limited capabilities. Centered around the Xi'an Aircraft Company's H-6, a dated copy of the Soviet-era Tupolev Tu-16, its aircraft only carried a small number of missiles of fairly limited capability and could deliver them to a limited range. This began to change in 2009 with the introduction of the H-6K, a major redesign and update of the basic airframe. Equipped with completely new engines and avionics, the H-6K enjoys a much longer combat radius (about 3500km), and is capable of carrying three times the number of missiles (6 compared to 2 each in previous versions), with each land-attack cruise missile having a much longer range compared to previous versions.

Incorporating the improvements provided by the PLA Air Force's H-6K, the PLA Navy gained its own maritime strike-focused version of the aircraft—the H-6J. First seen in 2018, the H-6J is capable of carrying 6 YJ-12 long-range supersonic anti-ship cruise missiles (ASCMs), again three times as many as its predecessor. In 2023, the PLA Navy's H-6J-equipped bomber regiments were transferred to the PLA Air Force, supporting increasing jointness in conducting maritime strike operations.[15] China has revealed the development of a new model, the H-6N, which is capable of aerial refueling and carries a single, air-launched ballistic missile, with what appears to be a hypersonic glide vehicle. While it is not yet clear what targets the H-6N's new missile is intended to strike, with the range extension provided by refueling the reach of China's bomber force will grow ever further. This is to say nothing of China's ongoing development of its own stealth bomber, the H-20, which Chinese state media claims will be publicly revealed soon.

It is important to note that it is not only in individual platform capability that China's bomber force has been improving, but also in numbers. China has not merely replaced older bombers with improved ones; it appears to have grown the size of the force as well. Prior to the introduction of the H-6K, most estimates were that China's H-6 inventory was in the mid to low-100s, with a total production run since the early 1960s of about 200 aircraft. By my count using commercial imagery, there were more than 230 H-6's of all types in 2020; given that China has a number of recently-built or upgraded H-6 bases which have shelters for their aircraft, the actual numbers may be higher if bombers there were parked under cover. When combined with its potent conventional ballistic missile force, China's long-range striking power will be vastly greater than would be necessary to deal with any regional challenger, and seems clearly directed at gaining the ability to deny U.S. forces the ability to operate with reasonable risk at ranges from which they could deliver effective support to our allies within the First Island Chain.

3) **China's world-class naval expansion:** In recent decades China has grown to be the world's premier sea power by most measures. In three of the pillars of maritime power—fishing fleets, merchant shipping, and maritime law enforcement—China holds already holds first place. China's shipbuilding industry dwarfs that of the United States, building 26 million tons of shipping in 2022 compared to just over 70,000 tons from American yards. The same is true in maritime law enforcement, with China building coast guard cutters and "maritime safety" vessels weighing over ten thousand tons, larger even than the U.S. Navy's newest destroyers. China's huge fishing fleet, also the world's largest, is depleting fish stocks worldwide. In the vanguard of the fishing fleet is a force of government-subsidized and directed maritime militia, with vessels specifically constructed to be able to successfully ram others.

It is only in the realm of hard naval power that the United States has retained superiority, though the trend lines even there are distinctly negative. In addition to its growing regional air and missile strike forces described above, in recent years China has engaged in a naval buildup unlike any seen since the U.S. "600-ship Navy" effort of the 1980s. Xi Jinping has declared on more than one occasion that China must have a "world-class naval force",[16] and a program of naval construction appears to be underway to make that a reality. The U.S. Department of Defense revealed in 2020 that China's navy is now the "largest navy in the world" in terms of the sheer number of ships (see Figure 5).[17] Chinese shipyards have been seen churning out large numbers of warships, including aircraft carriers, state of the art multi-mission destroyers, and cruisers that are the world's largest current-production surface combatants. This naval buildup does not appear to be unbalanced in nature, as China has also been

constructing modern at-sea replenishment ships and amphibious assault ships to carry its rapidly-expanding Marine Corps.

Many commentators have pointed out, and not incorrectly, that China's warships have been on average much smaller; that the U.S. Navy remains much larger in terms of its overall tonnage, i.e., the sheer heft of the force. Assuming that combat power at sea has a somewhat comparable density among modern warships, tonnage may indeed be a better measure than the number of hulls.[18] But by that measure the trend lines are little better. By my calculations, from 2014-2023 China launched more than 1.1 million tonnes of warships, roughly fifty percent more than the United States launched over the same time period (see Figure 6). While the U.S. Pacific Fleet is currently larger than the PLA Navy by tonnage, my rough calculations indicate that, on current trend lines, the PLA Navy will reach near-parity on this basis as well in ten to fifteen years. Given that there are ongoing or planned major expansions both at the primary shipyards that build China's surface combatants and aircraft carriers, and at the one that builds its nuclear submarines, it seems that the pace of Chinese naval shipbuilding is unlikely to slow over the long-term.

When we consider China's historic economic expansion over recent decades, this naval buildup should not surprise us—it follows the pattern laid out more than a century ago by the seminal American naval thinker Alfred Thayer Mahan: that "the flag follows trade". Vigorous and growing trading nations like China gain overseas interests and become dependent on trade routes, and then work to gain the means to protect them. This is a self-reinforcing cycle where the Chinese economy's ever-growing appetite for energy and raw materials, as well as a growing array of Chinese overseas economic interests and investments, drive increased Chinese perceptions of insecurity. This feeling of insecurity is most clearly illustrated by what was described by Hu Jintao in 2003 as China's "Malacca dilemma", a recognition that China's energy supplies could be interdicted by hostile foreign nations in strategic locations. Prior to China's industrial development, no such dilemma existed; but as China's economy continues to grow and become ever-more-dependent on access to overseas resources and markets, this feeling of insecurity, as well as the resulting appetite for the military means to solve it, continues to grow—and it is a process that is not going to stop or go away. As U.S. Naval War College professors Toshi Yoshihara and James Holmes stated in their seminal work on the modern Chinese Navy, *Red Star Over the Pacific*:

> "China's maritime presence and activism are permanent because the forces impelling it to the seas are structural in nature. They are basic to contemporary China. A thoroughgoing socioeconomic transformation has reoriented the nation toward the seas since paramount leader Deng Xiaoping launched his reform and opening project four decades ago. After decades of integration into the global economic order—defined as it is by maritime commerce—the Chinese state and society have come to depend on free access to and free use of the seas for their well-being and even their survival. That reliance has compelled Beijing to develop durable commercial and military means to nurture and protect the nautical sources of China's wealth and power."[19]

As the international scope of China's economic interests has expanded over time, the horizons of China's strategic thinking have broadened correspondingly. In the 1980s, China's leaders established a timeline with three broader goals for the PLAN: by 2000, developing forces sufficient to exert control over the sea regions within the First Island Chain; by 2020, extending control out to the Second Island Chain, running from New Guinea up through the Mariana Islands to northern Japan; and by 2050, to develop a truly global navy. In 2004, President Hu Jintao provided a further update to the PLA's guidance with a declaration of "New Historic Missions" that broadened the PLA's goals to encompass "far seas defense", covering seas past the First Island Chain. In more recent years, the PRC's 2015 Defense White Paper explicitly included defense of overseas interests and sea lines of communication in its goals, to be accomplished by the added mission of "open seas protection", signaling a need to be able to project maritime power wherever China's interests lie. As outgoing PLA Navy chief Admiral Wu stated upon his departure from office in 2017, "wherever the scope of the nation's interests extends, that is where the perimeter of our combat development will reach…"[20]

Some observers might consider that China's understandable desire to protect its overseas interests and defend its maritime trade is an anodyne one. After all, such a statement on the part of other nations (and many do say similar things) would raise little alarm. But this is largely because of what would be assumed to be benign intent on the part of other nations or, in almost all cases, a lack of any real ability to do so on a large-scale basis. But in the case of China, we see a nation that seems to have the motivation, maritime industrial might, and iron will to power to give its words an entirely different meaning: a stated strategy that, if actualized, would take the form of military—and especially naval—capability of a scale that many Western observers have not quite come to fully apprehend, and that is only now taking shape before us as I have described above.

In summary, when one considers a Chinese military that includes an ever growing and highly threatening ballistic missile force, the development of a large force of long-range strike aircraft, and a highly capable and rapidly growing blue-water navy, it hardly seems like a defensive force intended only to uphold Chinese sovereignty, prevent piracy, etc. Rather, China's military seems like a force being forged specifically to be able to deter or deny U.S. military intervention to defend our allies and partners, and to eventually be able to seize and maintain control of key maritime routes across the region.

IV. U.S. capabilities and PRC vulnerabilities in a regional conflict

Even given the ominous developments discussed above, successful military aggression against our allies within the region will remain a high bar for the PLA. Additionally, as the PLA stretches its capabilities further away from its shores in search of power projection, it is in turn gaining its own new vulnerabilities as it begins to mimic in some ways the traditional American markers of world-class military capability.

1) **U.S. capabilities to intervene in a regional conflict:** The U.S. military has hard-won advantages over the PLA based on operational and warfighting experience, flexible and multi-purpose platforms, and difficult-to-replicate capabilities in key warfare areas.

   First, the U.S. military has gained extensive experience conducting real-world combat operations over decades of conflict in the Middle East and Central Asia—and more recently naval combat in the Red Sea—whereas the PLA has had little combat experience since its invasion of Vietnam in 1979. At sea, the U.S. Navy has had generations of experience operating worldwide, whereas the bulk of the PLA Navy typically stays within the home waters of the western Pacific, with smaller numbers of ships dispatched on missions such as anti-piracy patrols in the Red Sea. All of this should provide a level of flexibility and capability for U.S. forces to respond to uncertain circumstances, something that may not be matched within the PLA. This may be particularly true in cases where units of both sides lack guidance from above due to disrupted communications. One countervailing factor to consider is the possibility that U.S. experience gained mostly fighting insurgents in permissive environments will be of little utility (and perhaps even negative utility) in fighting a major war against a peer competitor.

   While some observers have applauded China's apparent focus on asymmetric means of fighting, such as the use of artificial intelligence, unmanned systems, and ballistic missiles, we should keep in mind that the multi-purpose nature of U.S. power projection platforms may also help to provide operational flexibility in a regional conflict. As a specific example, consider the Navy's Arleigh Burke-class destroyer. This modern U.S. surface combatant, the evolutionary winner of centuries of warship development, can engage in diverse mission areas such as long-range anti-aircraft defense, strike warfare, anti-surface warfare, and anti-submarine warfare. If cut off from communication, it can use its own sensors to locate and attack enemy targets and defend itself and others; if its information systems are affected by cyber-attacks, there are personnel onboard who can take corrective measures to patch and restore them to service. By contrast, a battery of ground-based missiles has no significant capability to detect targets or to defend itself; if cut off from communication, its military capability is reduced to near-zero. If unmanned combat systems are similarly cut off from communication, their capability may also be severely affected, at least in the absence of truly forward-leaning lethal autonomy. While it is difficult—due to

classification and other factors—to characterize the struggle that would surely take place to gain a command and information advantage in a regional conflict, what we can be sure of is that such efforts would be taking place on both sides, with mutual degradations of these functions likely to result. Over the course of a longer regional conflict such as a blockade or a stalemated invasion, this may favor U.S. and allied forces due to their greater flexibility and operational experience.

Benefiting from decades of investment, the United States also holds significant military advantages in areas such as undersea warfare, stealth aircraft, and the worldwide reach of its naval forces and Marine Corps. These areas, particularly technically-demanding ones such as submarine quieting and stealth technology, will take time for to China to erode, though we should remain watchful given recent indications such as China's apparent forthcoming construction of a new class of submarines, as well as the forthcoming debut of China's H-20 long-range stealth bomber.[21] Working against these U.S. military advantages, over time the cost of its individual platforms has gone up, with resulting reductions in the numbers available given other resource pressures such as ongoing combat operations and rising personnel costs. As a result, as some of the last waves of late-Cold War U.S. platforms retire, the U.S. military is seeing ongoing reductions in the number of combat-capable platforms available, with looming retirements of some of the Navy's most capable surface combatants, a mid-2020s trough in the number of nuclear-powered fast attack submarines, and an Air Force fighter inventory whose average age has increased to almost 30 years. While the Navy, for one, has a plan to increase its numbers in coming years, much of the technology supporting its proposed use of unmanned vessels is still developmental in nature, with deployment at a meaningful warfighting scale still years away and without certainty of success. The level of budgetary support to achieve fulfillment of this plan also seems uncertain given debt-related budget pressures, as well as understandable congressional mistrust in the wake of troubled programs such as the Littoral Combat Ship and Zumwalt-class destroyer.

2) **PLA vulnerabilities in a conflict:** Perhaps the greatest vulnerability that China faces in its ability to coerce or invade our allies and partners in the region has been its lack of sufficient amphibious sealift capability to deliver and sustain an invasion force, though China has been making efforts to significantly increase this capacity through the employment of dual-use civilian/ militia roll-on/roll-off ferries and vehicle carriers. Recent added focus on the part of both Taiwan and Japan in developing their own A2/AD capabilities should help to exacerbate this limitation by focusing on the use of weapons such as mines and ASCMs to inflict losses on PLA amphibious forces. The actualization of this can be seen in Taiwan's ongoing deployment of supersonic HF-3 ASCMs both at sea and ashore, a planned purchase by Taiwan of as many as 400 subsonic Harpoon ASCMs from the United States, and Japan's ongoing development of a new, longer-range ASCM. Additionally, in recent years the U.S. Department of Defense has developed or purchased a number of new ASCMs such as the Maritime Strike Tomahawk (MST), Naval Strike Missile (NSM), and Long Range Anti-Ship Missile (LRASM) in an effort to rapidly increase its ship-killing capabilities in the wake of decades of relative neglect of this mission area. It has also embarked on efforts to upgrade existing Harpoon ASCMs and has re-introduced their use onboard U.S. attack submarines.

More points of PLA vulnerability are likely to emerge as China continues to develop the capability to engage in long-range power projection, as the forces that it will need to do so will become subject to attack similarly to U.S. power projection platforms, whose vulnerability has been a point of debate for generations. Put simply, if one desires to go somewhere over the sea or through the air, one will have to leave the protective clutter of the earth, as well as the protective umbrella of defensive coastal sensors and weapon systems—and become subject to detection and attack on the open sea or airspace. More specifically, China's new aircraft carriers and large amphibious ships will make lucrative targets for U.S. attack submarines, having to venture into deep water if they are to project power outside of China's near seas. China's nuclear submarines are still noisy, and thus also would be subject to detection and destruction after they leave their home waters. The level of support required for China's large bomber fleet will probably limit them to a relatively small number of known fixed bases and avenues of approach, making them also subject to destruction in flight on their way to distant targets. The relevance that

all of this has for a regional scenario is largely related to how far PLA power projection forces will be able to push back U.S. and allied forces, and what costs China may suffer in doing so as its newer, prestige platforms come under threat.

V. Points of uncertainty

Considering all of the factors discussed above—extraordinarily rapid advances in Chinese military capabilities, enduring U.S. and allied strengths, and new U.S. and allied warfighting initiatives—what I am left with is a humbling sense of uncertainty as to the spectrum of possible results in a regional conflict. We should remind ourselves that there has not been a major power conflict, particularly at sea, within the last 75 years. Entire generations of weapon systems have come and gone without seeing significant use in peer combat. As a specific data point, it bears considering that the only currently commissioned warship in the U.S. Navy that has sunk another warship in combat is the USS Constitution, from the War of 1812.

To provide some perspective for when one hears confident predictions about how a major U.S.-China war would play out, it bears considering that during the last major power war in the Pacific, most platforms involved ended up being used for quite different purposes than those for which they were originally designed. Battleships, intended to be the main striking force of both sides' navies, ended up being used mostly for shore bombardment and anti-aircraft defense, with aircraft carriers (thought to be most useful as scouts) taking the place of the striking arm of the fleets. U.S. submarines, intended mostly for scouting and attrition of enemy battlefleets, ended up being focused on sinking merchant ships and strangling the Japanese economy. The B-29 bomber, which was originally developed to interdict fleets in mid-ocean from bases in the continental United States, ended up mostly being used to firebomb Japanese cities.[22] Considering this, we would do well to exercise humility in our planning for the future, and do what we can to ensure that the forces that we do deploy are as resilient and flexible as possible.

With this sense of uncertainty in mind, in my assessment the following unanswered questions come to the fore regarding the future regional military balance and state of deterrence:

1) **Will China close its gap in sealift capacity?** While some may take comfort that the PLA Navy may appear to lack sufficient amphibious lift to conduct an invasion, this is not a factor upon which our allies' and partners' defense should rest, as China may be able to close this gap faster than may be commonly understood.

   First, while recent commentary has documented the growing level of integration, as part of China's Military-Civil Fusion effort, between Chinese civilian industry and the PLA, some may not appreciate the scale and pace of such integration or of the improvements in relevant Chinese merchant fleet capabilities in recent years. By my calculations, China's RoRo ferries alone could provide more than double the sealift tonnage of the PLA Navy's amphibious assault ships; when combined with the PLA Navy's ships, China's maritime militia-associated RoRo vessels could deliver more than 300,000 troops and their vehicles to Taiwan in about ten days. The idea that China might employ its "civilian" RoRo vessels in this way is not a theoretical one—China's biggest ferry companies are formally established as organized auxiliary fleets of the maritime militia, and their ships regularly take part in PLA landing exercises that have grown larger every year.

   Next, we must consider that given the scale of its status as the world's largest shipbuilder, as well as the fact that its prime shipyards are dual-purpose producers of civilian and military vessels, China may be able to build sealift capacity fast enough that we may already be within the window of strategic surprise with respect to China's capability to conduct a successful invasion. That is, China may be able to increase its sealift capacity, one of the last missing pieces in its ability to invade and coerce its neighbors, faster than the U.S. and its allies may be able to make strategic changes in response, given the typical pace of change within our democratic systems. For some perspective on the Chinese shipbuilding capacity to which I am referring, during the emergency shipbuilding program of World War II, which supported massive, mechanized armies in two theaters of war thousands of

miles from home, U.S. shipbuilding production peaked at 18.5 million tons annually, and the United States finished the war with a merchant fleet that weighed in at 39 million tons.[23] In 2022, during peacetime, China built almost 26 million tons of shipping, and China's merchant fleet (including Hong Kong's) totals more than 400 million tons. We would also do well to note that China's shipyards have recently re-commenced serial production of large amphibious assault ships at the Hudong-Zhonghua Shipyard in Shanghai.

Finally, we would be wise to assume that China will bring all of its tools of maritime power to bear in ensuring success in a regional conflict, including the use of the China Coast Guard, the world's largest such force; and its fishing fleet, specifically in the form of the People's Armed Forces Maritime Militia (PAFMM). In something like the form of a reverse-Dunkirk, we should expect that instead of only dealing with dozens of gray-painted PLA Navy amphibious vessels and their escorts, we would likely see an effort supported by many hundreds of fishing boats, merchant ships, and Coast Guard and Maritime Safety Administration vessels. It is worth noting that Chinese PAFMM vessels have already been seen using radar reflectors and other tools to increase their radar signatures to resemble that of larger vessels.[24] In the event that U.S. and allied weapons such as ASCMs and torpedoes are unable to effectively distinguish between key amphibious assault ships and all of the other vessels that may be provided as decoys, we may find the number of anti-ship weapons able to be brought to bear to be lacking, especially given what are likely to be vigorous Chinese efforts at jamming, spoofing, and missile defense.

2) **In a conflict, would the PLA strike U.S. forces preemptively, degrading their ability to respond?** As China's ability to strike U.S. forces in the region has grown, some analysts have continued to assess that China is unlikely to quickly strike major U.S. bases and forces in the region, out of a concern that such a move would widen a conflict in a way that China would not desire. This may be true, with the United States and its allies able to marshal and disperse forces before major damage is done, thereby retaining sufficient military capability to respond meaningfully in support of our allies and partners during a regional conflict. An optimistic reading of Chinese strategic documents would support this view, focusing on China's statements that its doctrine of "active defense" is largely defensive in nature, that its preferred concept of "war control" would seek to keep a crisis below the level of military conflict, and that it would in any case seek to minimize the spread of any such conflict to additional countries.

   Such an interpretation minimizes several factors which indicate that, in some situations, China may indeed opt for large-scale and crippling pre-emptive strikes against U.S. forces and bases in the region. First, as other analysts have pointed out, China's strategic writings advocate, in cases where conflict seems inevitable, "seizing the initiative early, through rapid, violent, and possibly pre-emptive attack."[25] The nature of precision strike weapons, coupled with the relative difficulty of replacing modern and sophisticated weapon systems, has also created powerful first-mover advantages in going first—and going big—in a conflict. This factor is amplified by what seem to be additional offense-dominant, first-mover advantages in the cyber and space domains. Finally, and perhaps most obviously, as discussed above the PLA appears to be putting significant resources into building just such a strike force, as discussed above, and has been seen exercising and testing it accordingly (see Figures 7 and 8).

3) **How would key weapon system interactions play out?** To a far greater extent than in major-power wars in the past, the resolution of peer conflicts in the precision-strike era may be dramatically affected by individual weapon, sensor, and information system interactions whose resolution may not be truly known until the shooting actually starts. Given the smaller numbers of platforms, the accuracy of individual weapons, and the relative difficulty of replacing all of them, the consequences of the interplay of jammer versus seeker, sensor versus signature, and hacker versus data stream are likely to propagate from the tactical to the operational and perhaps strategic level in ways not seen before. As one specific and obvious example, a conflict where China's ASBMs could be consistently made to miss through the use of jammers might be a completely different war than one where that was not the case. We should expect to be surprised, and the ability to adapt quickly may well be the key to victory.

VI. Policy recommendations

Given the scale of the problem, and in light of China's ongoing improvements in military capability, we must carefully focus our efforts to ensure continued deterrence of Chinese aggression.

In particular, we must work in conjunction with our allies to ensure continued cross-Taiwan Strait deterrence, as the military and geo-political consequences of a forcible incorporation of Taiwan into the PRC would have grave effects on the regional military balance. Were China to gain control of Taiwan's east coast, the PLA Navy—which is currently forced to transit via First Island Chain choke points—would gain direct access the open ocean from Taiwan's east coast ports. More specifically, China's submarine force—which for now has to transit shallow waters surrounding all of its current bases—could gain immediate access to the deep water of the Philippine Sea (see Figure 9). Were China to base long-range ASCMs and anti-air missiles on Taiwan, the area coverage of these weapons (see the red arc in Figure 9) could extend across the near-entirety of the Luzon Strait, which constitutes the largest exit from the South China Sea to the Philippine Sea and cover the most vital shipping routes to South Korea and Japan (see Figure 10).

In case of a failure of deterrence, or were U.S. forces driven or withdrawn from the region, the effects on our allies' and partners' ability to maintain freedom of action as independent democracies would be dramatically negative. For a specific example on why this could be the case, let's return briefly to the topic of naval construction. Figure 11 shows the total warship tonnage launched from 2014 through 2023 for the major sea-going navies in the Indo-Pacific region, including the rough proportion of the U.S. Navy that is assigned to the Pacific Fleet (about 60%). One can see quite clearly that PLA Navy is on pace to exceed in size the *combination* of the rest of the major navies in the region—and would dwarf any individual one. Notably, these totals do not include China's coast guard and maritime safety agencies, which each have shipbuilding programs that probably rival those of individual regional navies, and that will populate the front lines of China's maritime "gray zone" operations. This comparison also leaves out the PLA's land-based maritime strike air and missile forces, none of which are approached in capability by any other regional power. If China *were* to achieve this level of air and maritime dominance in the Indo-Pacific, the fact of our allies' and partners' near-complete dependence on seaborne trade—all of them are island nations or might as well be—could give China major coercive power over them via the threat of blockade or quarantine.

Given these stakes, and China's likely desire to ensure "war control" prior to escalation, U.S. and allied deterrent efforts must focus on ensuring that China lacks confidence that military aggression on its part would succeed. Influenced by a Marxian belief in correct processes and scientific principles, China's strategists are thought to believe that "crises and wars need to be controlled". This arises from a concern that "an uncontrolled war could derail China's economy and, in the process, foster widespread domestic discontent and instability that would threaten the legitimacy of the Chinese Communist Party".[26] It is this factor—the desire to avoid uncertainty and ensure the stability of the CCP—and not the prospect of known costs, that is most likely to deter China from engaging in armed conflict. Assuming that the primary goal of U.S. policy continues to be deterrence of a regional conflict, we should therefore encourage measures that are likely to raise the uncertainty of success in the minds of Chinese leadership, seeding doubt as to whether the PLA can establish effective "war control" at the level of armed conflict and thus delaying a decision to move up to the next level of conflict in the continuum that it sees between peace, a "quasi-war" struggle, and open conflict.[27] Efforts to merely impose costs and "provide off-ramps" to deter a conflict may not be enough, as China's strategists have indicated that China's core interests, such as its claim to sovereignty over Taiwan, "must be protected, presumably even at a high cost".[28]

To succeed, efforts to create uncertainty in the minds of China's leadership must directly attack the PLA's theory of victory, which is based on waging "system destruction warfare"—efforts to paralyze and destroy an enemy's operational system—and which the PLA would intend to actualize via "system-vs-system operations featuring information dominance, precision strikes, and joint operations." These operations would focus on disruption of U.S. and allied information flow, attacking command and control, reconnaissance, and firepower capabilities and networks; and disrupting the time sequence and tempo of our operational architecture.[29] Of note, a perfect example of such

efforts would be the potential capability to single out and strike high-value command and control assets like AWACS aircraft, as discussed above.

With these factors in consideration, my specific policy recommendations are as follows:

1) **Undermine China's plans to strike at U.S. and allied command and control and firepower capabilities at the start of a conflict:**

   As a general axiom, planning for a regional conflict against the PLA should *not* rely on any of the following to succeed:
   - Units or forces that require anything but episodic communication or data flow (for example, uncrewed vehicles that rely on consistent human oversight to do their job, particularly given current policy restraints on lethal autonomous weapons).
   - Any important fixed and hard-to-repair facility on or within the Second Island Chain (for example, fixed fuel tanks, headquarters buildings, repair facilities, and fixed communications equipment). Note: with this in mind, perhaps assured U.S. C2 in the Indo-Pacific region should start to resemble U.S. nuclear C2, which does not rely only on fixed command centers to function, and has mobile backup command centers available at all times (such as the E-4B National Airborne Operations Center).[30]
   - Assuming that political considerations may require letting the PLA shoot first, any non-stealthy and non-dispersed platforms within IRBM range at the beginning of a conflict (for example, aircraft on the ground at major U.S. and allied bases, valuable ships within ASBM range, and non-dispersed air and missile defense assets). To be clear, this applies specifically to the beginning of a conflict, when the PLA has a peacetime-quality targeting picture, and may not apply to forces brought in after conflict has begun and the PLA's targeting picture has been degraded.

   It should go without saying, for those familiar with U.S. military forces and facilities in the region, that on any given day this list describes the bulk of them. This is not to say that forces or facilities that meet this description would not be useful in a conflict with China, or for purposes of peacetime presence operations. But they should not be *relied upon* for victory, or to deter the PRC from taking aggressive military action.

   When Congress is presented with plans and programs that do rely on any of these types of forces, facilities, and capabilities to deter China, hard questions should be asked about how they will evade targeting in China's planning for war initiation. Any corrective action that results should not be to take steps to improve survivability, minimize attrition, etc., but rather to find *different* capabilities, to ensure that China's leadership knows that our plans *do not rely on* capabilities that are within their easy reach in the region. Otherwise, the PLA may simply add additional resources (such as building hundreds *more* missiles) to ensure they gain the confidence that they desire to be able to move forward with conflict initiation.

   Any fixed facilities or non-dispersed forces that are still fielded within the region must be provided with robust and visibly-exercised defenses against precision strike, such as hardening and robust ballistic missile defense. The point in this case is not to provide a 100% assured, leak-proof defense, but to at least raise some doubt as to whether the PLA's precision strikes would succeed at scale. Network-dependent forces within the region must similarly build resilience against command-and-control disruption via means such as the extensive and well-rehearsed use of independent "mission command", forward-leaning rules of engagement, and capable organic sensors. The PLA must not believe that it can paralyze U.S. and allied forces by cutting them off from command and control and targeting networks, *even if they are wrong in this belief.*

2) **Visibly prepare for protracted war:** In order to undermine China's confidence that it can win by seizing the initiative via a short, violent fait-accompli, or by cutting Taiwan off from the international system, we should take clear action to ensure U.S. and allied preparation for a protracted conflict. This could include measures such as stockpiling critical supplies to ensure support for allied populations during an extended blockade, conducting joint

exercises with allies and partners focused on interdiction of Chinese maritime commerce, reinvigorating the U.S. and allies industrial bases, and designing common and easy-to-produce weapons and platforms whose production could be ramped up in the event of a protracted conflict. We should also have plans to bring to bear the substantial shipbuilding and repair capacity of Japan and South Korea. China must see visible commitment on the part of the United States and our allies and partners, and not gain the confidence that it can win via a short, sharp, system-destruction-type campaign.

3) **Ensure that our allies and partners fully appreciate the threat posed by the growing capabilities of the PLA, and the consequences of a failure of deterrence:** Despite the scale of the challenge laid out above, with appropriate resourcing, focus, and urgency, I believe that the U.S. and our allies should be able to maintain deterrence and prevent Chinese domination of the region. Our combined economic output, demographic advantages, and sources of technological innovation should suffice to maintain at least an uneasy peace—*if we collectively apply ourselves*. But this will require greater efforts and focus than have been apparent in recent years, particularly on the part of our allies.

As a specific example, while Taiwan is implementing an Overall Defense Concept that is more focused on deterring Chinese aggression, the resources it is applying to its own defense remain woefully inadequate to the task, despite recent promises to increase them. Looking at trends in defense expenditures by Taiwan and the PRC over recent decades (see Figure 12), one could be forgiven for gaining the impression that Taiwan is not taking seriously the regularly-repeated threats to its freedom from across the Strait. [It bears noting that these relative trendlines are not only a matter of China's economic power increasing, as Taiwan's defense spending as a percent of GDP has actually *declined* over recent decades, even as the threat from China has grown (see Figure 13).]

As democracies, gaining traction for increased efforts to prepare for the China challenge will ultimately be a matter of educating and alerting our publics to what we are facing, as well as the likely consequences of failure to live up to the moment. Our allies should be informing their people about the sorts of facts I have presented today and provide them with a clear-eyed assessment of what China's goals appear to be in the region—despite China's claims to the contrary. They should know that the question of what a Chinese-dominated Indo-Pacific would look like has largely already been answered by demonstrated behavior, such as China's attempts to coerce allies like South Korea and Australia economically, and its demonstrated willingness to use the threat of force to get its way elsewhere. In its list of "14 grievances" with Australia, for example, China indicated that resolution of its problems with Australia will require fundamental changes to Australia as a functioning democracy, such as the freedom of its leaders and thinkers to speak out on human rights issues as they see fit. And as China's military power has grown, one need only ask the Philippine Coast Guard—or Vietnamese energy companies—what a taste of Chinese military dominance looks like: when Vietnam commenced exploration drilling for energy resources off its own coast in 2017, China "threatened to attack Vietnamese bases in the Spratly Islands if the drilling did not stop". As China's military capabilities have increased over time, so have the horizons across which China plans to be able to use them, and there are no indications that this trend is going to change. The peoples of the Indo-Pacific democracies deserve to know this.

We should be clear-eyed, of course, about the scale of the diplomatic challenge involved in getting this message across throughout the region. Unlike during the 20th-century Cold War, the intertwining of Chinese and regional economic interests has made the risk of elite capture by China a grave one, with natural temptations to just "get along" in support of short-term interests. We have already seen this intertwining at work in the acceptance by some local governments of Chinese infrastructure help, as well as the construction of critical infrastructure within regional partner nations by now-sanctioned Chinese companies—in some cases even partly funded by U.S. and allied tax dollars. Nevertheless, we must overcome these hurdles and speak the truth to our allies and partners, lest a lack of preparedness tempt China to progress from a war of words in the region to one of missiles.

Appendix A: Graphs and Figures

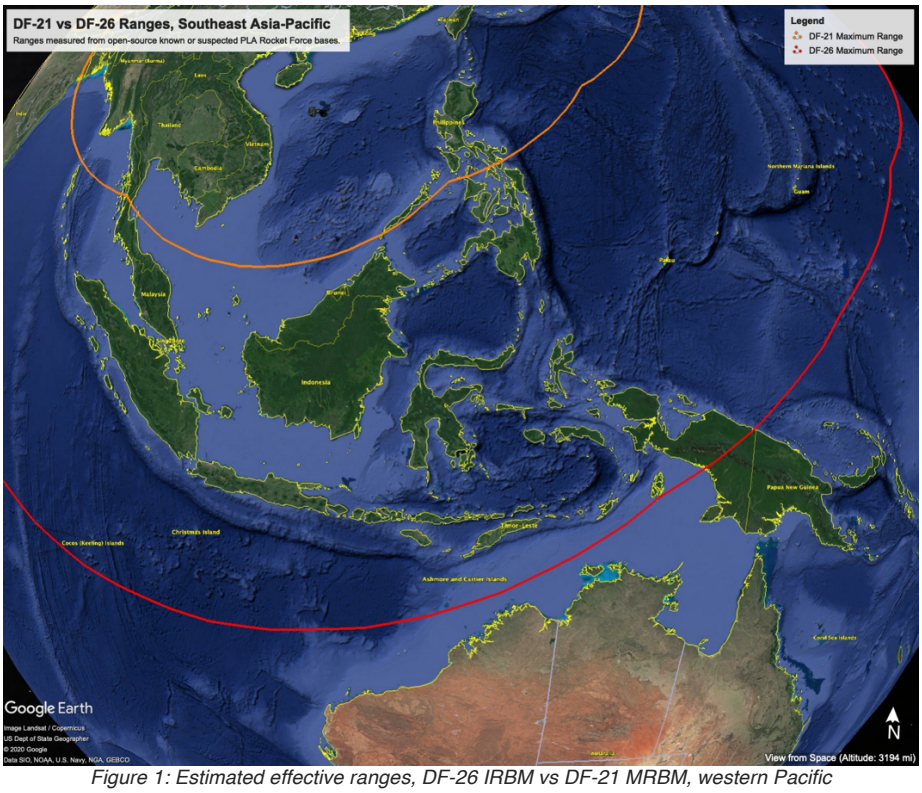

Figure 1: Estimated effective ranges, DF-26 IRBM vs DF-21 MRBM, western Pacific

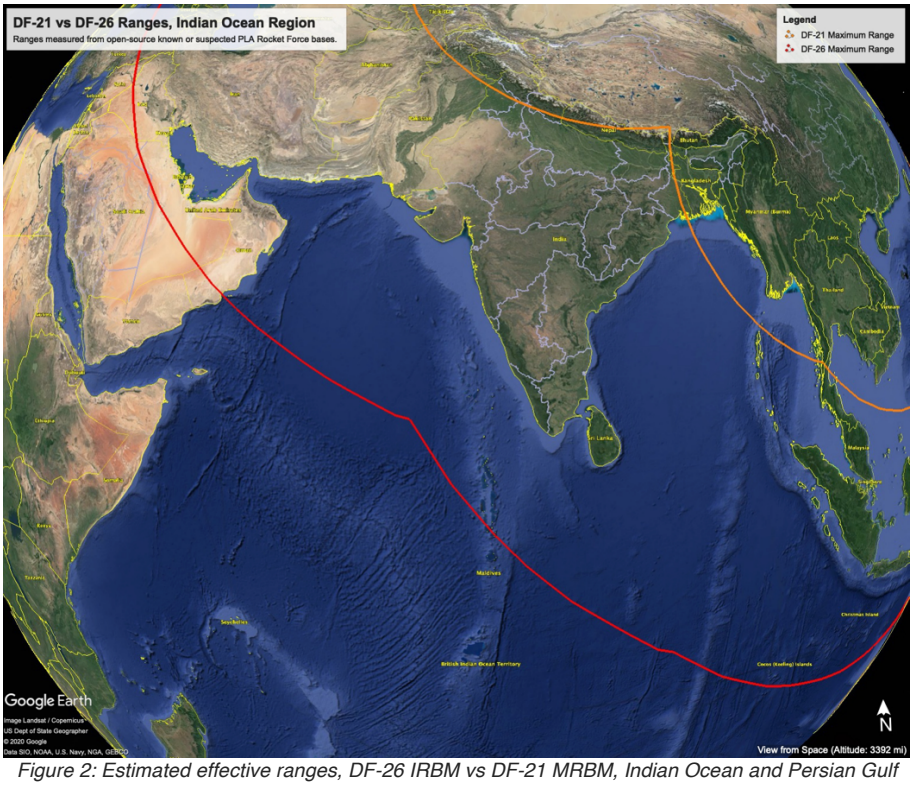

Figure 2: Estimated effective ranges, DF-26 IRBM vs DF-21 MRBM, Indian Ocean and Persian Gulf

Figure 3: Possible mockup E-3 AWACS target, western China. Sources: DigitalGlobe (upper left) and Google Earth (lower right).

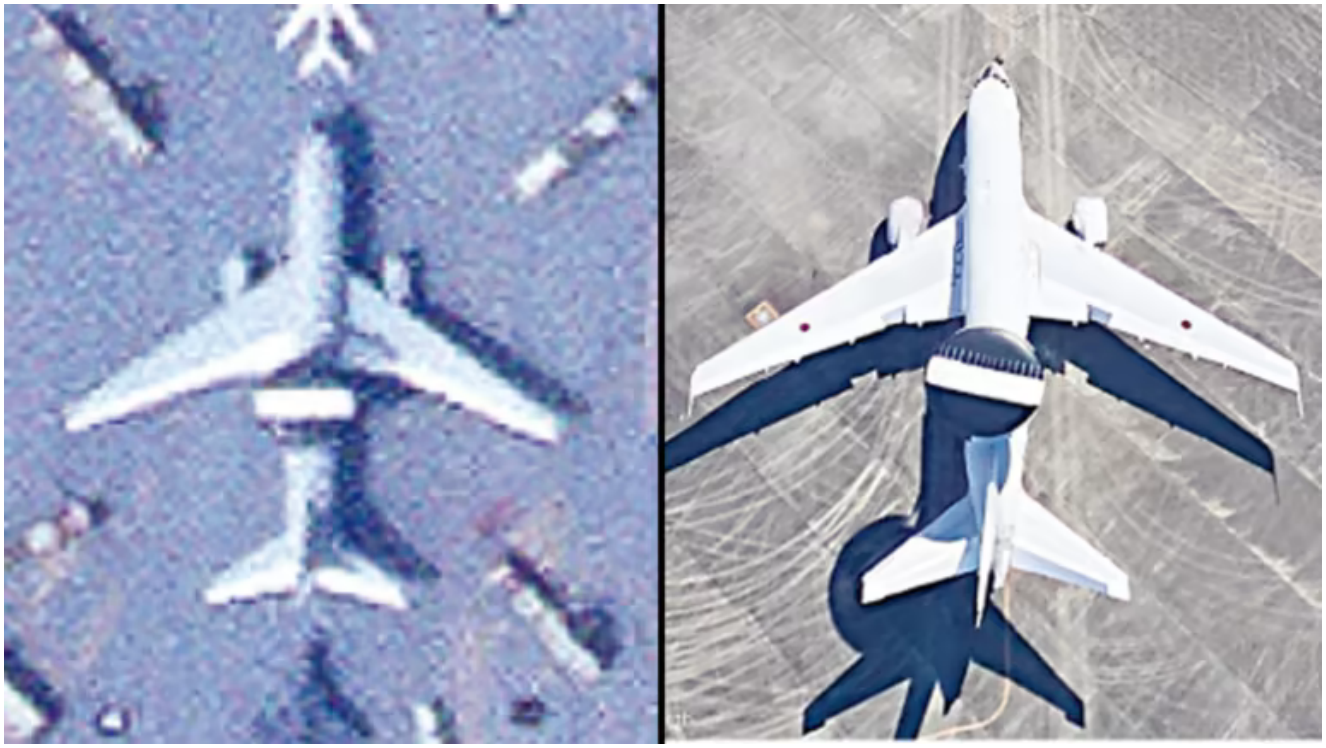

Figure 4: An apparent mock-up, left, of an AWACS plane is seen in a desert in Xinjiang desert, while the photo on the right shows an E-767 at Hamamatsu Air Base in Japan. (Left: Photo by 2022Planet Labs PBC. Right: Photo by Google Earth. Source: Nikkei Asia.)

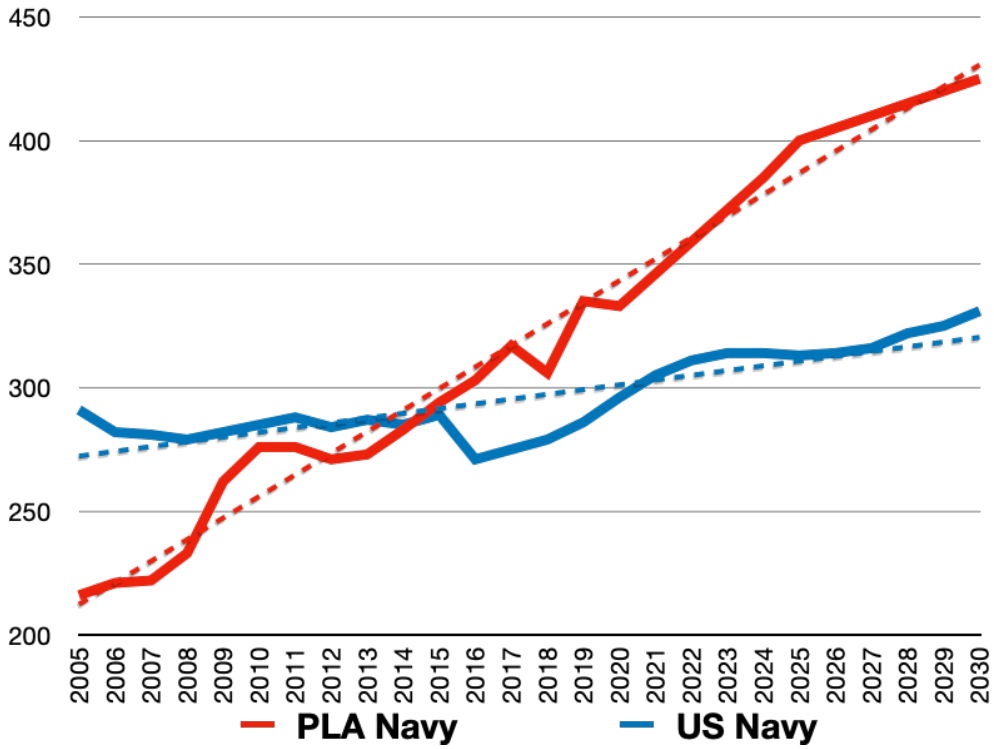

Figure 5: Total battle force ships, US Navy and Chinese PLA Navy (totals past 2023 are estimates)[31]

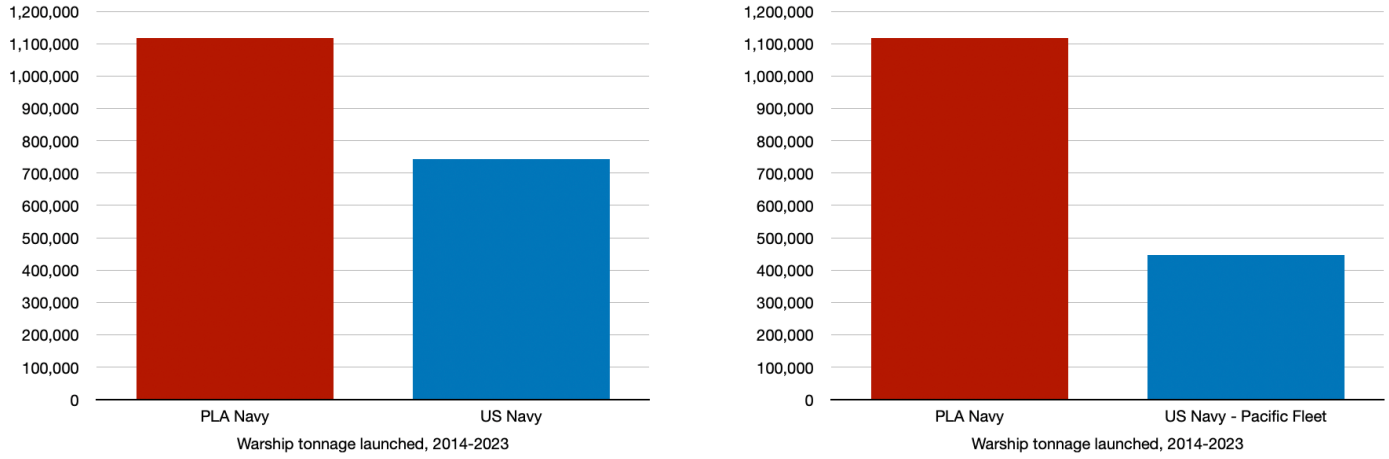

Figure 6: Total warship tonnage launched, 2015-2019. "US Navy - Pacific Fleet" is 60% of US Navy total.[32]

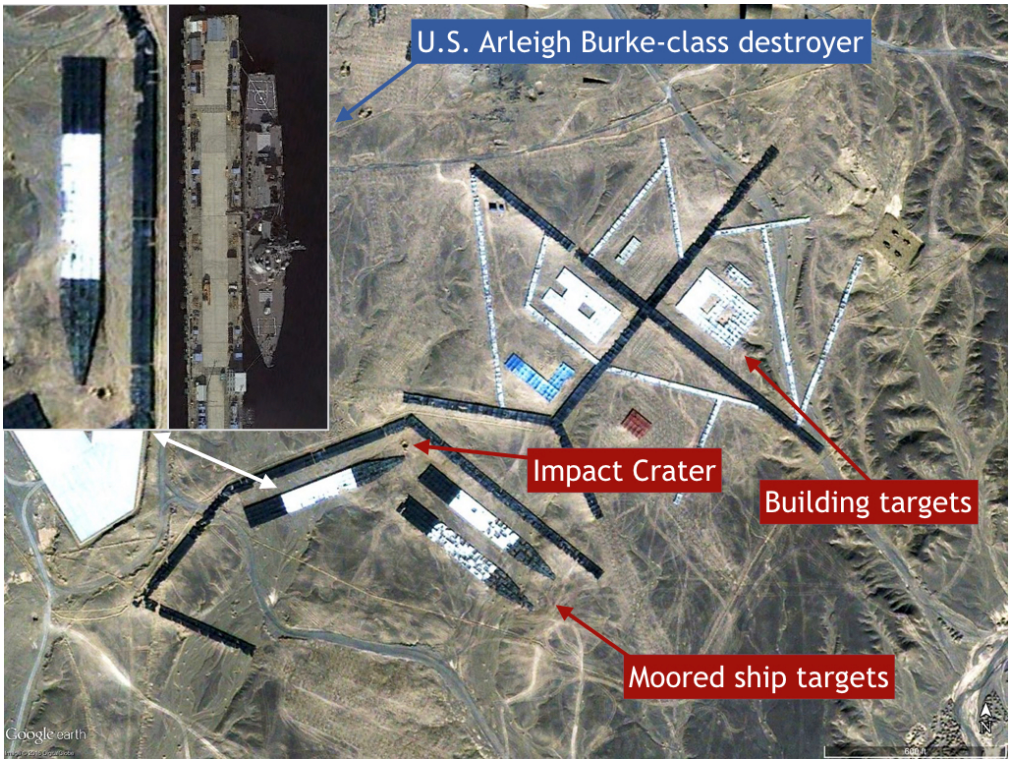

Figure 7: Possible ballistic missile test targets, western China, 2013.

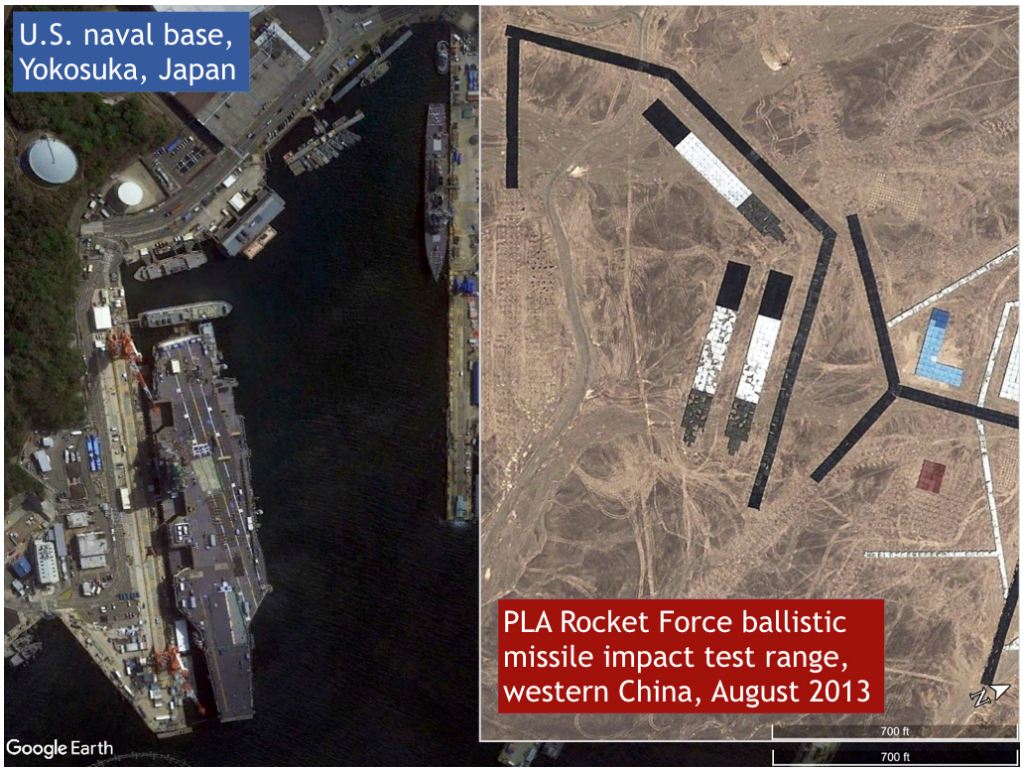

Figure 8: Possible ballistic missile test targets, western China, 2013.

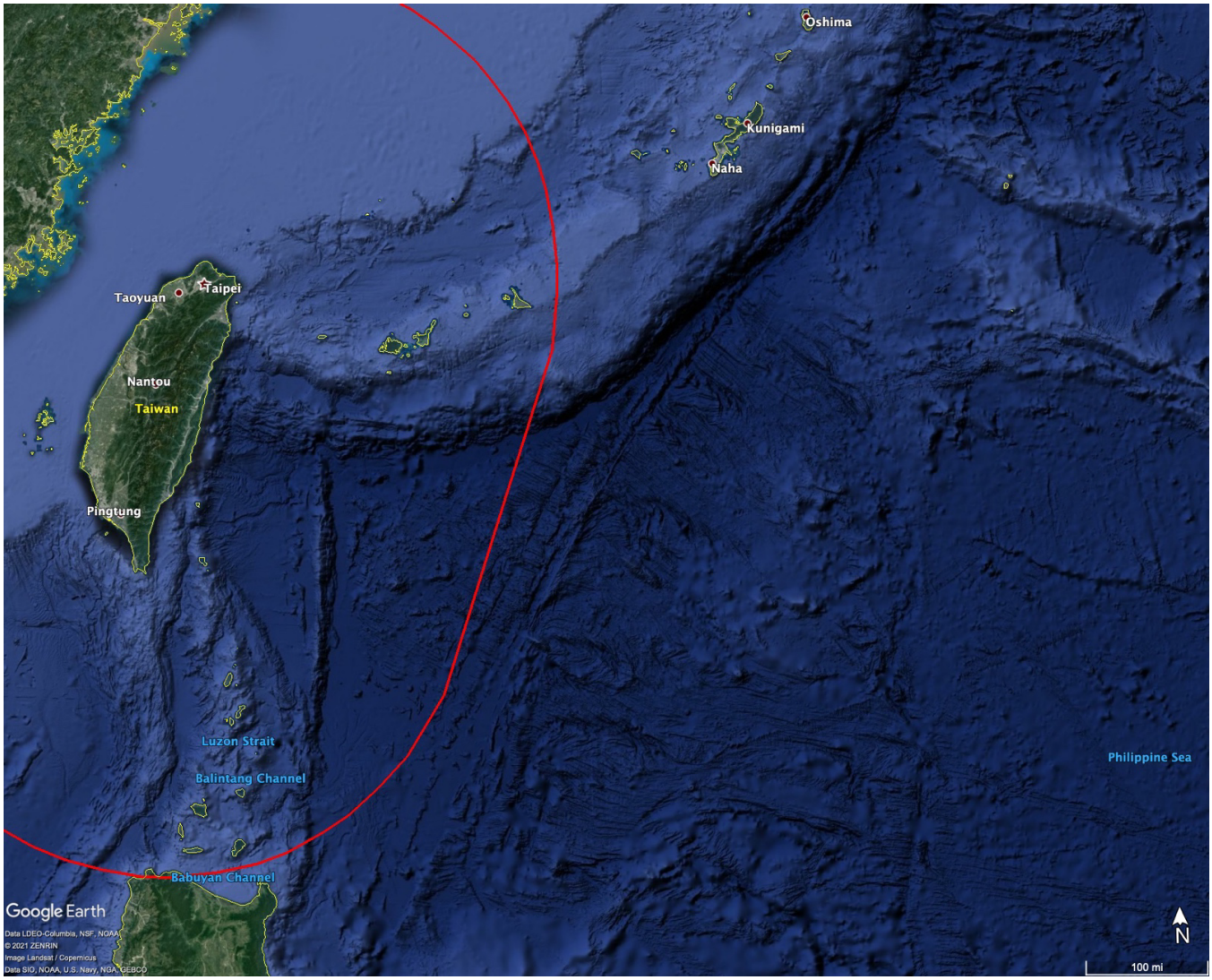

Figure 9: Taiwan and the deep water of the Philippine Sea. Also shown: range arcs (red) representing approximate ranges of potential Taiwan-based PLA anti-ship and anti-air weapons (400km).

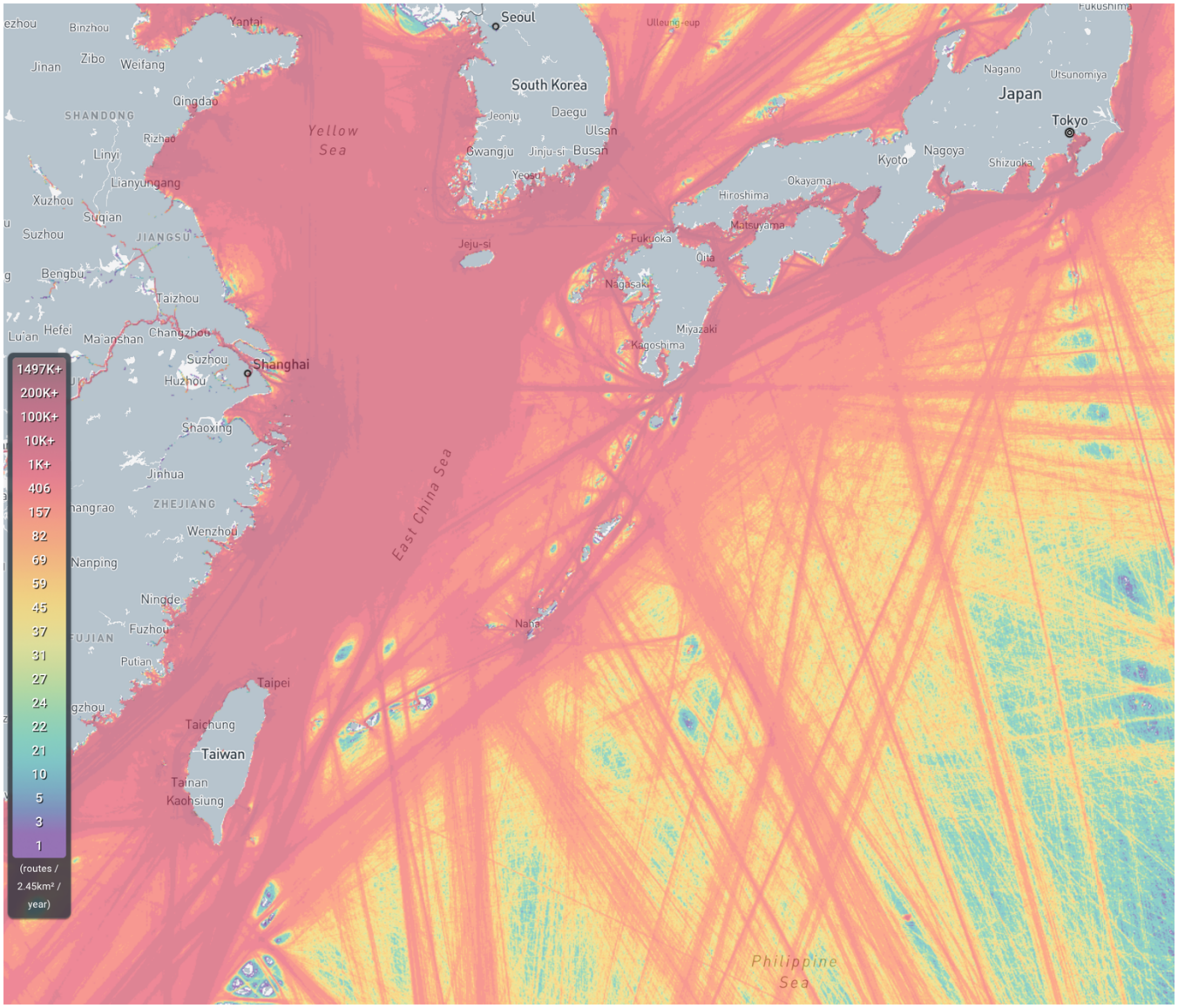

Figure 10: Historical marine shipping density in the vicinity of Taiwan and the Philippine Sea (source: MarineTraffic, 2022 data)

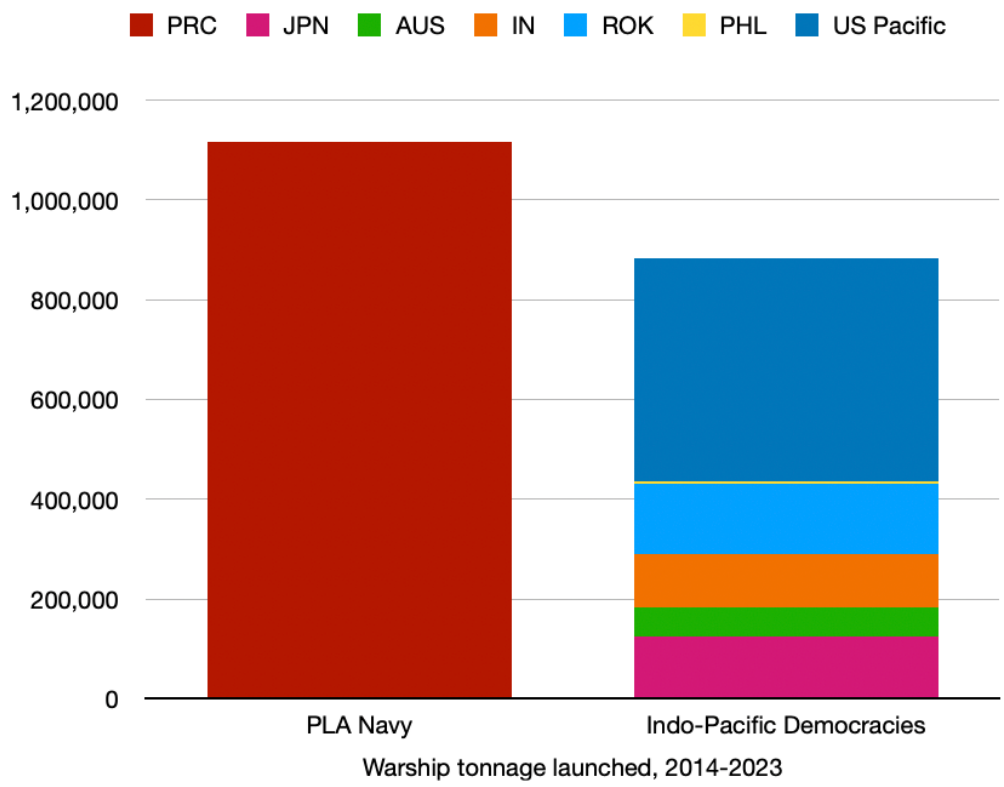

Figure 11: Total warship tonnage launched by Indo-Pacific democracies, 2014-2023. "US Navy - Pacific Fleet" is 60% of US Navy total.

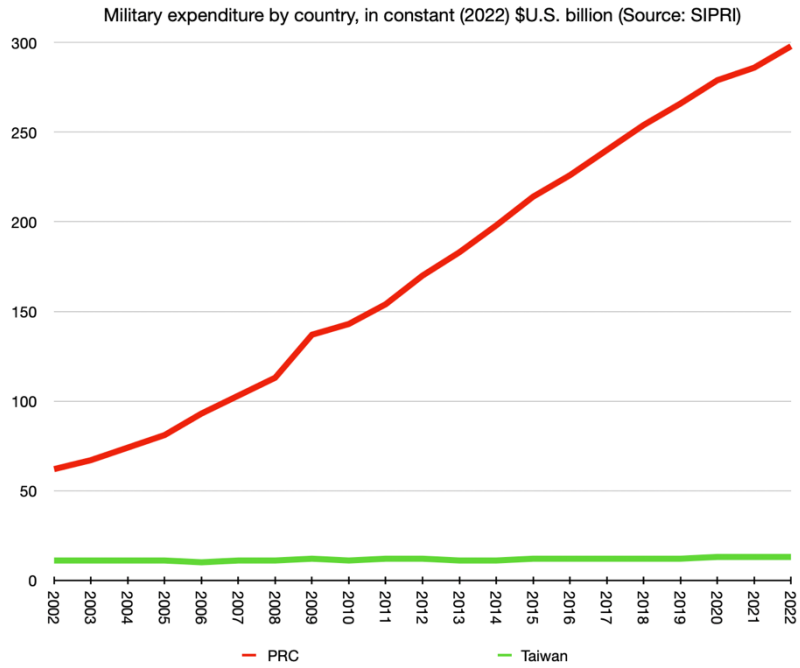

Figure 13: PRC vs. Taiwan defense expenditures, 2002-2022

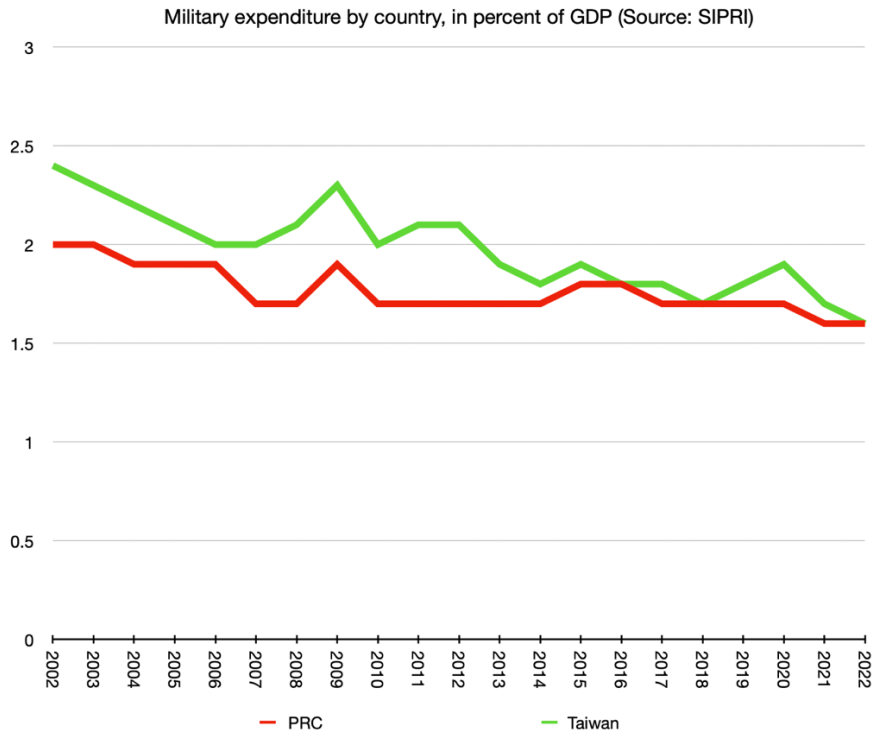

Figure 12: PRC vs. Taiwan defense expenditures as a percentage of GDP, 2002-2022

Appendix B: About the Author

Thomas Shugart is an Adjunct Senior Fellow with the Defense Program at the Center for a New American Security (CNAS). His research focuses on undersea warfare and maritime competition, military innovation and acquisition, and the broader military balance in the Indo-Pacific.

Shugart served more than 25 years in the U.S. Navy, where he last worked in the Defense Department's Office of Net Assessment. He served as a submarine warfare officer during his military service, deploying multiple times to the Indo-Pacific region and commanding the nuclear-powered fast attack submarine USS Olympia from 2013 to 2016. Following his submarine command tour, he served on the Navy Staff as the principal officer providing oversight of the Columbia-class ballistic missile submarine program, the Navy's highest-priority acquisition effort. Over the course of his military career, he served onboard both fast attack and ballistic submarines as well as at shore headquarters. He also served on the Joint Staff as the principal officer responsible for nuclear strike planning, advising of senior Defense Department leaders on nuclear weapons employment plans, and the training of presidential military aides and command center personnel on nuclear command and control.

Shugart's writing has appeared in *Foreign Affairs*, *War on the Rocks*, *The National Interest*, the U.S. Naval Institute's *Proceedings*, and the Lowy Institute's *Interpreter*. He has provided expert testimony before to the U.S.-China Commission and the Senate Foreign Relations Committee, has appeared on CNBC and CBS News' *60 Minutes*, and has been quoted in *The New York Times*, *The Wall Street Journal*, *The Washington Post*, *The Japan Times*, *The Economist*, *Nikkei Asia*, CNN.com, *Business Insider*, and other publications. During his first stint at CNAS as a Navy Fellow, he published the study *First Strike: China's Missile Threat to U.S. Bases in Asia*.

Shugart is a graduate of the U.S. Naval War College, and he holds an MA in national security and strategic studies. He is also an honor graduate in mechanical engineering of the University of Texas at Austin and received postgraduate training in nuclear engineering from the U.S. Naval Nuclear Propulsion Program. He is an instrument-rated commercial pilot and Federal Aviation Administration–certified flight instructor.

Appendix C: CNAS Intellectual Independence Policy

This testimony reflects the personal views of the author alone. As a research and policy institution committed to the highest standards of organizational, intellectual, and personal integrity, the Center for a New American Security (CNAS) maintains strict intellectual independence and sole editorial direction and control over its ideas, projects, publications, events, and other research activities. CNAS does not take institutional positions on policy issues and the content of CNAS publications reflects the views of their authors alone. In keeping with its mission and values, CNAS does not engage in lobbying activity and complies fully with all applicable federal, state, and local laws. CNAS will not engage in any representational activities or advocacy on behalf of any entities or interests and, to the extent that the Center accepts funding from non-U.S. sources, its activities will be limited to bona fide scholastic, academic, and research-related activities, consistent with applicable federal law. The Center publicly acknowledges on its website annually all donors who contribute.

---

[1] "In their Own Words: Science of Campaigns (2006)", China Aerospace Studies Institute, December 2, 2020, 307-394.
[2] "Science of Campaigns", 593-728.
[3] "In their Own Words: China's National Defense in the New Era, The State Council Information Office of the People's Republic of China, July 2019", China Aerospace Studies Institute, March 16, 2021, 6-7.
[4] "Science of Campaigns", 376.
[5] "Science of Campaigns", 122, 129, 354, 610, 719; "In their Own Words: Science of Military Strategy (2013)", China Aerospace Studies Institute, February 8, 2021, 122, 124, 165; "In their Own Words: Science of Military Strategy 2020", China Aerospace Studies Institute, January 26, 2022, 140, 192; "China's National Defense in the New Era", 7.
[6] "Science of Military Strategy (2013)", 124.

[7] "Science of Military Strategy 2020", 192.
[8] "Science of Campaigns", 105, 354.
[9] "Science of Military Strategy (2013)", 165.
[10] Science of Military Strategy 2020", 259.
[11] "Military and Security Developments Involving the People's Republic of China 2023", U.S. Department of Defense, October 2023.
[12] "Military and Security Developments Involving the People's Republic of China 2018", U.S. Department of Defense, August 2018.
[13] H I Sutton, "China Build Missile Targets Shaped Like U.S. Aircraft Carrier, Destroyers in Remote Desert," USNI News, November 7, 2021.
[14] Thomas Shugart and Javier Gonzalez, "First Strike: China's Missile Threat to U.S. Bases in Asia" (Center for a New American Security, 2017), 13.
[15] Rod Lee, "PLA Naval Reorganization 2023", China Aerospace Studies Institute, July 2023.
[16] "President Xi calls for establishment of world-class naval force," CGTN, April 12, 2018.
[17] "Military and Security Developments Involving the People's Republic of China 2020", U.S. Department of Defense, Sep 1, 2020.
[18] Factors that could cause this to be more likely would include similarities in warship design and capability, sufficiency of fleet logistics, and the state of personnel and materiel readiness. Factors that could cause divergence might include significant differences in munitions capability and magazine depth, effectiveness of C2 and fleet employment, and the ability to cope with battle damage.
[19] Yoshihara and Holmes, Red Star Over the Pacific, 6.
[20] Toshi Yoshihara and James Holmes, Red Star Over the Pacific: China's Rise and the Challenge to U.S. Maritime Strategy (Annapolis, Naval Institute Press, 2018), 132.
[21] "Military and Security Developments Involving the People's Republic of China 2023", 55, 63.
[22] Ian Toll, Twilight of the Gods: War in the Western Pacific, 1944-1945 (New York: W.W. Norton & Company, 2020), 335.
[23] "U.S. Shipping and Shipbuilding: Trends and Policy Choices", Congressional Budget Office, August 1984; Thomas Cochran, "How Many Tons of Ships Do We Have Now?", in *EM 25: What Shall We Do with Our Merchant Fleet?* (January 1946).
[24] Michael McDevitt, *China as a Twenty*-First *Century Naval Power* (Annapolis: Naval Institute Press, 2020), 215.
[25] Alison Kaufman and Daniel Hartnett, "Managing Conflict: Examining Recent PLA Writings on Escalation Control" (CNA China Studies, 2016), 68.
[26] Burgess Laird, "WAR CONTROL: Chinese Writings on the Control of Escalation in Crisis and Conflict" (Center for a New American Security, 2017), 6.
[27] Kaufman and Hartnett, "Managing Conflict", 20-30.
[28] Kaufman and Hartnett, "Managing Conflict", 79.
[29] Jeffrey Engstrom, "Systems Confrontation and System Destruction Warfare: How the Chinese People's Liberation Army Seeks to Wage Modern Warfare" (RAND Corporation, 2018), x.
[30] Robert Critchlow, "Nuclear Command and Control: Current Programs and Issues", Congressional Research Service, May 3, 2006, CRS-4, https://apps.dtic.mil/sti/citations/tr/ADA453640.
[31] Source Data: Congressional Research Service, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress" (dated 30 January 2024), and "Military and Security Developments Involving the People's Republic of China 2023", U.S. Department of Defense, October 2023.
[32] Author's calculations, using data obtained from Janes, Congressional Research Service, the Center for Strategic and International Studies, Google Earth, The Diplomat, and other sources.

OPENING STATEMENT OF J. MICHAEL DAHM, SENIOR RESIDENT FELLOW FOR AEROSPACE AND CHINA STUDIES, MITCHELL INSTITUTE FOR AEROSPACE STUDIES

MR. DAHM: Thank you. I appreciate the opportunity to speak to the Commission about what I believe is one of the most consequential aspects of military competition with China. That is how the People's Liberation Army, or PLA, seeks to control battlespace information to deter and potentially defeat a U.S. military intervention in a conflict. The Commission has requested that I testify on China's substantial - here we go -- command, control, communications, computers, intelligence, surveillance, and reconnaissance, or C4ISR capabilities.

You've also asked that I speak about PLA electronic warfare capabilities. Taken together, C4ISR and electronic warfare represent core capabilities in the PLA's efforts to achieve information dominance in counter-intervention or frankly, any other military operation. C4ISR and electronic warfare are quite literally seven or eight topics in one and the most complex system of systems in the modern battlespace. Consequently, my written remarks are extensive, but I will endeavor to summarize some of my key points and recommendations.

First, seizing battlespace information dominance will be one of, if not the most consequential struggles in any military conflict between the U.S. military and the PLA. China's military leaders believe firmly that superior C4ISR and counter-C4ISR capabilities will allow the PLA to achieve and maintain battlespace information dominance early in a conflict and will be critical to PLA combat success.

Therefore, the PLA will likely initiate a counter-intervention operation by conducting overwhelming kinetic and non-kinetic strikes on the sprawling U.S. and allied C4ISR system of systems to achieve that battlespace information dominance.

What the PLA calls informationized warfare is their overarching design to achieve battlespace information dominance. Now, informationized warfare is not an asymmetric strategy, nor is it uniquely Chinese. The PLA's informationized approach simply copies a well-established U.S. military playbook: render enemies deaf, dumb, and blind, and then pick off disconnected enemy forces with long-range precision fires.

Recent PLA reforms and reorganization efforts reflect informationized warfare principles. Specifically, the creation of operationally oriented theater commands, the PLA's joint operational command system, and the creation of the strategic support force has significantly increased the PLA's ability to achieve battlespace information dominance and support counter-intervention operations.

Additionally, for the past 25 years, the PLA has made substantial investments in diverse and resilient C4ISR and counter-C4ISR that will allow it to create important synergies among different offensive and defensive information power capabilities. These synergies may play a potentially decisive role in counter-intervention. These are the interactions that Mr. Shugart just spoke about a few minutes ago. I'm concerned that the U.S. military does not fully appreciate the cascading effects that may be created by PLA capabilities and the havoc they may reap within U.S. C4ISR systems of systems in a conflict.

In East Asia, it goes without saying the PLA enjoys a home-field advantage in military operations. These advantages extend beyond basing and logistics to its fortress-like C4ISR on the Chinese mainland. Hardwired networks on the mainland and in the South China Sea deny U.S. intelligence collection access and provide PLA C4ISR with substantial resilience and -- substantial resilience rather against kinetic and non-kinetic attack.

Beyond that, over the past several years, there has been a significant increase in the number of PLA special mission aircraft that provide airborne C4ISR. These aircraft, as well as uncrewed aerial vehicles or UAVs, are flying with increasing frequency in the southern reaches of the South China Sea and beyond the first island chain. PLA improvements in airborne anti-submarine warfare as well as surface ship anti-submarine warfare has also likely increased detection threats against U.S. and allied submarines, eroding a key U.S. military advantage.

Perhaps most significantly, the PLA has seen significant growth in space-based C4ISR capabilities as well as counter-space capabilities. Over the past five years, the number of PLA reconnaissance satellites and geostationary orbit has doubled, while the number of PLA reconnaissance satellites in low earth orbit has tripled to over 300. Taken together, these reconnaissance capabilities will likely create pronounced challenges for U.S. and allied forces attempting to avoid detection and targeting in a PLA counter-intervention operation.

Finally, in terms of counter-C4ISR capabilities, I would observe that the PLA is an electronic warfare juggernaut. The PLA possesses both the technological capabilities and significant electronic warfare capacities to conduct decisive offensive and defensive electromagnetic spectrum operations that will enable, if not ensure, initial PLA information dominance in a counter-intervention fight.

I do not mean to suggest that China's military represents an insurmountable threat, but policymakers should be clear-eyed about the PLA's battlespace information dominance strategy and the -- and the substantial impacts that PLA capabilities may have on U.S. military operating concepts and capabilities.

The Commission may want to consider the following recommendations. One, conduct a comprehensive net assessment of U.S. and allied C4ISR vs. PLA counter-C4ISR capabilities in a large-scale conflict. Engage U.S. -- engage the U.S. military regarding future C4ISR strategies and the need to emphasize more defensive capabilities, including significant redundancy and resilience within the U.S. C4ISR system of systems, which I can assure you will not be inexpensive.

Three, to defeat the layers and layers of PLA surveillance and reconnaissance, we may wish to consider investments in significant counter-reconnaissance capabilities, that include physical, virtual, and electromagnetic camouflage, concealment, and deception measures. And four, invest in robust, resilient, and redundant coalition C4ISR networks, not just for ourselves but among our critical allies and partners. Investing in C4ISR for and with our friends will be critical to denying the PLA the ability to separate the U.S. from a military coalition.

There are other recommendations outlined in my written statement. Again, I thank you for this opportunity, and I look forward to your questions.

COMMISSIONER SCHRIVER: Thank you very much. Ms. Garafola.

PREPARED STATEMENT OF J. MICHAEL DAHM, SENIOR RESIDENT FELLOW FOR AEROSPACE AND CHINA STUDIES, MITCHELL INSTITUTE FOR AEROSPACE STUDIES

Mitchell Institute for
Aerospace Studies
1501 Langston Blvd
Arlington, VA 22209
www.mitchellaerospacepower.org

March 21, 2024

Testimony before the U.S.-China Economic and Security Review Commission

Hearing on China's Evolving Counter Intervention Capabilities
and Implications for the U.S. and Indo-Pacific Allies and Partners

China C4ISR and Counter-Intervention

J. Michael Dahm
Senior Resident Fellow for Aerospace and China Studies
The Mitchell Institute for Aerospace Studies

Introduction

I appreciate the opportunity to speak to the Commission and provide this written testimony on what is perhaps the most consequential aspect of U.S. security competition with the People's Republic of China (PRC)—how the People's Liberation Army (PLA) seeks to control battlespace information to deter and potentially defeat a U.S. military intervention in a conflict. My assessment draws on published and previously unpublished independent, open-source research that I have conducted on China's C4ISR and counter-C4ISR strategies and capabilities.[a] This is not an exhaustive net assessment of U.S. and PRC capabilities but does highlight significant developments, illustrating trends I have observed over the two decades I have been examining the PLA and its warfighting capabilities. The analysis and opinions expressed in this testimony are my own—they do not necessarily reflect the views of the Mitchell Institute for Aerospace Studies, its sponsors, or any previous employer.

Executive Summary

- The PLA will likely initiate counter-intervention operations by conducting overwhelming kinetic and non-kinetic strikes on the sprawling C4ISR system-of-systems of the U.S. and its allies in order to achieve battlespace information dominance.

[a] "C4ISR" – command, control, communications, computers, intelligence, surveillance, and reconnaissance.

- Seizing battlespace information dominance will be one of, if not *the* most consequential struggles in any scenario where the PRC seeks to prevent the intervention of U.S. and allied military forces. In the minds of PLA decisionmakers, possessing superior C4ISR and counter-C4ISR capabilities to achieve information dominance early and throughout a conflict will be critical to combat success.

- The PLA's overarching design to achieve information dominance—informationized warfare—is not asymmetric nor is it uniquely Chinese. The PLA approach copies a well-established U.S. military playbook: Render enemies deaf, dumb, and blind, and then pick off disconnected enemy forces with long-range precision fires.

- The PLA has been reorganizing itself around its informationized warfare principles. The creation of operationally oriented theater commands, the joint operational command system, and the Strategic Support Force (SSF) among other C4ISR investments have significantly increased the PLA's ability to achieve battlespace information dominance and support counter-intervention operations.

- For the past quarter-century, the PLA has made substantial investments in diverse and resilient "information power" capabilities that will allow it to create important synergies among different C4ISR and counter-C4ISR capabilities. The cascading effects created by these capabilities will likely play a significant and potentially decisive role in counter-intervention.

- Within the Yellow Sea, East China Sea, and most of the South China Sea, the PLA probably begins a counter-intervention operation with information dominance and enjoys distinct advantages that may quickly translate into initial air and maritime dominance. In the initial stages of a counter-intervention operation, the PLA may be able to establish localized information, air, and maritime dominance in areas out to the Second Island Chain that would, if necessary, allow the PLA to launch strikes on U.S. bases and deployed forces.
    - The PLA enjoys a "home field advantage" in counter-intervention operations. These advantages extend beyond basing and logistics to its fortress-like C4ISR.

- The PLA has seen significant growth in space based C4ISR capabilities that will likely create pronounced challenges for U.S. and allied forces attempting to avoid detection and targeting in a PLA counter-intervention operation.
    - Over the past five years, the number of PLA ISR satellites in geostationary orbit (GEO) has doubled while the number of PLA ISR satellites in low Earth orbit (LEO) has tripled.

- The PLA is an electronic warfare juggernaut. The PLA possesses both the technological capabilities and significant electronic warfare capacities to conduct significant offensive and defensive electromagnetic spectrum operations that will enable, if not ensure initial PLA information dominance in a counter-intervention operation.

Summary of Recommendations

U.S. policymakers may wish to consider the following recommendations, which are explained in detail at the end of this report.

- Conduct a comprehensive net assessment of U.S. and allied C4ISR and counter-C4ISR capabilities in a large-scale conflict with the PLA.
- Engage the U.S. military regarding future C4ISR strategies and the need to emphasize more defensive capabilities including significant redundancy within the U.S. C4ISR system-of-systems.
- Invest in significant counter-reconnaissance capabilities to defeat PLA ISR that includes physical, virtual, and electromagnetic camouflage, concealment, and deception measures.
- Invest in robust, redundant, and resilient coalition C4ISR links and networks to increase combat interoperability among critical allies and partners, denying the PLA battlespace information dominance that might separate the U.S. from a coalition.
- Fund additional U.S. Intelligence Community capabilities to analyze current and future PLA counter-C4ISR capabilities and strategies.
- Publish a detailed open-source assessment of PLA C4ISR and counter-C4ISR threats to U.S. and allied military forces to increase public and policymaker awareness of these challenges.
- Fund additional U.S. Intelligence Community capabilities to analyze current and future PLA electromagnetic spectrum operations capabilities and strategies.
- Publish a detailed open-source assessment of PLA electronic warfare capabilities and threats to U.S. and allied military forces, again, to increase public and policymaker awareness of these challenges.

This report begins with a description of PLA informationized warfare concepts and principles and how they apply to counter-intervention operations. This is followed by an examination of recent organizational reforms in PLA command structure and their implications for counter-intervention. There is also a brief discussion of how C4ISR and counter-C4ISR elements may interact to create information dominance through synergistic effects. Several examples of PLA C4ISR capabilities illustrate the PLA's ability to combine different intelligence sources to locate, track, and target U.S. and allied military forces in different domains. Examples of counter-C4ISR capabilities with special attention to electronic warfare capabilities demonstrate direct challenges to U.S. and allied C4ISR. Finally, a number of recommendations are offered for the Commission's consideration.

Informationized Warfare and Counter-Intervention

- **The PLA will likely initiate counter-intervention operations by conducting overwhelming kinetic and non-kinetic strikes on the sprawling C4ISR system-of-systems of the U.S. and its allies in order to achieve battlespace information dominance.**
- **Seizing battlespace information dominance will be one of, if not *the* most consequential struggles in any scenario where the PRC seeks to prevent the intervention of U.S. and allied military forces. In the minds of PLA decisionmakers, possessing superior C4ISR and counter-C4ISR capabilities to achieve information dominance early and throughout a conflict will be critical to combat success.**

The PLA has explicitly described their designs to defeat a "strong enemy" like the United States military and counter U.S. intervention in a conflict—attack the C4ISR system-of-systems of the U.S. and its allies in order to achieve battlespace information dominance. With the PLA's redundant and resilient C4ISR still functional, battlespace information dominance enables the PLA to then achieve air and maritime dominance, potentially paralyzing a U.S. and allied advance. This overarching strategy is not asymmetric nor is it uniquely Chinese. The PLA approach copies a well-established U.S. military playbook: Render enemies deaf, dumb, and blind, and then pick off disconnected enemy forces with long-range precision fires.

The PLA's priority to achieve and sustain battlespace information dominance as a tactical, operational, and strategic imperative cannot be overstated. Any force that engages in a conflict with the PLA that fails to recognize and understand the central role of battlespace information dominance to PLA operational design risks a potentially disastrous outcome.

What is C4ISR?

C4ISR is an acronym that has traditionally referred to "command, control, communications, computers, intelligence, surveillance, and reconnaissance."[1] C4ISR may be thought of as a collection of individual systems that align to the seven named categories. This leads to any number of variations of "C4ISR" as different institutional champions append additional categories to the original seven (e.g. C5ISR-T adding another 'C' for "cyber" or "cyber-defense," and a 'T' for "targeting").[2] However, C4ISR is more than simply a description of different categories of systems. C4ISR should be considered an amalgamation of systems—a complex system-of-systems that enables an information-related purpose—military decision advantage.[3]

For the purposes of this report, C4ISR refers generally to a complex battlespace information system-of-systems that provides relevant information to a commander or weapons system operator, affords decision advantage, and enables military action. A C4ISR system-of-systems consists of command-and-control organizations and systems, communications and computer networks, and intelligence collection systems. Counter-C4ISR refers to a system-of-systems designed to confuse, disrupt, or destroy adversary C4ISR and deny an adversary commander decision advantage thereby inhibiting or preventing adversary action. A counter-C4ISR system-of-systems may include camouflage, denial, and deception activities, as well as electronic warfare, cyber-attack and defense, and the physical destruction of adversary networks, ISR platforms, and command nodes.

This analysis is scoped to battlespace information dominance and C4ISR. Western assessments of all things "information" and "military" too often confuse PLA informationized warfare concepts with what the PLA might term "political warfare" or "three warfares"—public opinion warfare, psychological warfare, and legal warfare. Assessments that indiscriminately mix everything from electronic warfare to malign influence on social media obscure PLA efforts to generate information power in the operational battlespace. Informationized warfare is about what a commander or weapons system operator sees, hears, and perceives in combat. It is about how battlespace data is collected and processed, how decisions are made, how actions are directed, and how data passes from "sensor-to-shooter."

Informationized Warfare and Force Employment

How the PLA will employ military force against an adversary in a counter-intervention scenario may be understood by examining the PLA's overarching approach to multidomain integrated joint operations and how their forces will likely employ different elements of combat power in any given large-scale military operation.

PLA strategic doctrine and other writings consider information power (信息力) or information dominance (制信息权)[b] as the key to controlling the battlespace and operational initiative. As early as 2002, Central Military Commission (CMC), Chairman Jiang Zemin observed:

> *"Informationization is the core of a new military transformation… information warfare links all combat processes and permeates each warfare domain. Competition for information superiority has become the focus of war. Information dominance is the key to seizing air and maritime dominance and control in other combat domains."*[4]

For over twenty years, the PLA has built upon this tenet—developing and refining ideas about informationized warfare.[5] Information power (信息力) is the operational expression of informationized warfare. It is the first among the five "Basic Elements of Campaign Power," in the seminal PLA doctrinal text, *Science of Campaigns*. Table 1 lists information power and the other elements of campaign power in priority order.

Table 1. Basic Elements of Campaign Power[6]

English Term	Chinese Term
Basic elements of campaign power	战役力量的基本要素
1. Information power	信息力
2. Firepower	火力
3. Maneuver power	机动力
4. Assault power	突击力
5. Protection power	防护力

[b] 制信息权 is translated in this report as "information dominance" but could also be translated as "information control." The characters might be translated more literally as "the power or authority to control information."

The 2006 *Science of Campaigns* and other more recent PLA writings note that information power does not stand alone; all the elements are necessary and complementary, applied in varying proportions depending on particular objectives. However, Chinese military doctrine and writings up to the present day indicate that that *all* the resources of war—that is, all the capabilities and materiel represented by the other elements—rely, first and foremost, on information power.[7]

The 2013 *Science of Military Strategy* introduced the concept of the "three dominances" (三权) – information, air, and maritime dominance. PLA theory holds that information dominance is critical to success in the modern battlespace. Air and maritime dominance cannot be achieved without first achieving battlespace information dominance according to PLA military doctrine.[8]

Current guidance from China's CMC in its Military Strategic Guidelines identifies informationized warfare as the prevailing "form of war" (战争形态). Just as the basic elements of campaign power are considered an objective list, the PLA's "form of war" is an objective assessment of the character of warfare in any given period that applies to all military operations, both friendly and enemy.

It is important not to confuse informationized warfare with the *process* of informationization, which is the transformation of any endeavor, from accounting to war, through the application of information technology. Informationized warfare, on the other hand, addresses the character of war and how wars are fought and won. The U.S. Department of Defense (DoD) annual report to Congress on the PLA, the 2023 *China Military Power Report*, states:

> *"PRC military writings describe informatized warfare as the use of information technology to create an operational system-of-systems, which would enable the PLA to acquire, transmit, process and use information during a conflict to conduct integrated joint military operations across the ground, maritime, air, space, cyberspace, and electromagnetic spectrum domains."*[9]

This statement is somewhat misleading. It accurately describes the *process* of informationization and the transformational goals for PLA C4ISR using information technology. It does not, however, accurately describe how the PLA believes informationized warfare has transformed warfighting or capture the depth and breadth of PLA informationized warfare concepts.

PLA ideas about informationized warfare were born out of PLA observations of modern wars, especially the 1991 Gulf War. PLA scholars drew heavily on concepts like "net-centric warfare" advanced by the U.S. military in the 1990s. The views of PLA authors writing on informationized warfare in the early 2000s were not entirely derivative of U.S. military doctrine. They incorporated many Western, Soviet, and Chinese information warfare concepts and ideas.

In the late-1990s and early-2000s, prominent Chinese military figures emerged to assess and define the new informationized form of war. One such figure was Major General Dai Qingmin (戴清民).[10] Often credited as the father of a core Chinese operational concept, "integrated

network electronic warfare (INEW)," Dai Qingmin's role in the development of informationized warfare is often overlooked. Beginning in the late 1990s, Dai wrote over sixty articles on informationized warfare and authored or coauthored a dozen books on the subject. Over two decades later, Chinese informationized warfare principles still clearly reflect the writings of Dai and his contemporaries.

Informationized warfare principles that are integral to current Chinese military doctrine, strategy, and operations include the following broad concepts:

- Information dominance is necessary to seize and maintain battlefield initiative.[11]
- "Active offense" is the key to seizing information dominance and the initiative in battle.[12]
- Information dominance is a prerequisite for air and maritime dominance.[13]
- Informationized warfare concepts are essential for success in large-scale joint operations.
- Individual elements of a combat system are networked and linked as an organic whole—a system-of-systems—through multidomain information perception, real-time information transmission, and intelligent information processing.[14]
    - Therefore, informationized warfare is inherently system-of-systems versus system-of-systems confrontation (体系与体系的对抗).[15]
- C4ISR systems-of-systems are critical friendly and enemy centers of gravity.[16]
    - C4ISR must be diverse and redundant since networks and myriad linked elements will be targeted for interference and destruction.
    - In the defense, diversity and redundancy in one's own C4ISR network is necessary to preserve friendly access to information.
    - In the attack, no single combat measure will paralyze an informationized system-of-systems; coordinated strikes must take place across adversary C4ISR.[17]

"Informationized warfare" (信息化作战) may be translated literally as "warfare transformed by information."[c] If the industrial age resulted in warfare transformed by machines (mechanized warfare), the information age yields warfare transformed by information (informationized warfare). Future warfare may be transformed further by artificial intelligence and intelligent systems (intelligentized warfare, 智能化作战).

Informationized warfare does not exclude contests of materiel power. The authoritative 2020 PRC National Defense University text, *Science of Military Strategy*, observes that information dominance is facilitated through electronic warfare, network warfare, *and* physical destruction. Informationized warfare principles manifest information-centric operations in which both non-kinetic *and* kinetic strikes are used to ensure friendly control of battlespace information while

[c] 信息化作战 may also be rendered "informatized warfare."

targeting, destroying, and paralyzing an enemy combat information system.[18] The ultimate goal is to ensure PLA decision-making advantages and operational advantages through information dominance in a paradigm where "information flow dominates materiel and energy flows."[19]

Information dominance remains a central feature of PLA operational concepts.[20] Even as the PLA's "basic form of operations" (基本作战形式) has evolved over the past quarter-century from "joint operations" (联合作战) to "integrated joint operations" (一体化联合作战) to "multi-domain integrated joint operations" (多域一体化联合作战), the overarching principles of informationized warfare have prevailed. The C4ISR system-of-systems—fusing command and control, sensing, communication, precision strikes, support systems, and other capabilities into a coherent combat system—is the core of multi-domain integrated joint operations.[21]

Emerging PLA concepts of intelligentized warfare—the transformation of warfare by artificial intelligence (AI) and intelligent systems—is still fundamentally rooted in informationized warfare principles and battlespace information control. Some PLA sources are beginning to discuss intelligentized warfare as an independent, aspirational stage of future military development. Top-level PRC government guidance directs the PLA to simultaneously pursue the integrated development of mechanized, informationized, and intelligentized capabilities.[22]

That said, many Chinese military scholars regard intelligentized warfare as highly evolved informationized warfare and acknowledge the inextricable link between the two epochs of military development.[23] The reality is that AI will have significant impacts on *all* elements of combat power and military capabilities from C4ISR to firepower to maneuver to logistics. AI will enhance or, perhaps, even revolutionize the speed, accuracy, and volume of military actions and decision making. However, retaining friendly access to battlespace information while denying battlespace information to enemy forces will remain central to decision advantage even as AI-enabled networks and weapons systems become ascendant.

PLA Organizational C2 for Counter-Intervention

- **Since 2015, the PLA has been reorganizing around its informationized warfare principles. The creation of operationally oriented theater commands, the joint operational command system, and the Strategic Support Force (SSF) among other C4ISR investments have significantly increased the PLA's ability to achieve battlespace information dominance and support counter-intervention operations.**

Understanding the underlying organization of PLA command-and-control (C2) provides a foundation upon which to assess the PLA's expansive C4ISR system-of-systems. In 2015, the PLA created the Strategic Support Force, a military service-level organization that has overarching responsibility for PLA C4ISR. The PLA took several other significant steps to reorganize and streamline national- and theater-level C2 to facilitate integrated joint operations. This reorganization has also enabled more effective counter-intervention operations.

The PRC's 2015 military reforms, commonly referred to as "above-the-neck" reforms, fundamentally reoriented the PLA toward more joint, offensive capabilities.[d] The reforms enable the PLA to engage in the types of "active offense" (积极进攻) necessary to seize information dominance and gain operational initiative in military conflicts, including counter-intervention operations. The above-the-neck reforms replaced Military Regions (MRs), which were optimized to defend the PRC from attack and invasion, with five geographically oriented Theater Commands (TCs) that will allow for more focus on PLA offensive operations.

Joint Operational Command System Development

- **The PLA's joint operational command system was a significant reform that should improve the PLA's ability to conduct offensively oriented integrated joint operations and enable more effective counter-intervention operations.**

The 2015 reforms subordinated operational forces that might engage in counter-intervention against the U.S. or its allies to the PLA's "joint operational command system" (联合作战指挥体系).[24] Operational forces were previously under the control of PLA military service commanders. The PRC's Central Military Commission (CMC) also abolished the PLA General Staff Department, established a CMC Joint Staff Department, and created a national-level joint operations command center (JOCC) (联合作战指挥中心) to oversee theater operations as well as national-level, strategic operations. The CMC JOCC supervises five "theater joint operations command centers" (T-JOCC) (战区联合作战指挥中心) that are responsible for commanding operations in each of the TCs.[25]

What is not clear from available open-sources is how far from the Chinese mainland a TC's responsibility for counter-intervention operations might extend. In 2019, the Southern Theater Command T-JOCC probably controlled a PLA Navy surface ship task force far into the Central Pacific Ocean, beyond Guam and the Second Island Chain.[26] While this was ostensibly a training exercise, a T-JOCC controlling military forces so far from China's shores may indicate T-JOCC responsibility for coordinating counter-intervention operations at extended ranges. Over the past several years, PLA navy and air forces have operated with some frequency outside the First Island Chain in the Philippine Sea. In 2023, PLA Navy carrier strike groups operated within several hundred miles of Guam. There are no outward indications in open-source reporting that these operations were controlled directly by the CMC JOCC. These naval formations were probably controlled by the Northern, Eastern, or Southern Theater T-JOCCs.[27]

Within the T-JOCCs, different warfighting domain functions are organized into "command sub-centers" (指挥分中心), also referred to as "operational sub-centers" (作战分中心). The T-JOCC operational sub-centers are the "land operations sub-center" (LOSC) (陆上作战分中心), "maritime operations sub-center" (MOSC) (海上作战分中心), "air operations sub-center"

[d] The 2015-16 "Above-the-neck" reforms focused on top-level command reorganization, the "head" of the PLA. 2017-2019 "below-the-neck" reforms focused on reorganization within the "body" of the PLA.

(AOSC) (空中作战分中心), and "conventional missile operations sub-center" (CMOSC) (常导作战分中心).[28] The top-level theater command organization is depicted in Figure 1.

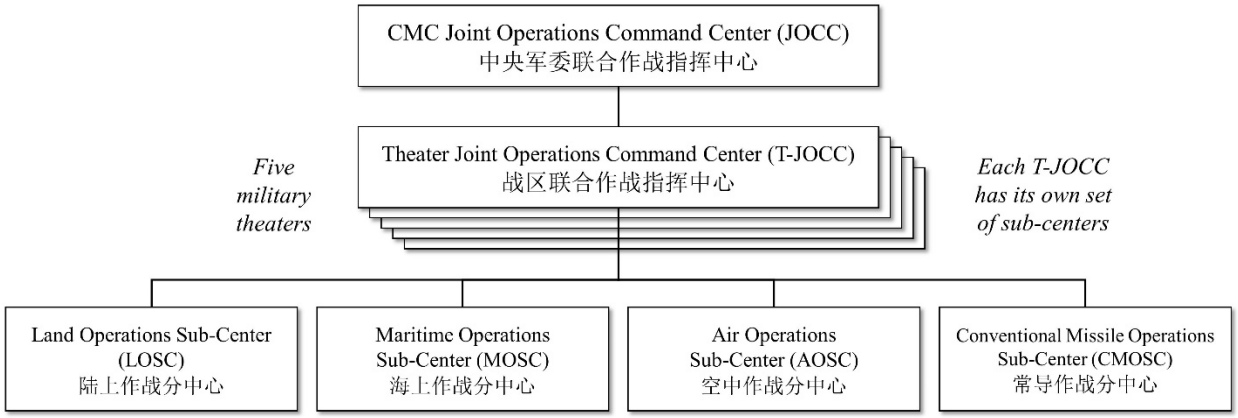

Figure 1. Theater Joint Operations Command System Organization.[29]

The sub-centers clearly align to the PLA military services—the PLA Army (PLAA), PLA Navy (PLAN), PLA Air Force (PLAAF) and the PLA Rocket Force (PLARF) respectively. The MOSC and the AOSC probably perform functions similar to the U.S. Navy's maritime operations centers (MOCs) and the U.S. Air Force's air operations centers (AOCs). Within each theater, the LOSC is probably led and managed by the TC Army commander, the MOSC is led by the TC Navy commander (for those coastal TCs with PLAN fleets), and the AOSC is led by the TC Air Force commander. It is not clear which PLARF senior officer might lead the theater Conventional Missile Operations Sub-Center since PLARF bases do not align with theater command boundaries.[30] "Dual-hatting" the theater service commander as both a "force provider" and "operational commander" again appears similar to U.S. military organization. For example, the commander, U.S. Pacific Air Forces is a U.S. Air Force major command and force provider while simultaneously serving as the air component commander for the U.S. Indo-Pacific Command theater.

The T-JOCCs are currently untested in real-world operations and would probably face significant challenges in conducting offensive action against a neighboring country while simultaneously coordinating and conducting counter-intervention operations against the U.S. and its allies. Open-source information does not currently provide many insights about how well the PLA's new C2 system is functioning or whether it has met with success or significant challenges in large-scale PLA exercises.

PLA Air & Air Defense Reorganization

- **A recent reorganization of PLA command has probably closed significant gaps and seams in air and air defense coverage but may have created new challenges and vulnerabilities related to counter-intervention.**

In 2023, the PLA took a major step to streamline and improve PLA air and air defense capabilities that might be applied in counter-intervention operations. Most land-based combat aircraft and air defense systems have apparently been consolidated under PLAAF command. More significantly, the consolidation improves the T-JOCC AOSC's ability to command operations in the air domain. The reorganization also probably improves the PLAAF's ability to support the PLA joint force and project airpower within East Asia.

Since the 1950s, the PLAN had always maintained a separate naval air force, the PLA Naval Aviation Force (PLANAF). The PLANAF was responsible for overwater intercepts, maritime strikes with bombers or fighter-bombers, and air defense of PLAN fleet concentration areas. Air defense forces included PLAN-owned and operated land-based radars and long-range surface-to-air missile systems like the HQ-9. The PLAAF was historically responsible for intercepts over the Chinese mainland (or just off the coast), air-to-ground strikes, as well as air and missile defense in parts of China not covered by PLAN air defense.

In early 2023, the PLAN transferred over 150 combat aircraft, ten airfields, three land-based air defense battalions, and several radar brigades to the PLAAF. The move consolidates virtually all PLA land-based combat airpower—fighters, bombers, air defense radars, and surface-to-air missile systems—under the control of the PLAAF. Moving PLAN combat aircraft to the PLAAF also means the PLAAF has assumed responsibility for airborne maritime strike operations with control of all land-based H-6 bombers and fighter-bombers like the JH-7 and J-16.[31]

The 2023 transfers from the PLAN to the PLAAF were likely inspired by the concentration of air operations command and control in the T-JOCC Air Operations Sub-Center. Consolidating land-based air defenses under PLAAF/AOSC command effectively closed any seams and vulnerabilities that had previously existed between PLAAF and PLAN areas of air defense responsibility. The consolidation potentially creates new seams and vulnerabilities. The PLAN and the MOSC must now rely almost entirely on the PLAAF and the AOSC to meet its air defense and air strike requirements. This dependency will persist at least for the next decade until the PLAN can generate sufficient airpower from its aircraft carriers.

PLA Strategic Support Force Development

- **The creation of the PLA Strategic Support Force appears to have had a seismic impact on the development of PLA C4ISR and electronic warfare capabilities. The SSF is now responsible for the majority of the PLA's joint C4ISR architecture as well as several counter-C4ISR capabilities.**

The 2015 "above-the-neck" reforms created the Strategic Support Force (SSF) (战略支援部队) from elements of the former PLA General Staff Department (GSD) and General Armaments Department (GAD). The SSF controls and manages joint military communications and computer systems, offensive and defensive military cyber operations, electronic warfare, space-based ISR,

and both terrestrial and on-orbit counter-space capabilities. The SSF also appears to have a limited role in military psychological operations against Taiwan.

The scale of PLA's SSF experiment has been massive. One public U.S. estimate in 2009 put the size of the former GSD 3rd Department (3PLA) at over 130,000 personnel.[32] The SSF combined personnel from 3PLA as well as the GSD 4th Department (4PLA) and some elements of the 2nd Department (2PLA), space-related forces, and communications troops. Accounting for some growth, the SSF may currently have between 200,000 and 250,000 personnel. Given the two-million PLA personnel, the SSF only represents between 10-12 percent of the force. Still, if the numbers are accurate, it means the SSF by itself is larger than almost every NATO military and close to the size of the entire Japan Self Defense Force. However, simply reorganizing personnel—even hundreds of thousands of personnel—into a single organization does not necessarily translate into operational proficiency or an ability to overcome institutional rivalries from the other military services.

Many popular assessments of the SSF tend to focus almost exclusively on the SSF's role in offensive cyber activity for both espionage and attack. Outsized interest in narrow SSF cyber capabilities has served to undermine a broader understanding of the SSF's fundamental responsibilities for developing and operating the PLA's extensive C4ISR system-of-systems and attendant counter-C4ISR capabilities, which includes offensive and defensive cyber capabilities.

The creation of the SSF consolidated many military information power capabilities and reflects the PLA's focus on informationized warfare and its strategic and operational imperative to achieve battlespace information dominance. The SSF is directly subordinate to the CMC Joint Staff with the same command grade as the TCs and military services (PLAA, PLAN, PLAAF, and PLARF). The SSF appears to be a "force provider" of information power capabilities for the theaters, but also appears to retain direct operational control of certain cross-cutting and strategic capabilities under the supervision of the Joint Staff.

Space Systems Department (SSD). The SSF Space Systems Department (航天系统部) is responsible for virtually all PLA space operations including space launch operations; telemetry, tracking, and control (TT&C) of satellites and other space vehicles; space-based management and control of PLA C4ISR; and select counterspace capabilities, especially on-orbit capabilities. Relative to PLA C4ISR, counter-C4ISR and counter-intervention operations, the most important SSD organizations are probably the 26th Base and the 37th Base, as well as several independent SSD Bureaus.

The 26th Testing and Training Base (第 26 试验训练基地), also known as the Xi'an Satellite Control Center (XSCC) (西安卫星测控中心), is the core of China's space TT&C network. Tasking for an ISR satellite to locate and track mobile or fixed targets very likely runs through the XSCC. Although the XSCC hub is in Xi'an, the XSCC is not a "center" as much as a nation-wide network of TT&C stations.[33] If the 26th base is responsible for C3 and tasking of PLA space assets, the 37th Base is responsible for space situational awareness (SSA) and ISR of adversary

space assets. The 37th Base, possibly known as the Monitoring and Early Warning Base, probably has responsibility for foreign space object identification, tracking, and analysis.[34]

The SSD Aerospace Reconnaissance Bureau (ARB) (航天侦察局) is responsible for analysis of space-based ISR.[35] The ARB was apparently moved to the SSF from GSD military intelligence (2PLA) indicating the ARB may focus on imagery intelligence. Space-based signals intelligence (SIGINT) may flow to the NSF's technical reconnaissance bureaus (TRBs) to be fused with other, terrestrial SIGINT sources for analysis. It is possible the ARB also acts as that fusion center for the different intelligence feeds.

The SSD's Satellite Communications Main Station (卫星通信总站) is responsible for space-based communications and data relay.[36] The SSD's space communications architecture would necessarily need to work closely with the SSF Information Communication Base (ICB) and its management of terrestrial communications. The SSD's Satellite Positioning Main Station (卫星定位总站) is responsible for the military operation and use of China's *Beidou* global positioning satellite system.[37]

Network Systems Department (NSD). The SSF Network Systems Department (网络系统部) is responsible for PLA strategic and joint SIGINT capabilities, which includes military cyber capabilities. The NSD is also responsible for strategic and joint electromagnetic spectrum operations (EMSO). The NSD reportedly inherited the PLA's 311 Base, which is responsible for psychological operations against Taiwan and generating propaganda, influencing public opinion on the island to support PLA objectives.[38]

Virtually every organizational element of the NSD likely plays an important role in counter-intervention operations against the U.S., its allies, and partners. The NSD's extensive SIGINT capabilities likely include signals intelligence (SIGINT)—electronic intelligence (ELINT) and communications intelligence (COMINT)—to monitor and intercept signals both terrestrially and in space. There are also indications that the NSD may be responsible for monitoring activity on international submarine fiber-optic cables where they land in China.[39]

SSF NSD inherited its SIGINT capabilities from the former 3PLA. 3PLA had been organized into twelve technical reconnaissance bureaus (TRB), a structure that most open-source analysts suspect was exported to the SSF intact. The most infamous of these TRBs was the 2nd Bureau that has been identified as responsible for a large share of PLA cyber hacking and espionage.

There is ample evidence that the twelve TRBs, including the 2nd Bureau, were responsible for SIGINT missions and capabilities well beyond computer network operations (CNO). A report prepared for the USCC in 2009 stated:

> *"While the TRB appear largely focused on traditional SIGINT missions, oblique references to staff from these units conducting advanced research on information security*

or possibly related topics suggests a possible CNO or EW role that augments their SIGINT collection mission."[40]

The SSF NSD operates a number of independent electronic warfare (EW) units, often identified as electromagnetic countermeasures (ECM) units. The PLAN, PLAAF, and PLARF all operate ECM brigades that support their respective service forces while PLAA ECM is incorporated within PLAA maneuver elements. NSD ECM brigades, inherited from the former 4PLA, are probably responsible for strategic air defense and counter-space electronic warfare (principally ground-based monitoring and jamming of satellite communications).

Information Communication Base (ICB). The PLA 2017-2019 "below-the-neck" reforms transferred what is now known as the "Information Communication Base" (ICB) (信息通信基地) to the SSF.[e] The move further consolidates the SSF's responsibility for PLA C4ISR. The ICB is responsible for national and joint military communication networks. The ICB is also probably responsible for the PLA's enterprise-level computer architecture, the integrated command platform (一体化指挥平台). The ICB may also hold overall responsibility for cyber defense and information security of PLA networks through its Network Security and Defense Center (网络安防中心).[41] ICB units appear to be responsible for maintaining and repairing the National Defense Communication Network (NDCN) (国防通讯网) built on the PRC's defense fiber-optic cable (国防光缆) backbone network.[42]

Immediately following the 2015 "above-the-neck" reorganization, the ICB, also known as the 61001 Unit (61001 部队), was subordinated to the CMC Joint Staff Department. At that time, the organization was known as the Information Assurance Base (IAB) (信息保障基地), also translated as the "Information Support Base."[43] Probably in 2017 or 2018, as part of the PLA's "below-the-neck" reforms, the IAB was transferred to the SSF and renamed the Information Communication Base.[44] The ICB appears to control a number of information communication brigades (信息通信旅) (possibly also referred to as local "information communication bases") that are geographically distributed and assigned to support individual theater commands. ICB information communication brigades appear to be further organized into battalions and then companies mirroring PLA ground forces organization.[45]

The Information Communication Base joins the SSF SSD and NSD possibly as the third branch of the Strategic Support Force.[46] This preliminary assessment is based on the ICB retaining its "61001" military unit cover designator (MUCD) and the somewhat tenuous observation that no interim command organization is ever mentioned in official PLA media that highlights ICBs subordination to the SSF.[47] That said, it is certainly possible that the ICB belongs to the SSF Network Systems Department.[48] In any case, it is unlikely that the ICB is co-equal with the SSD

[e] "Base" (基地) in "Information Communication Base" may synonymously be thought of as an organization – ***the*** Information Communication Base (organization) or, in some contexts, a place – ***an*** information communication base (a communication base subordinate to the ICB or one of the services).

or NSD. The SSF departments have been assessed to be deputy theater grade commands with their own subordinate bases. According to PLA organizational convention, a “base" (基地), is normally a corps grade or deputy corps grade command. An assessed SSF organizational chart appears in Figure 2. The working relationship between NSD theater bases and ICB theater information communications brigades/bases is currently unclear.

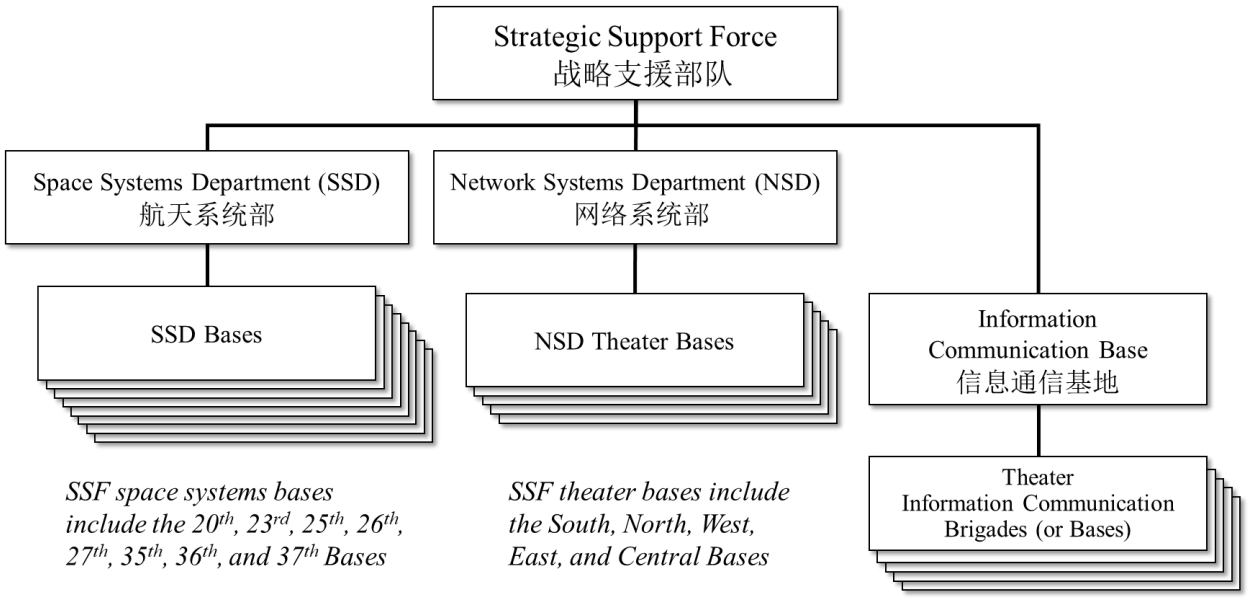

Figure 2. Assessed 2024 Strategic Support Force Organization.

SSF Support to Theater Operations. Theater-aligned SSF bases, possibly called “Technical Reconnaissance Bases,” may be subordinate to NSD or SSF headquarters. These SSF bases probably provide direct operational support to the five TCs and their T-JOCCs. Public references to SSF theater bases are normally prefaced with “Strategic Support Force” (战略支援部队) adding the term Eastern Base (东部基地), Southern Base (南部基地), Western Base (西部基地), Northern Base (北部基地), and Central Base (中部基地) aligning to their respective theater command.[49]

Figure 3 depicts a notional SSF theater support arrangement in which the SSF theater bases act as hubs for intelligence, cyber, and ECM. In this construct, the SSF theater bases draw information out of the SSF SIGINT and space ISR architecture and, conversely, convey theater tasking and requests for support back to the SSF. This diagram postulates either an administrative or operational relationship between the SSF theater bases and the theater information communication brigades. In any case, this arrangement is simply a logical extrapolation and would require research and further analysis to confirm.

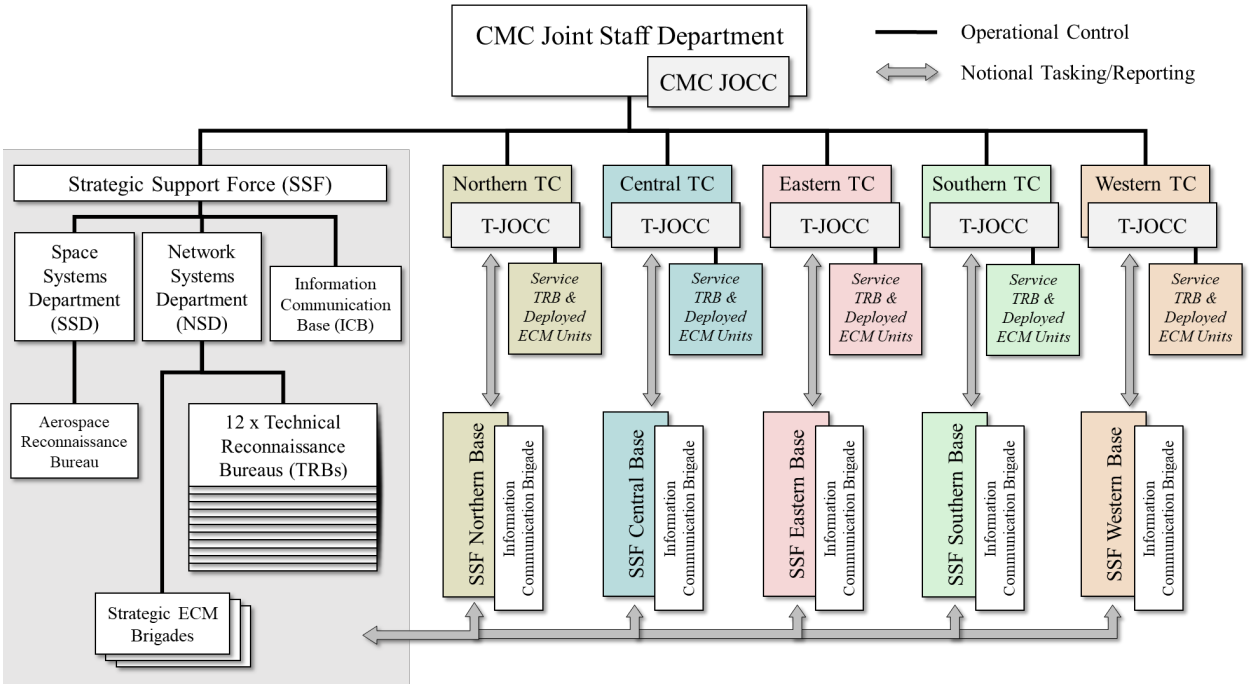

Figure 3. Notional Organization for SSF Theater Support.[50]

This notional SSF theater support arrangement raises questions about roles the SSF may play in the T-JOCC. How, for example, does the T-JOCC deconflict tasking and actions of service TRB and ECM forces with those of the SSF? There is a possibility that the SSF theater base or other SSF staff might be integrated into the T-JOCC to command an independent information operations sub-center (IOSC) alongside the land, maritime, air, and conventional missile operations sub-centers. The presence of an IOSC is purely speculative. How the PLA manages information warfare within the T-JOCC would also require further research and analysis.

Eight years after the creation of the SSF, the organization is probably just beginning to realize many of the information power goals it was given. The Strategic Support Force, as managers and operators of core components of the PLA C4ISR system-of-systems will have a key role in generating battlespace information dominance and will have a significant impact on any PLA counter-intervention operation.

C4ISR & Counter-C4ISR Synergies

- **For the past quarter-century, the PLA has made substantial investments in diverse and resilient "information power" capabilities that will allow it to create important synergies among different C4ISR and counter-C4ISR capabilities. The cascading effects created by these capabilities will likely play a significant and potentially decisive role in counter-intervention.**

Figure 4 offers a framework that demonstrates how different C4ISR and counter-C4ISR information power elements may interact to create information dominance through synergistic effects.

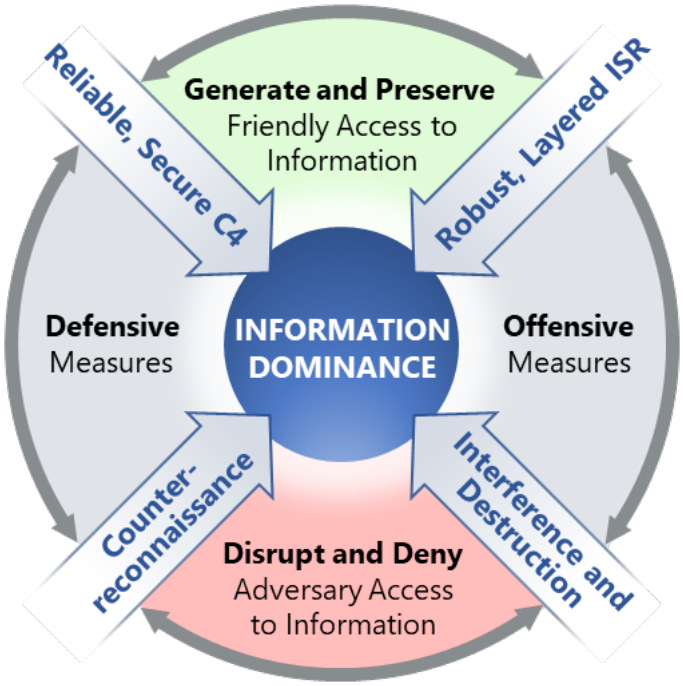

Figure 4. Information Power Capabilities Conceptual Framework.[51]

The diagram shows four information power categories—C4, ISR, interference and destruction, and counter-reconnaissance oriented toward information dominance. Interference and destruction may include kinetic actions, such as airstrikes, or non-kinetic actions that might be reversible or destructive such as temporary electronic interference or a cyber-attack that disables a system. Counter-reconnaissance may include camouflage, concealment, deception, decoys, and other measures to defeat adversary ISR. These categories are arranged into offensive or defensive measures that either preserve friendly access to information or deny an adversary access to information. The combination of different types of capabilities and the synergistic effects they generate will yield greater battlespace information dominance than any one capability employed in isolation. In an operational battlespace, the different categories of capabilities work together to achieve information dominance and deliver combat effects.

In the absence of counter-reconnaissance, interference, and destruction, two opposing C4ISR system-of-systems might compete with one another in terms of how fast one or the other system enables decisions or closes a kill chain. That is, the advantage may go to the C4ISR system that can spin the "OODA loop" faster than one's adversary.[f]

[f] OODA – Observe, orient, decide, act.

In any confrontation between the U.S. military and PLA, there are challenges comprehending how complex interactions and cascading effects across the respective C4ISR systems-of-systems may play out in multiple domains. For example, if the PLA sought to prevent a U.S. Navy ship from using satellite communications (SATCOM), a simple interaction might be for a PLA EW system to jam the communication satellite's receiver (PLA interference versus U.S. C4).

A more complex, and realistic scenario might combine PLA ISR with the risk of a missile strike against the ship. If PLA ISR can detect and geolocate the U.S. ship's SATCOM, the PLA *might* attack the ship. The U.S. ship recognizes the threat, so it does not transmit using SATCOM to evade PLA ISR. In this example, the ship turned off its own SATCOM and the PLA achieved its goal, but no actual jamming or missile strike took place (ISR and destruction versus C4). This scenario could continue to play out if the U.S. ship continued to use SATCOM by deceiving PLA ISR with SATCOM signals in false locations (counter-reconnaissance) or using interference and destruction to directly disrupt PLA ISR or defeat the threat of missile attack. The PLA could (and does) compensate for these types of countermeasures by having multiple types of ISR systems and missiles that an adversary must defeat simultaneously.

Walking through every permutation of complex C4ISR system-of-systems confrontation would be impractical. However, over the past thirty-five years, the U.S. military has not had to think in terms of systems-of-systems confrontation. U.S. military C4ISR in the post-Cold War era has been confronted by either a few individual adversary systems or a wholly unsophisticated and primitive C4ISR such as those employed by terrorist organizations that created its own sets of challenges.[52]

There is an argument to be made that neither the U.S. military, nor any military, has faced the challenges that may emerge from military competition or confrontation with the PRC. Toward the end of the Cold War U.S. and Soviet military leaders were heralding a "revolution in military affairs" brought on by new technologies that connected sensors to shooters. However, kill chains in the 1980s were still fairly linear, and network technology was rudimentary by today's standards. Now, for the first time, the U.S. military faces a near-peer competitor with an extraordinarily complex C4ISR systems-of-systems and counter-C4ISR capabilities with a vision to defeat the U.S. at its own game – to achieve battlespace information dominance at in the early stages of hostilities.

The PLA has fully embraced system-of-systems confrontation concepts.[53] Informationized warfare is inherently system-of-systems versus system-of-systems confrontation—information and information technology are what binds a joint force together in a networked system-of-systems. As early as 2001, PRC National Defense University scholars observed, "[Modern warfare] is a confrontation between a system-of-systems and a system-of-systems. In informationized warfare, the degree of 'systemized confrontation' (体系化对抗) will be even more extreme."[54] By 2005, the CMC began emphasizing proficiency in system-of-systems confrontation as a specific goal for the PLA.[55]

This is not to say that the PLA has fully realized its C4ISR goals over the past two decades, nor has PLA necessarily exceeded the C4ISR capabilities of the U.S. military. However, the PLA is clearly working to build a world-class C4ISR and counter-C4ISR system-of-systems—all the offensive and defensive capabilities necessary to generate and preserve PLA access to information while disrupting and denying access to information for the PLA's adversaries.

PLA C4ISR in Counter-Intervention Operations

PLA C4ISR will have a critical role in establishing information dominance in a PLA counter-intervention operation. Robust, redundant, and resilient PLA C4ISR was principally designed to preserve PLA access to battlespace information in a defensive fight—to continue functioning in the face of anticipated attacks against the PLA C4ISR by U.S. and allied forces. However, PLA C4ISR also serves an important counter-C4ISR function through synergistic effects, as was described earlier in this report. Beyond direct damage and disruption to U.S. and allied C4ISR caused by PLA attacks, U.S. and allied active emitters may need to shut down to hide and prevent targeting by dense, layered PLA ISR. The PLA anticipates these synergies will yield potentially decisive information dominance for the PLA in a counter-intervention fight.

PLA Operational Reach

- **Within the Yellow Sea, East China Sea, and most of the South China Sea, the PLA probably begins a counter-intervention operation with information dominance and enjoys distinct advantages that may quickly translate into initial air and maritime dominance. In these initial stages of counter-intervention operations, the PLA may be able to establish localized information, air, and maritime dominance in areas out to the Second Island Chain that would, if necessary, allow the PLA to launch strikes on U.S. bases and deployed forces.**

C4ISR architecture largely defines the limits of PLA operational reach, especially in a large-scale operation like counter-intervention against the U.S. military. In 2024, PLA C4ISR and its ability to command and operate its joint force probably defines PLA conventional military power projection to the Western Pacific and Southeast Asia in a real-world combat scenario. In a counter-intervention operation, PLA kinetic strikes would probably be effective within 1500-2000 nautical miles of the Chinese mainland. Such strike capabilities, if realized in sufficient volume, may seriously impede, if not stop, a U.S. military intervention.

The PLA has certainly demonstrated global C4ISR capabilities in limited military operations that include peacekeeping operations in Africa, military diplomacy deployments, counterpiracy operations, and permissive non-combatant evacuation operations. What the PLA Navy calls "far seas" operations, even if limited, are a relatively recent development and generally have not involved large-scale joint military operations. The PLA Navy conducted its first substantial exercises in the Philippine Sea beginning in 2012.[56] The first circumnavigation of the Japanese archipelago by a formation of PLA Navy ships first occurred in 2013.[57] It is only within the past

few years that substantial joint formations of PLA ships and aircraft have exercised and operated together beyond the First Island Chain.[58] Even as the PLA stretches into global operations, it is important to recall that until very recently, PLA C4ISR was designed for the defense of China. The PLA's current C4ISR architecture is built upon those legacy C4ISR capabilities that are largely concentrated in mainland China.

Terrestrial C4ISR

- **The PLA enjoys a "home field advantage" in an East Asian conflict or counter-intervention operations. These advantages extend beyond basing and logistics to its fortress-like C4ISR.**

Over the past thirty years, the PLA leveraged growing defense budgets to create survivable and informationized warfare capable C4ISR. PLA leaders were impressed and extremely concerned by the devastating U.S. air strikes against Iraqi C4ISR in the 1991 Gulf War. Beginning in 1994, the PLA began to completely overhaul its National Defense Communications Network (NDCN), upgrading the entire system to high-speed fiber-optic cable.[59] The NDCN is almost entirely segregated from the PRC's civilian telecommunications network. NDCN fiber-optic cable may travel in the same cable trenches as civilian fiber, but the two systems have limited connectivity. However, as part of the PRC's civil-military fusion initiative, there have been exercises in which the civil network serves as a backup for the NDCN if it suffers damage.[60] The PLA's fiber-optic cable network also extends from the Chinese mainland to the PLA's artificial island-reefs in the South China Sea.[61]

Following embarrassment at the hands of the U.S. military in the 1995-1996 Taiwan Strait Crisis, the PLA began installing a "theater electronic information system" in southeast China.[62] It was known by the Chinese abbreviation "Qu Dian."[63] The Qu Dian theater system reportedly covered all of China's military regions by 2008 and offered high-speed communications and automated C2 of China's defenses for the first time.[64] Also in the early 2000s, the PLA developed an "integrated command platform" (ICP) (一体化指挥平台) an enterprise architecture to ingest and process large amounts of information, aid in command decision-making, and enable an interoperable joint force.[65] The PLA SSF's Information Communication Base is now probably responsible for the upkeep and maintenance of the ICP and its supporting networks.

PRC terrestrial C4ISR networks are the core of the architecture upon which the broader PLA C4ISR system-of-systems is built. PLA space-based communications capabilities have grown significantly in the past several years, but the "hard-wired" connectivity of the NDCN provides PLA command centers as well as units in the field with secure, reliable communications that are difficult for an attacker to disrupt or destroy.

Cyber ISR. PLA cyber ISR conducted by the SSF NSD will be an integral part of PLA counter-intervention operations, but these ISR capabilities are difficult to quantify. Cyber will certainly be used to launch computer network attacks against U.S. and allied C4ISR, platforms, and

weapon systems. However, the PLA will need to consider what intelligence might be lost if those networks are attacked and disabled. In a counter-intervention operation, cyber ISR will be employed to collect intelligence for indications and warning of intervention, intended movements, and the real-time location of U.S. and allied forces for targeting.

One area of concern for U.S. and allied forces should be an understanding of the "cyber terrain" and vulnerabilities in third countries where the U.S. or its allies may be operating. That is, U.S. networks may be protected and completely segregated from a telecommunications network where U.S. forces are based (e.g. the Philippines). However, if those national networks were constructed by PRC companies or are built on PRC network hardware, the PLA may be able to exploit those networks for ISR. (e.g. Surveilling Philippine networks for intelligence divulged by otherwise well-meaning locals such as a text messages or social media posts about the location of dispersed U.S. forces.)

Skywave Over-the-Horizon Radar. One notable land-based PLA ISR system that may be particularly relevant to counter-intervention operations is one or more sky-wave over-the-horizon (OTH) radars operated by the PLAAF. These OTH radars transmit high-frequency (HF) radar waves from huge land-based arrays that then bounce off the ionosphere and reflect back to Earth. Depending on the height of the ionosphere, China's skywave OTH radar may be able to detect ships and aircraft to ranges up to 3000 kilometers (1600 nautical miles) from the Chinese coast. The known skywave OTH radar transmitter and receiver sites are located 1000 kilometers inland and can probably detect ships and aircraft between the First and Second Island Chains.[66] China is also believed to operate several surface wave over-the-horizon radars which probably only provide detection and tracking capabilities a few hundred miles offshore and would not play a significant role in counter-intervention.

Air and Maritime C4ISR

- **Over the past several years, there has been a significant increase in the number of PLA C4ISR special mission aircraft. These aircraft, as well as uncrewed aerial vehicles (UAV) are flying with increasing frequency in the southern reaches of the South China Sea and beyond the First Island Chain. PLA improvements in airborne anti-submarine warfare as well as surface ship anti-submarine warfare has likely increased detection threats to U.S. and allied submarines.**

Special mission aircraft operated by the PLA have capabilities that include airborne early warning and control (AEW&C), signals intelligence/electronic intelligence (SIGINT/ELINT), electronic attack (EA) (i.e., jamming), as well as anti-submarine warfare (ASW) and maritime patrol (MARPAT). A list of PLAAF and PLANAF special mission aircraft appears in Appendix A. These aircraft elevate communications as well as active and passive sensors, allowing them to look down on the battlespace and extend line-of-sight ranges over the curve of the Earth. An example of the types of coverage that can be achieved by special mission aircraft flying at different altitudes is shown in Figure 5.

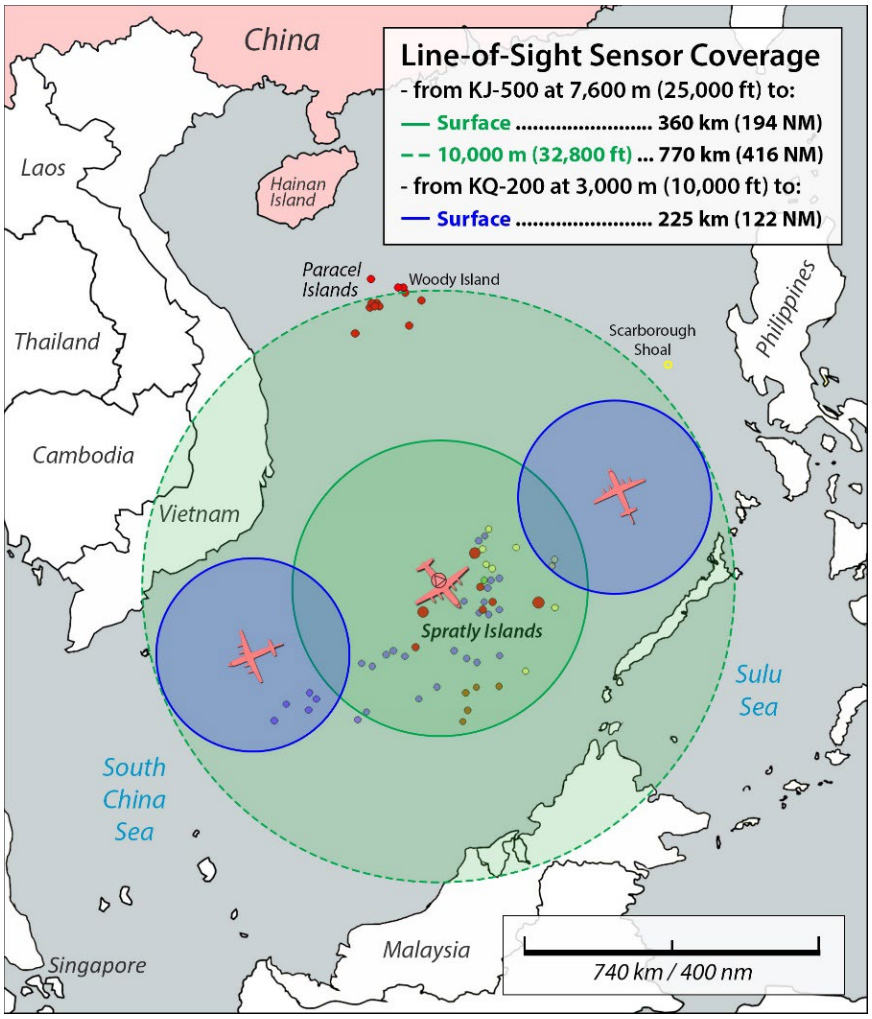

Figure 5. Example of Line-of-Sight Radar Coverage from PLA Aircraft [67]

Newer PLA special mission aircraft are based on the PRC's domestically designed and produced Y-9 transport aircraft. The Y-9 offers significant improvements in reliability and a 60 percent range increase over the Y-8, the airframe used for older PLA special mission aircraft. The Y-9 has a reported range of over 5,000 kilometers (~2,700 nautical miles) that translates to approximately ten hours of mission endurance.[68]

In 2019, the Shaanxi Aircraft Corporation, which produces Y-9 airframes, reportedly began mass producing special mission aircraft for the PLA.[69] A cursory examination of commercial satellite imagery reveals dozens of new special mission aircraft have appeared at PLA airfields over the past several years. Recognizable aircraft noted in commercial satellite imagery include KJ-500 AEW&C aircraft, KQ-200 ASW/MARPAT aircraft, and Y-9JB SIGINT/ELINT aircraft. More recently, the PLA has made significant improvements to infrastructure at several special mission aircraft airfields in the Northern, Eastern, and Southern TCs.[70]

Special mission aircraft have been noted flying beyond Japan's Ryukyu Islands and the First Island Chain with increasing frequency over the past several years.[71] Since at least 2021, special

mission aircraft have also been noted operating from PRC artificial island-reef air bases in the South China Sea.[72] In peacetime, these aircraft collect intelligence against U.S. and regional militaries. They also provide airborne C4ISR in support of PLAAF fighters and bombers or PLAN surface formations conducting routine operations and exercises.

UAVs would likely play a key role in providing ISR, communications relay, and possibly electronic warfare capabilities, especially in areas with a high threat of U.S. or allied air attack during counter-intervention operations. Occasionally, PLA UAVs have operated beyond the First Island Chain while accompanying special mission aircraft.[73] More typically, PLA UAVs have operated alone or in tandem with another UAV. Long-range UAVs that have been sighted flying into the Philippine Sea by the Japan Self Defense Force include the medium-altitude, long-endurance (MALE) Harbin BZK-005 and Tengden TB-001 as well as the high-altitude, long-endurance (HALE) Guizhou WZ-7 "Soaring Dragon." Figure 6 shows the recent flightpath of a BZK-005 and unidentified UAV operating east of Taiwan.

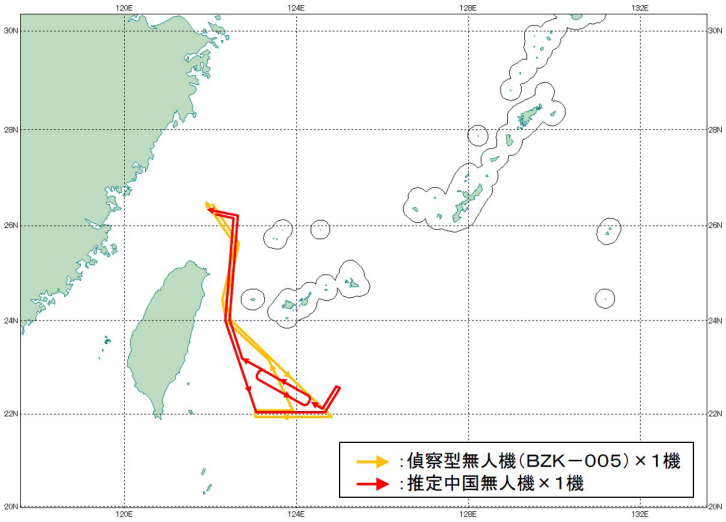

Figure 6. PLA UAV Out-of-Area Activity, August 25, 2023 [74]

Airborne C4ISR missions in the Philippine Sea and farther south into the South China Sea combined with increased PLAN ship presence has significantly improved PLA maritime domain awareness in these areas, especially against surface targets. It is important to note that PLAN and PLAAF presence in these areas only affords the PLA persistent C4ISR while they are deployed. Air and maritime domain awareness and C3 for forces operating far from the Chinese coast is largely enabled by rapidly developing space-based capabilities, discussed in the next section.

Long-range maritime ISR for counter-intervention is enabled by the SIGINT and radar information collected by PLAN ship patrols that venture beyond the First Island Chain and deep into the South China Sea. The three ship PLAN formation that conducts counter-piracy patrols in the Gulf of Aden as well at the PLAN base in Djibouti probably provide ISR of U.S. forces in Southwest Asia and would also provide indications and warning of a U.S. or allied move to intervene in an East Asian conflict from the Persian Gulf or through the Suez Canal and Red Sea.

Maritime ISR near and far from the PRC coast is also enabled by the PLA's maritime militia and PRC state-owned shipping. The PRC's maritime militia is most often associated with its fishing fleet but could conceivably include any PRC-flagged vessel. PRC mariners may be deployed to surveil U.S. and allied naval forces entering or operating in theater. C3 for these civilian vessels may include *Tiantong* communications. (*Tiantong* is a PRC version of IMARSAT.) Milita forces may also use the PLA-managed *Beidou* satellite navigation system, which has an integrated two-way text messaging capability.[75]

In the undersea domain, the PLA continues to make progress in improving its ASW technology, operational proficiencies, and capacities. Based on open-source assessments, PLA improvements in ASW technologies and operational proficiency are unlikely to shift the undersea advantage away from U.S. Navy submarines in the near term.[76] The PLA probably remains years away from having a submarine ASW capability. There is also very little open-source evidence to suggest that the PRC has developed and deployed a large-scale undersea acoustic array for ISR similar to the U.S. Navy SOSUS. However, the one area where the PLAN has made gains is in ASW capacity. Over the past several years, the PLA has fielded the new Z-20 shipborne ASW helicopter, dozens of KQ-200 ASW/MARPAT aircraft, and many more surface combatants equipped with both variable depth sonars (VDS) and towed array sonar systems (TASS).[77] Even if PLA ASW technology is not on par with that of the U.S. or Russia, some PLA undersea challenges may be addressed with the sheer volume of PLA ASW platforms available.

Space-based C4ISR

- **The PLA has seen significant growth in space based C4ISR capabilities. The number of PLA ISR satellites in geostationary orbit (GEO) has doubled in the past several years, while the number of PLA ISR satellites in low Earth orbit (LEO) has tripled. The PLA is also investigating and fielding new and novel technologies including a persistent imaging capability from GEO and automated detection and tracking from LEO satellites. These capabilities will likely create pronounced challenges for U.S. and allied forces attempting to avoid detection and targeting in a PLA counter-intervention operation.**

On February 29, 2024, General Stephen Whiting, Commander, U.S. Space Command, stated that the PRC is aggressively pursuing advances in military space capabilities. According to General Whiting's written testimony for the U.S. Senate Armed Services Committee,

> *"As of January 2024, the PRC's Intelligence, Surveillance, and Reconnaissance (ISR) satellite fleet contained more than 359 systems, more than tripling its on-orbit collection presence since 2018. The PRC has also dramatically increased its ability to monitor, track, and target US and Allied forces, both terrestrially and on orbit."*[78]

PRC development of military space capabilities has been stunning considering that the PLA only launched its first dedicated miliary communication satellite, its first real-time imaging satellite, and its first *Beidou* navigation satellite in 2000.[79] Even then, the PLA's on-orbit presence did not

see significant growth until after 2010. Now, the PLA launches dozens of satellites each year and appears to be heavily leveraging civil space capabilities. In 2023, PRC military and civil space launches totaled 67, putting over 200 satellites and other spacecraft into orbit. The record number of 2023 launches exceeded the previous PRC record, 64 launches 2022.[80]

PRC's Xi Jinping has described space as the "strategic high ground." The PLA clearly intends to occupy as much of that high ground as possible. An examination of PLA satellite constellations and their orbits reveals many PLA space priorities and counter-intervention capabilities.

Space Ground Segment. As previously outlined in the section on the Strategic Support Force (SSF) Space Systems Department (SSD), the 26th Testing and Training Base, also known as the Xi'an Satellite Control Center (XSCC), is the core of China's space telemetry, tracking, and control (TT&C) network. In a counter-intervention scenario, tasking for an ISR satellite to locate and track potential targets very likely runs through the XSCC and its nation-wide network of TT&C stations. The SSF SSD Aerospace Reconnaissance Bureau (ARB) is probably responsible for analysis of space-based ISR. These two key organizations will likely be directly involved in detecting and tracking U.S. and allied forces in a PLA counter-intervention operation. The PLA's space ground segment is extensive and may also include a handful of international ground stations. Further research would be required to offer a more comprehensive picture of the SSF SSD ground segment and processes for tracking and targeting foreign military forces.

Between 2019 and 2022, the PRC launched its second-generation of *Tianlian* data relay satellites. These relay satellites are critical enablers for the PLA space ground segment that pass tasking and data between low Earth orbit (LEO) satellites and PRC ground stations when the LEO satellites are out of view of the PRC mainland.

Geostationary Orbit (GEO) Satellites.[g] PRC presence in GEO reveals an orientation toward the PRC and East Asia. All probable PLA satellites in GEO appear positioned to maximize collection access and data throughput in or near the Chinese mainland. The field of view from GEO is significant, spanning approximately one-third of the Earth's surface, so PLA military communications and ISR satellites in GEO can theoretically provide coverage from western Africa to the mid-Pacific Ocean although signal degradation and a loss of collection capabilities likely occurs at extreme ranges and oblique angles.

The number of PLA ISR satellites in GEO has increased significantly since 2021, from six GEO ISR satellites in 2020 to a total of fourteen satellites today. The satellites offer few clues about their true missions while parked in orbit. PRC military and civilian satellites currently in GEO are shown in Figure 7. Assessed ISR satellites and their probable missions are depicted in purple. A list of GEO satellites that may provide significant capabilities in a counter-intervention scenario appears in Appendix B.

[g] A geostationary orbit or geosynchronous equatorial orbit (GEO) is a circular orbit 35,786 km above the equator that is synchronized with the Earth's rotation, so the GEO satellite appears stationary when viewed from the ground.

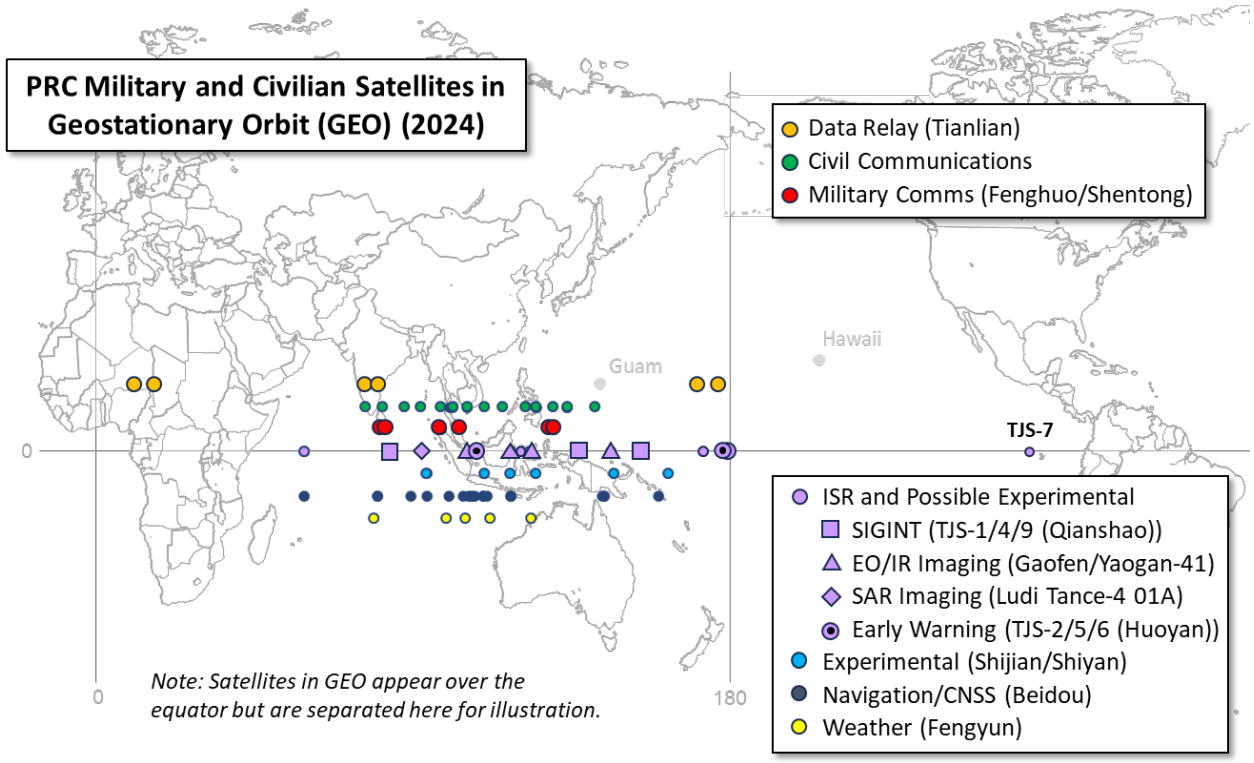

Figure 7. PRC Military and Civilian Satellites in Geostationary Orbit (GEO), 2024 [81]

The PLA probably operates at least three SIGINT satellites in GEO, the *TJS-1, -4,* and *-9*, known by their PLA designator, "*Qianshao*." The three *Qianshao* SIGINT satellites likely provide some of the most significant capabilities to support PLA counter-intervention operations. GEO satellites can be directed to "stare" at different parts of the battlespace for extended periods of time unlike low-earth orbit (LEO) satellites that only pass overhead periodically. These SIGINT satellites may be directed to geolocate signals or collect intelligence on U.S. or allied military forces operating from the Indian Ocean to the mid-Pacific. Little is publicly known about the *TJS-7*, the only PRC GEO satellite over the Western Hemisphere. It is likely an early warning satellite but could be a SIGINT collection satellite or, perhaps, serve both functions.

The PRC is reportedly the only nation with electro-optic (EO) imaging satellites in GEO, which could have significant implications for PLA counter-intervention operations. Like the *Qianshao* SIGINT satellites, these high-orbit EO satellites, can provide persistent imagery coverage across most of the Indo-Pacific to detect U.S. and allied ships. Since the satellites are so high above the Earth, the satellites cannot offer detailed image resolutions. The two ostensibly civilian *Gaofen-13* satellites, launched in 2020 and 2023, reportedly offer 15-meter image resolution. That is probably high enough to detect and track ships at sea, but probably not to identify the type of ship. The low-resolution imaging capability may still be valuable in a counter-intervention operation if, for example, the PLA cross-cues the low-resolution imaging capability with SIGINT collection to distinguish combatants from civilian ships and maintain persistent tracks on the former.

The *Yaogan-41*, launched into GEO in 2023, is almost certainly a dedicated military satellite that reportedly offers a 2.5-meter EO image resolution. If true, the *Yaogan-41* could both detect and classify different types of ships.[82] Of course, GEO imaging satellites, like their LEO counterparts, cannot see through cloud cover. In August 2023, the PRC launched the *Ludi Tance-4 01* (Land Survey-4 01), which is believed to be the world's first synthetic aperture radar (SAR) satellite in GEO. The satellite can reportedly collect 20-meter resolution images through all-weather conditions that would allow it to detect and track ships at sea.[83]

Low Earth Orbit (LEO) Satellites. LEO ISR capabilities, especially when combined with GEO ISR capabilities, create pronounced challenges for U.S. and allied forces trying to avoid detection and targeting in a PLA counter-intervention operation. The majority of PLA on-orbit capabilities are currently in LEO and consist of EO, hyperspectral, and infra-red (IR) imaging satellites, SAR imagery satellites, SIGINT and ELINT collection satellites, and a handful experimental communications satellites. It is doubtful that PRC ISR satellite technical capabilities exceed or even approach those of the U.S. National Reconnaissance Office. However, The PLA, and in some cases the PLA's commercial partners, are building dense, layered LEO constellations that provide near-constant space-based ISR coverage, especially in East Asia.

This report identifies 213 LEO ISR satellites in over a dozen constellations launched since 2018 that may provide significant capabilities to locate U.S. and allied forces in a PLA counter-intervention operation. Of those 213 satellites, 162 satellites—76 percent—have been launched since 2021.[84] A list of PLA and commercial LEO ISR satellites that may support counter-intervention operations appears in Appendix C.

LEO Imagery Satellites. LEO imagery satellites will allow the PLA to visually detect, track, and potently target U.S. and allied forces in a counter-intervention operation. Using current technology, the PLA would probably be challenged to use imagery satellites for real-time targeting of weapons against moving targets due to the time delay to download and interpret the images with either computers or human analysts. LEO satellite imagery alone is more valuable in identifying and targeting fixed or relocatable targets such as aircraft on the ground, radars, communications, or ships in port.

Beyond older, legacy systems that may still retain some capability, the PLA operates four high-resolution EO and eight SAR imaging satellites in LEO. The *Gaofen-11*, known by its likely PLA designator *Jianbing-16*, is purported to have a 10-centimeter image resolution.[85] For comparison, since 2020, U.S. and Western commercial satellite imagery providers have offered 30-centimeter resolution images that can be improved to 15-centimeter resolution with post-collection processing.[86] Open sources offer no indication of the SAR image resolution the four *Yaogan-33* and four *Yaogan-34* satellites.

The *Jilin-1* constellation of over 100 satellites in LEO may contribute significantly to PLA counter-intervention operations due to their high-revisit rates. Most of the *Jilin-1* small-form

imagery satellites offer 75-centimeter image resolution. The satellites are operated by the Chang Guang Satellite Technology Company (长光卫星技术股份有限公司), which is mostly government owned, but characterized as a commercial enterprise.[87] With over 100 imaging satellites on orbit in 2024, a Chang Guang company spokesman has suggested *Jilin-1* satellites will soon be able to image any place on Earth within ten-minutes. The *Jilin-1* constellation is expected to grow to 300 satellites by 2025.[88] Among the most concerning single *Jilin* capability may be the *Jilin-1 Kuanfu-02A*. Launched in August 2023, the satellite purportedly offers 50-centimeter resolution images that are collected in a 150-kilometer-wide swath, allowing it to cover large areas in a single image where U.S. and allied military forces may operate.[89]

LEO ELINT Satellites. The PLA's constellation of LEO ELINT satellites detects and geo-locates radar, communication, and other signals of interest and provides the PLA with an all-weather, day-night capability to detect, track, and potentially target U.S. and allied forces in a counter-intervention operation. The most capable PLA LEO ELINT satellite constellations are probably the *Yaogan-30, -31,* and *-40* satellites. The orbits of each of the thirty *Yaogan-30* satellites are evenly spaced to provide rolling, but near-constant ELINT coverage of East Asia and the Western Pacific.[90] The dense ELINT coverage offered by these satellites may create challenges for U.S. or allied forces attempting to radiate radars or communications in the apparently small gaps in LEO ELINT coverage.

The *Yaogan-31* and *Yaogan-40* ELINT satellites appear similar to those in the U.S. Naval Ocean Surveillance System (NOSS).[91] The combined fifteen *Yaogan-31* and *-40* satellites orbit in five sets of three satellites in a relatively tight formation. These formations probably detect and geolocate signals of interest, especially maritime targets. Compared to the *Yaogan-30* constellation, *Yaogan-31* and *-40* satellites provide global ELINT coverage with a much lower daily revisit rate. However, they can track targets high into the northern and southern latitudes.

LEO Multi-INT Satellite Trains. The latest generation of PLA LEO ISR satellites probably integrates multiple collection methods into a train of three satellites traveling in a line in the same orbit. The innovation may indicate that the satellites are engaged in automated "tipping and cuing." The first satellite, for example, may be an ELINT satellite to detect and geolocate a signal of interest. The trailing satellites, which may have EO, IR, or SAR payloads, are automatically cued to image the area where signals are detected to positively identify the emitter.

Little public information is available about these ISR satellite sets. The *Yaogan-35*, *-36*, and *-39* series satellites were all launched between 2021 and 2023. There are five triplets in each series—fifteen per series for a total of forty-five satellites. Again, instead of orbiting together in a tight formation like the *Yaogan-31* satellites, the satellites travel in a line, separated by between 400-1000 kilometers. A depiction of a *Yaogan-36* triplet and the satellites' field of view is shown in Figure 8.

These satellite sets may be designed to defeat U.S. or allied decoys and deception. For example, a decoy may transmit a ship's radar signal and would be located by the first ELINT satellite.

However, if the cued trailing satellite does not image a ship, the bluff is revealed. If, on the other hand, the signal does correlate to a ship, the PLA has instant confirmation of the ship's location.

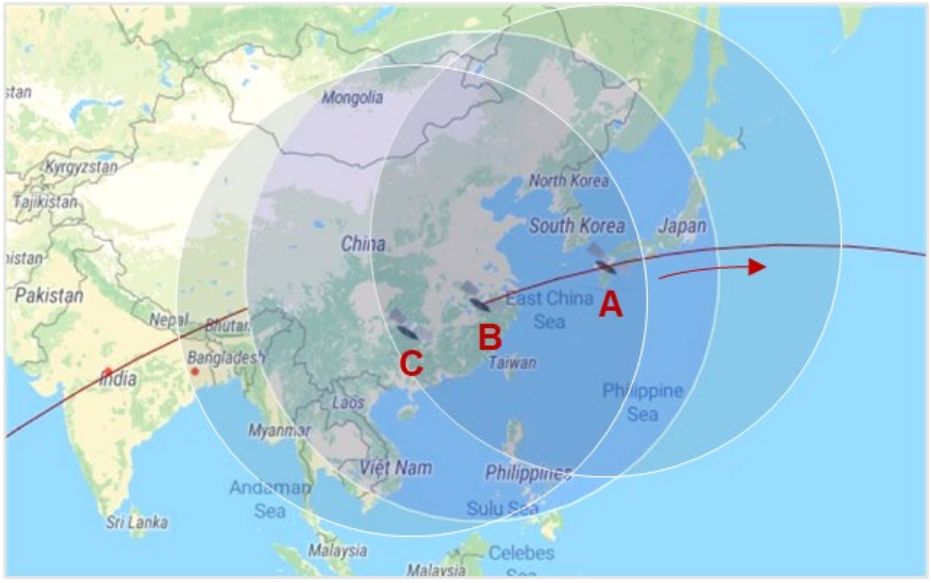

Figure 8. Yaogan-36 03A/B/C Orbits.[92]

LEO Communication Satellites. The PRC has struggled in recent years to field a constellation of LEO communications satellites. However, the PRC government has recently unveiled ambitious plans for a LEO communication constellation to rivla the U.S. company SpaceX and its constellation of over 5,000 *Starlink* satellites.

The PRC commercial company GalaxySpace (银河航天) has established an experimental constellation of six LEO satellites in what has been called "China's first LEO broadband communication test constellation in the South China Sea."[93] In 2023, GalaxySpace reportedly planned to provide high-speed satellite data service for the PRC's hypersonic flight program.[94] Those plans for LEO broadband are almost certainly being undermined by two competing PRC mega constellations of LEO communications satellites in development.

In 2024, the PRC state-owned Shanghai Gesi Aerospace Technology (上海格思航天科技有限公司), plans to launch the first 108 "*G60 Starlink*" LEO communication satellites of a planned 12,000 satellites. Meanwhile, state-owned aerospace and defense conglomerates CASC and CASIC have combined their previously struggling plans for LEO communications constellations to form the China Satellite Network Group (中国卫星网络集团有限公司), which has its own plans for a 13,000-satellite mega constellation of "*Guowang*" (国网) satellites.

PLA access to LEO communication satellites will significantly improve communication and data connectivity for mobile PLA forces including ships, aircraft, and amphibious forces on the move. An expansive LEO communications capability may also decrease the likelihood of detection and targeting of PLA forces by U.S. or allied ISR.

PLA Counter-C4ISR in Counter-Intervention Operations

- **In a counter-intervention operation, the PLA will directly and indirectly target what it considers the critical operational center of gravity for the U.S. and its allies—their C4ISR system-of-systems—to ensure battlespace information dominance. Coalition C4ISR networks will likely be priority targets for PLA counter-C4ISR strikes.**

PLA strikes on U.S., allied, and partner forces in the early stages of counter-intervention operations will be "information-centric." That is, the focus of effort, at least initially, will be to target U.S. and coalition information power—its C4ISR system-of-systems with non-kinetic and kinetic strikes. Other strikes against important targets such as air defenses, airfields, and ships operating forward will certainly occur in this phase, but the weight of PLA effort will likely be against U.S. and coalition C4ISR to achieve battlespace information dominance. The theory behind such opening moves is that if U.S. and coalition C4ISR can be removed from play, maneuver forces will simply be unable to press their intervention against PLA operations. Even if U.S. and allied commanders and decisionmakers can push through the uncertainty, PLA forces will lie in wait in the fog they created, ready to target and engage disconnected U.S. and coalition forces with potentially devastating effects.

Initial impacts on U.S. and coalition C4ISR will likely be generated through synergistic effects created by PLA C4ISR and the threat of detection and/or attack. U.S. and allied militaries will have to turning off their own communications and active sensors to avoid detection by dense, layered PLA ISR thus ceding initial information dominance to the PLA. These compounding effects will be accompanied by direct cyberattacks on U.S. and coalition networks accompanied by extensive non-kinetic electronic warfare (EW) attacks. EW effects will increase in type and intensity the closer U.S. and allied forces are to the PRC mainland. As the conflict progresses, the PLA will be prepared to escalate and launch overwhelming kinetic attacks on U.S. and coalition C4ISR. Command, control and communications hubs, satellite teleports, undersea communications cables, airborne C4ISR, and on-orbit C4ISR capabilities will be priority targets. The PLA will also seek to protect its own operational center of gravity—its C4ISR system-of-systems—that the PLA expects is at the top of the U.S. and coalition target lists for non-kinetic and kinetic attacks.

One thing that is virtually certain is that allied and coalition C4ISR networks will be priority targets for PLA non-kinetic and kinetic strikes in any counter-intervention operation involving other than U.S. military forces. Coalition C4ISR will almost certainly be less protected than U.S. C4ISR and probably the most vulnerable to PLA attack. Disrupting and destroying the C4ISR links among the U.S., its allies, and partners will likely have outsized operational and strategic effects that may significantly slow or stop a U.S. intervention in an East Asian conflict.

Which U.S. and allied C4ISR targets will likely be attacked in a counter-intervention operation and whether the system-of-systems has sufficient redundancy and resilience to continue functioning in the face of PLA attacks merits additional in-depth study. One PLA counter-

intervention capability that warrants special attention and demonstrates the interrelated, compounding synergies of information power is the PLA's substantial electronic warfare capabilities.

Electronic Warfare

- **The PLA is an electronic warfare juggernaut. The PLA possesses both the technological capabilities and significant electronic warfare capacities to conduct significant offensive and defensive electromagnetic spectrum operations that will enable, if not ensure initial PLA information dominance in a counter-intervention operation.**

In a media event for the rollout of DoD's 2023 China Military Power Report, an unnamed Pentagon official intimated that the PLA believes it is facing significant challenges in electronic warfare (EW). "Some of the things that they [the PLA] talked about are how they can operate — or need to be better prepared to operate — in what they call a complex electromagnetic environment," the official stated.[95] The PLA and its leadership certainly understand the importance of dominating the electromagnetic spectrum (EMS) and may harbor significant concerns about the inherent complexity of military operations in the EMS. However, to suggest that the PLA is not currently an extremely capable EW force is a gross mischaracterization of PLA capabilities. In point of fact, PLA electronic warfare capabilities and, more importantly, capacities vastly exceed those of the Russian military and probably even the U.S. military.

The PLA initially invested in EW capabilities in the 1980s based on observations of superpower competition during the Cold War.[96] Current PLA EW concepts are built on Soviet concepts of "radio-electronic combat" more than Western ideas about EW employment. The Soviet strategy for countering the U.S, precision strike–enabled "Second Offset Strategy" was essentially to starve U.S. smart weapons of information through EW strikes against the U.S. "reconnaissance-strike complex." China's informationized warfare strategy is, in many ways, an evolution of that Soviet approach to operational-level information superiority based on non-kinetic and kinetic EW.

The PLA's development of significant EW capabilities occurred in parallel with PLA informationized warfare development. As early as 2001, the PLA's overarching training guidance, the "Outline of Military Training and Evaluation (OMTE)," directed a force-wide focus on what the PLA started calling a "complex electromagnetic environment (CEME)" (复杂电磁环境).[97] By 2006, senior PLA leadership established a clear linkage between success in electronic warfare (电子战) and informationized warfare.[98] The PLA's 2015 Military Strategy directed the PLA to "intensify training in complex electromagnetic environments."[99] The PRC 2019 Defense White Paper identified China's national defense aims to include safeguarding "China's security interests in outer space, electromagnetic space, and cyberspace," probably a nod to the combined mission areas of the Strategic Support Force.[100] For over two decades, the same level of technology investments and innovations apparent in other advanced PLA weapons systems have also been poured into PLA EW capabilities.

In the context of military operations, the PLA concept of integrated network-electronic warfare (INEW) should be understood to emphasize electronic warfare more than cyber capabilities. Cyber capabilities will play an important role but may have limited utility in the operational battlespace and actual combat engagements. Fundamentally, cyber capabilities are challenged by access. Network and system access to cyber-hardened, closed-loop combat systems is a greater challenge than most realize. Moreover, both the PLA and its competitors may have restrictive concerns about implanted malware that cannot be controlled inside an adversary network that might result in runaway escalation during a crisis. Where the PLA does have ready access and some measure of control is the electromagnetic spectrum.

The discipline of electronic warfare consists of three interrelated functions. Electronic attack (EA), also known as electronic countermeasures (ECM), is the use of electromagnetic energy to jam or deceive enemy signals. EA may also involve the use of directed energy or anti-radiation homing weapons to physically destroy enemy electronic equipment. Electronic protection (EP), or electronic counter-countermeasures (ECCM), are measures that protect friendly electronic signals and equipment from enemy EA. Electronic warfare support (ES) is essentially synonymous with electronic intelligence (ELINT) but has the expressed purpose of detecting, identifying, and localizing enemy signals. ES has a large role in targeting support for EA or other weapons. The three interrelated EW functions correlate to the interrelated elements of information power introduced earlier (see Figure 9). No single PLA EW capability will yield EMS dominance. Taken together, however, their synergies will likely generate outsized effects.

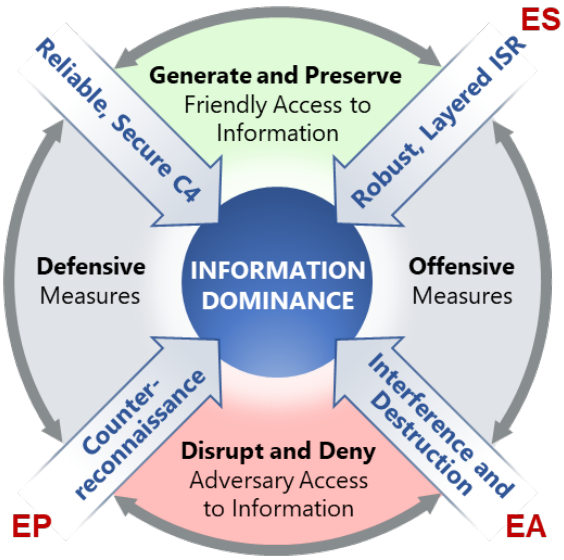

Figure 9. EW Functional Alignment to Information Power Capabilities Conceptual Framework.

Qualifying or quantifying capabilities in the three areas—EA/ECM, EP/ECCM, and ES—is challenging given the nature of EW capabilities and technical features that are not readily observable through publicly available sources. PRC scientists and defense-related research institutions have been publishing world-class radar, communications, and electronic warfare

research papers for over a decade. Where some PLA EW-related capabilities can be observed, it is abundantly clear that the PLA is making significant and growing investments in EW.

Electronic Attack (EA). Many of the PLA's current EA capabilities and capacities reside in ground-based, road-mobile ECM brigades. The SSF operates substantial ground-based ECM brigades that probably focus on air defense of Beijing or other strategic targets.[101] The PLAAF, PLAN, and PLARF each have service ECM brigades that provide ES and EA capabilities to the TCs. PLA EA vehicles are seldom displayed publicly but have occasionally been noted in commercial satellite imagery.[102] Individual EA vehicles marketed by PRC defense manufacturers indicate specialized vehicles may jam different types of targets (e.g. datalinks, radars, etc.) or in different frequency bands (millimeter-wave-, X/Ku-, C-, L-, and S-band jammers have been noted).[103]

EA Aircraft. While ground based EA may be effective against airborne targets, EA aircraft offer better wide-area coverage of targets. The PLAAF does not appear to currently have a significant number of purpose-built EA aircraft.[104] However, several new types have appeared in the past few years and their numbers are growing. The PLAAF still apparently flies older Y-8G EA aircraft. As part of the surge in special mission aircraft production mentioned earlier, the PLAAF began adding new Y-9G EA aircraft to its inventory in 2019.[105] 2021 China Air Show saw the debut of the PLAAF J-16D, an EA-version of the J-16 fighter-bomber similar to the U.S. Navy EA-18G *Growler*. The J-16D is apparently operational and was noted conducting exercises near the Taiwan Strait in 2022.[106]

Anti-Radiation Weapons. Perhaps more significant than ground-based or airborne jammers may be the different types of EA anti-radiation weapons that guide themselves into electromagnetic signals to "hard-kill" radar or communications targets. The PLAAF acquired the Russian AS-17 anti-radiation missile (ARM) in 2000 and successfully retro-engineered it into the YJ-91 ARM. Since 2020, several new PRC-produced ARMs have emerged.[107] The TL-30, possible also known as the AKF088C, was first noted on a PLAAF aircraft at the 2022 China Air Show. The TL-30/ AKF088C is an anti-radiation cruise missile that can fly up to 280 kilometers (150 nautical miles) and loiter while searching for targeted signals.[108] The PRC defense industry also markets anti-radiation seekers for ballistic missiles indicating that these types of seekers are probably incorporated on PLARF ballistic missiles that might be employed against U.S. or allied forces.[109]

In early 2024, media reports indicated that Iranian-produced Shahed-136 "kamikaze" attack drones were used by the Russian military in Ukraine to great effect. Based on appearance alone, the Shahed-136 is almost certainly an Iranian knock-off of the PRC-produced ASN-301 "mobile anti-radiation drone system," which has been in the PLA inventory since at least 2017.[110] These types of low-altitude, slow flying anti-radiation drones can be particularly potent since they are designed to approach a target area undetected and loiter. Then, when an air defense radar illuminates to engage an aircraft or ballistic missile, for example, the drone will home in on the radar and destroy it.

Counterspace EA. Since 2020, there has been a significant increase in the SSF's ability and capacity to conduct counterspace EA against foreign satellite communications (SATCOM). Non-kinetic attacks against U.S. and allied SATCOM will likely be the first moves in any PLA counter-intervention operation.

SSF counterspace EA capabilities have been consolidated under the SSF's counter-space ECM brigade, the 32090 Unit (32090 部队), headquartered in Langfang, Hebei, PRC.[111] The Langfang facility, which houses road-mobile SATCOM jamming battalions, saw significant upgrades to base infrastructure between 2021 and 2022.[112] The SSF's Yingtan counterspace ECM facility, located in eastern China, also houses road-mobile SATCOM jammers and was the only other counterspace ECM facility identified in open sources prior to 2020. Since 2020, six additional 32090 Unit counterspace ECM facilities have been constructed in Tibet, near Shanghai, and on Hainan Island. By 2022, the six facilities represented a 500 percent increase in fixed antenna infrastructure to identify and track SATCOM signals in support of PLA counterspace EA.[113] An additional battalion of road-mobile SATCOM jammers was also identified on Hainan Island.[114] Since 2022, many of the newly constructed facilities have continued to expand with some doubling in size by early-2024.

The effectiveness of PLA non-kinetic EA capabilities is next to impossible to assess based on open sources. Even if PLA jamming capabilities were estimated based on PRC EW research, jamming necessarily involves the interaction between a jammer and a receiver—a radar, communications, or other system. Without intimate knowledge of the EP capabilities of EA targets, comprehensive effectiveness cannot be assessed. The PLA likely enjoys significant EA capabilities against older military systems or commercial systems with little or no EP. How PLA EA might fare against EP hardened, advanced U.S. military systems probably cannot be determined based on open-source research.

Electronic Protection (EP). PLA EP capabilities are among the most difficult to observe and assess. Given the PLA focus on EW, PLA radars, communications, and ISR certainly have hardware or signal processing that protects those systems from enemy EA, but this is not apparent from open sources. A more obvious measure of PLA efforts at EP is the frequency diversity in PLA C4ISR systems. The PLA fully anticipates electronic jamming attacks as well as kinetic attacks against its C4ISR. Therefore, the PLA covers a broad range of the frequency spectrum with such a diversity of systems, that even a sophisticated adversary would be challenged to simultaneously jam or destroy enough PLA C4ISR electronic systems to significantly constrain the PLA's access to battlespace information.

Large numbers of diverse PLA systems cover a wide swath of the frequency spectrum. Ground-based radars employed for ISR range from the HF-skywave over-the-horizon radar mentioned earlier, to VHF-, UHF-, L-, S-, C-, and X-band radars.[115] Similarly, PLA communications systems extend from lower frequency HF communications all the way up to Extremely High Frequency (EHF) satellite communications in the Q/V-bands. The PLA also remains invested in

older communications technologies like difficult to intercept and jam troposcatter communications against which U.S. and allied EW probably have little-to-no capabilities.[116]

In 2007, the PLA began fielding a joint datalink system that is similar to, if not based on, the U.S. Link-16/Joint Tactical Information Distribution System (JTIDS) data link. That PLA datalink is known as the "Joint Information Distribution System" or "JIDS" (联合信息分发系统). Link-16, and probably JIDS, are frequency hopping data links that are resistant to intercept and jamming. The PLA may now be incorporating a new generation of tactical data link, the DTS-03, developed by PLA defense conglomerate CETC. DTS-03 purportedly has a significantly higher data exchange rate at much lower latency than Link-16/JIDS and incorporates ad-hoc technology to create a dynamic, jam-resistant mesh network.

Electronic Warfare Support (ES). PLA ES capabilities were outlined in earlier discussions of ISR capabilities. SIGINT collection facilities on the Chinese mainland combined with ELINT sensors on deployed ships, GEO and LEO satellites, UAVs, and special mission aircraft provide a robust, layered, redundant ES capability to support EA and kinetic targeting.

Electromagnetic Spectrum Operations (EMSO). Recently revised U.S. military doctrine has placed electronic warfare functions under the umbrella of EMSO, which includes management of the electromagnetic spectrum.[117] Here too, the PLA has evolved significant capabilities, especially in military operations where the PLA enjoys a "home field advantage." In a counter-intervention operation against U.S. and allied forces, the PLA will be operating in the same electromagnetic environment where they live, operate, and train day-to-day.

The PLA also appears to have a well-developed frequency management apparatus that deconflicts frequency spectrum use among military units and with civil authorities.[118] The PRC's 2010 Radio Control Regulations assign military responsibility for frequency spectrum management to the Military Electromagnetic Spectrum Management Agency (军队电磁频谱管理机构) and Military Region electromagnetic spectrum management agency (军区电磁频谱管理机构). In 2016, in conjunction with the above-the-neck reforms, what is apparently now called the Frequency Spectrum Control Group (Dadui) (频谱管控大队) was transferred to the CMC Joint Staff Department.[119] The current TC's have probably incorporated the former MR spectrum management agencies and converted them to theater frequency spectrum control groups, mirroring the organization of the CMC Joint Staff Department.

Electronic warfare capabilities and electromagnetic spectrum operations are clearly a priority for the PLA. The PLA will likely exploit its ready access to its local electromagnetic environment and deliver non-kinetic EW strikes on U.S. and allied forces in the opening moves of a counter-intervention operation. As the conflict escalates, the PLA will probably employ destructive, kinetic EW capabilities to ensure dominance in the electromagnetic environment and the information battlespace.

Conclusions and Recommendations

PLA C4ISR is layered and dense, ensuring a significant capability to detect, track, and target U.S. and allied forces seeking to intervene against the PLA. The PLA C4ISR system-of-systems combined with reliable long-range weapons poses a serious, if not critical threat to U.S. and allied freedom of action in an East Asian conflict.

A large-scale conflict that pits the PLA against the U.S. military will likely be fundamentally different in terms of scope and complexity than any other near-term conflict currently facing either nation. Both the U.S. and PRC have invested in complex and expansive C4ISR systems-of-systems that are not well understood by policymakers or even the militaries themselves. The complex interactions and cascading effects that may be created across the opposing C4ISR systems-of-systems of these competitors is difficult to comprehend and merits further study.

In August 2023, the USCC issued a request for proposals on "China's Advanced Remote Sensing Technologies and Applications," which will likely be an excellent contribution to the Commission's understanding of the important issue of PRC C4ISR technologies.[120] U.S. policymakers may also wish to consider the following recommendations:

- **Conduct a comprehensive net assessment of U.S. and allied C4ISR and counter-C4ISR capabilities in a large-scale conflict with the PLA.** The complex interactions and cascading effects created in a U.S.-PRC conflict across respective C4ISR systems-of-systems would be exceedingly complicated and are becoming more complex each year. Assessing and modeling C4ISR and counter-C4ISR engagements in a virtual system-of-systems model may be a costly and time-consuming endeavor. However, if policymakers wish to understand likely outcomes in a U.S.-PRC system-of-systems confrontation, make informed C4ISR capability investments, and develop effective mitigation strategies, modeling and analysis combined with a comprehensive net assessment will be critical.

- **Engage the U.S. military regarding future C4ISR strategies and the need to emphasize more defensive capabilities including significant redundancy within the U.S. C4ISR system-of-systems.** A 2023 U.S. Government Accountability Office (GAO) report described programs like DoD Joint All-Domain Command and Control (JADC2) as principally improving joint force integration and interoperability. "JADC2 must connect headquarters to forces so that joint command and control decisions are executed at a faster pace than potential adversaries to maximize operational effectiveness."[121] Perhaps it is implied, but there is no mention in the GAO report for JADC2 to be redundant or resilient in the face of integrated PLA C4ISR capabilities and counter-C4ISR attacks that have been specifically designed to paralyze the U.S. command and control. Redundancy and resiliency will be a prerequisite to basic survivability and successful combat employment.

- **Invest in significant counter-reconnaissance capabilities including physical, virtual and electromagnetic camouflage, concealment and deception (CCD) measures.** PLA ISR in East Asia is fantastically dense, featuring layered and overlapping coverage from different types of collection—EO/IR/hyperspectral imagery, synthetic aperture radar imagery, and different types of SIGINT. These detection capabilities combined with long-range PLA weapons systems will deny the U.S. and its allies the sanctuaries to base and operate that they enjoyed since the end of the Cold War. Robust defensive that include significant CCD measures that either deceive or overwhelm PLA ISR will be necessary to ensure U.S. and allied forces can operate in contested battlespaces.

- **Invest in robust, redundant, and resilient coalition C4ISR links and networks to increase combat interoperability among critical allies and partners and deny the PRC military battlespace information dominance that might separate the U.S. from a coalition.** The PLA understands that allies and partners are a significant force multiplier for the U.S. military. Allied and partner bases in the Indo-Pacific will be critical to any intervention in a military conflict involving the PRC. Moreover, allies and partners may provide combat forces to fight alongside U.S. forces, but only if those forces can securely share, interpret, and act upon critical battlespace information in real-time. The PLA will target coalition C4ISR networks early and often in a conflict to disaggregate the coalition force and achieve information dominance to enable follow-on kinetic strikes.

- **Fund additional U.S. Intelligence Community capabilities to analyze current and future PLA counter-C4ISR capabilities and strategies (if required).** As a near-peer competitor and potential military adversary, the PLA has adopted a strategy to target, disrupt, and destroy enemy C4ISR with a goal of establishing battlespace information dominance. The U.S. Intelligence Community is no doubt keenly aware of PLA counter-C4ISR capabilities and strategies. However, there is no one DoD institutional champion for U.S. C4ISR. While individual joint and service programs drive requirements to understand threats to individual C4ISR systems, no single DoD official is responsible for the broader system-of-systems that the PLA will ultimately target. This bureaucratic segregation may dilute intelligence requirements for a more comprehensive understanding of how PLA counter-C4ISR capabilities might threaten the broader U.S. C4ISR enterprise. Comprehensive intelligence on PLA counter-C4ISR capabilities and strategies will lead to better strategic and operational outcomes and inform effective policy and budget decisions.

- **Publish a detailed open-source assessment of PLA C4ISR and counter-C4ISR threats to U.S. and allied military forces.** PLA progress on weapons systems and platforms—missiles, aircraft, ships, and tanks—are widely reported in public sources. The public and policy community should be better educated on critical military capabilities that will likely have outsized impacts on Information Age warfare. Special attention should be paid to PLA's rapid advances in space based C4ISR from open-source material for the purposes of public debate.

- **Fund additional U.S. Intelligence Community capabilities to analyze current and future PLA electromagnetic spectrum operations (EMSO) capabilities and strategies (if required).** Many dedicated Intelligence Community professionals are certainly focused on PLA EMSO capabilities and strategies. However, as with the C4ISR system-of-systems, there is no DoD institutional champion for electronic warfare, which may result in a lower priority and consequently fewer Intelligence Community resources directed at PLA EMSO. Policymakers may wish to consider whether Intelligence Community collection and analysis of PLA EMSO and electronic warfare is commensurate with the importance the PLA clearly attaches to those capabilities and the outsized role EMSO has in informationized warfare. Comprehensive intelligence on PLA EMSO capabilities and strategies will lead to better strategic and operational outcomes and inform effective policy and budget decisions.

- **Publish a detailed open-source assessment of PLA electronic warfare capabilities and threats to U.S. and allied military forces.** As a stand-alone effort or in conjunction with the recommended assessment of counter-C4ISR threats, the subject of electronic warfare should receive special attention. In future combat operations, electronic warfare will be as significant if not more significant than cyber warfare. Electronic warfare threats and the potential vulnerabilities created by a EW capable challenger like the PLA have not received the same level of attention and scrutiny as issues related to conventional weapons and platforms or cyber. A better public understanding of PLA electronic warfare capabilities and strategies will inform DoD and Intelligence Community budget priorities and guide program development.

Appendix A. PLA C4ISR Aircraft and UAVs

Table 2. PLAAF and PLANAF Special Mission Aircraft [122]

Aircraft Model	*Gaoxin* Designator	PLA System Designator	Mission	PLA Service *Notes*
Y-8G	GX-3		Electronic Attack	**PLAAF** *Being replaced by Y-9G*
Y-8W	GX-5	KJ-200	AEW&C	**PLAAF/PLANAF** *Being replaced by Y-9W/KJ-500*
Y-9Q	GX-6	KQ-200	ASW/Maritime Patrol (MARPAT)	**PLANAF**
Y-8XZ	GX-7		Psychological Warfare	**PLAAF** *Being replaced by Y-9XZ*
Y-9JB	GX-8		SIGINT/ELINT	**PLAAF/PLANAF**
Y-9XZ	GX-9		Psychological Warfare	**PLAAF**
Y-9W	GX-10	KJ-500	AEW&C	**PLAAF/PLANAF**
Y-9G	GX-11		Electronic Attack	**PLAAF**
Y-9DZ	GX-12		SIGINT/ELINT	**PLAAF (prob.)**

Project designations based on the prefix *Gaoxin* (GX)— "高新" or "high-tech"—appear to be collectively assigned by Chinese aviation enthusiasts as aircraft appear in photographs for the first time.

Table 3. Select PLA Uncrewed Aerial Vehicles (UAV) / Uncrewed Combat Aerial Vehicles (UCAV) [123]

UAV / UCAV	External/Mission Payload	Max Speed	Max Ceiling	Endurance
BZK-005	150 kg (330 lb)	210 km/hr (113 kt)	8,000 m (26,000 ft)	40 hrs
GJ-1 Wing Loong I	200 kg (441 lb)	280 km/hr (151 kt)	7,000 m (23,000 ft)	20 hrs
Wing Loong I-D	400 kg (882 lb)	280 km/hr (151 kt)	7,500 m (24,600 ft)	35 hrs
GJ-2 Wing Loong II	480 kg (1058 lb)	370 km/hr (200 kt)	9,000 m (29,500 ft)	20 hrs
CH-5	480 kg (1058 lb)	300 km/hr (162 kt)	8,300 m (25,000 ft)	35 hrs
TB-001	100 kg (220 lb)	300 km/hr (162 kt)	8,000 m (26,000 ft)	36 hrs
WZ-7 Soaring Dragon	650 kg (1400 lb)	750km/hr (405 kt)	18,000 m (60,000 ft)	10-11 hrs

Appendix B. Significant Geostationary Orbit (GEO) Satellites Supporting Counter-Intervention Operations

Table 4. Select PRC Communication Satellites in GEO [124]

Satellite Name	Likely PLA Designator	Likely Mission	GEO Slot (Deg. Longitude)	Launched
ChinaSat 1A	*Fenghuo* 2A	Military Comms C- and UHF-bands	129.8	2011
ChinaSat 1C	*Fenghuo* 2C	Military Comms C- and UHF-bands	81.0	2015
ChinaSat 1D	*Fenghuo* 2D	Military Comms C- and UHF-bands	130.0	**2021**
ChinaSat 1E	*Fenghuo* 2E	Military Comms C- and UHF-bands	98.1	**2022**
ChinaSat 20A	*Shentong* 1A	Military Comms Ku-Band	130.0	2010
ChinaSat 2A	*Shentong* 2A	Military Comms Ku-band	98.0	2012
ChinaSat 2C	*Shentong* 2C	Military Comms Ku-band	103.4	2015
ChinaSat 2D	*Shentong* 2D	Military Comms Ku-band	130.0	2019
ChinaSat 2E	*Shentong* 2E	Military Comms Ku-band	98.1	**2021**
Tiantong-1 01	(commercial)	Mobile SATCOM S-band	101.4	2016
Tiantong-1 02	(commercial)	Mobile SATCOM S-band	125.0	**2020**
Tiantong-1 03	(commercial)	Mobile SATCOM S-band	81.4	**2021**
Tianlian-1 Series (5 satellites)	-	Data Relay (LEO-to-ground)	10.5, 16.9, 77.0, 77.1, 176.7	2008, 2011, 2012, 2016, **2021**
Tianlian-2 Series (3 satellites)	-	Data Relay (LEO-to-ground)	10.7, 79.9, 171.0	2019, **2021, 2022**

Table 5. Select PRC Intelligence Collection Satellites in GEO [125]

Satellite Name	Possible PLA Designator	Likely Mission	GEO Slot (Deg. Longitude)	Launched
TJS-1	*Qianshao*-3 1	SIGINT	155.1	2015
TJS-4	*Qianshao*-3 2	SIGINT	83.5	2019
TJS-9	*Qianshao*-3 3	SIGINT	137.3	**2021**
TJS-2	*Huoyan*-1	Early Warning (probably IR)	107.4	2017
TJS-5	*Huoyan*-1	Early Warning (probably IR)	178.0	2020
TJS-6	*Huoyan*-1	Early Warning (probably IR)	179.0	**2021**
TJS-7	*Qianshao* or *Huoyan* (?)	SIGINT or Early Warning	-99.0	**2021**
TJS-10	(?)	Unknown	173.3	**2023**
TJS-11	(?)	Unknown	120.4	**2024**
Yaogan-41	(?)	Poss. 2.5m EO + IR Imagery	123.5	**2023**
Gaofen-4	(civil-military)	50 m EO + IR Imagery	105.7	2015
Gaofen-13	(civil-military)	15 m EO + IR Imagery	118.0	2020
Gaofen-13-02	(civil-military)	15 m EO + IR Imagery	146.7	**2023**
Ludi Tance 4-01	(civil-military)	SAR Imagery L-band	90.5	**2023**

TJS stands for *Tongxin Jishu Shiyan* (通信技术试验), which means "communication technology test." *Gaofen* (高分) is "high resolution." *Yaogan* (遥感) is "remote sensing." *Ludi Tance* (陆地探测) is "land survey." *Qianshao* (前哨) is "outpost" or "frontline." *Huoyan* (火眼) is "fire eye."

TJS-2, -5, and -6 are likely *Huoyan* satellites—a constellation of satellites with an infra-red (IR) imaging capability used for ballistic missile early warning. These early warning satellites probably support the PRC's significant increase in fixed nuclear ballistic missile silos and the PLA's shift to a "launch-on-warning" nuclear retaliation strategy.

Appendix C. Significant Low Earth Orbit (LEO) Satellites Supporting Counter-Intervention Operations

Table 6. Select PRC Intelligence Collection Satellites in LEO [126]

Satellite Series	Possible PLA Designator	Satellites in Constellation	Likely Mission	Orbit Type	Year Launched (# of satellites)
Gaofen-11	*Jianbing*-16	4	EO Imaging (< 0.2 m)	Sun Synchronous	2018 (1), 2020 (1), **2021 (1), 2022 (1)**
Jilin-1 Gaofen-02	(commercial)	4	EO Imaging (0.75 m)	Sun Synchronous	2019 (2), **2021 (2)**
Jilin-1 Gaofen-03	(commercial)	64	EO Imaging & Video (0.75-1 m)	Sun Synchronous	2019 (1), 2020 (9), **2021 (3), 2022 (32), 2023 (9)**
Jilin-1 Gaofen-06	(commercial)	30	EO Imaging (0.75 m)	Sun Synchronous	**2023 (30)**
Jilin-1 Kuanfu-02A	(commercial)	1	EO Imaging (0.5 m x 150 km)	Sun Synchronous	**2023 (1)**
Jilin-1 Hongwai-A	(commercial)	8	IR Imaging	Sun Synchronous	**2022 (6), 2023 (2)**
Yaogan-33	Follow-on to JB-5 (?)	4	SAR Imaging (?)	Sun Synchronous	2020 (1), **2022 (1), 2023 (2)**
Yaogan-34		4	SAR Imaging	Inclined (63.4°)	**2021 (1), 2022 (2), 2023 (1)**
Yaogan-30 (CX-5)		30	ELINT	Inclined (35°)	2017 (9), 2018 (3), 2019 (3), 2020 (6), **2021 (9)**
Yaogan-31	*Jianbing*-8 (6) (JB-8)	12 (4 triplets)	ELINT	Inclined (63.4°)	2018 (3), **2021 (9)**
Yaogan-32		4	SIGINT/ELINT (?)	Sun Synchronous (2), Inclined (2)	2018 (2), **2021 (2)**
Yaogan-40		3 (1 triplet)	ELINT	Inclined (86°)	**2023 (3)**
Yaogan-35		15 (5 triplets)	Multi-Int (?) ELINT/EO/SAR	Inclined (35°)	**2021 (3), 2022 (12)**
Yaogan-36		15 (5 triplets)	Multi-Int (?) ELINT/EO/SAR	Inclined (35°)	**2022 (12), 2023 (3)**
Yaogan-39		15 (5 triplets)	Multi-Int (?) ELINT/EO/SAR	Inclined (35°)	**2023 (15)**

Gaofen (高分) is "high resolution." *Yaogan* (遥感) is "remote sensing." *Jianging* (尖兵) is "vanguard" or "pioneer/trailblazer"

Notes

[1] "C4ISR" as a recognized acronym has apparently been dropped from the latest *DOD Dictionary of Military and Associated Terms*. "ISR" (intelligence, surveillance, and reconnaissance) is currently defined as, "An integrated operations and intelligence activity that synchronizes and integrates the planning and operation of sensors, assets, and processing, exploitation, and dissemination systems in direct support of current and future operations. See, Office of the Chairman of the Joint Chiefs of Staff, *DOD Dictionary of Military and Associated Terms*, (Washington DC: The Joint Staff, 2021), p. 109.

[2] Several Chinese sources add a 'K'—either C4KISR or C4ISRK—that includes an additional category of weapons systems or "killing." This reflects references to C4ISRK and concepts of integrated kill chains advanced by the U.S. military in the early 2000s. See, for example, NDU, *战略学 (2020) [Science of Military Strategy (2020)]*, p. 336.

[3] Thea Clark and Terry Moon, "Assessing the Military Worth of C4ISR Information" in *7th International Command and Control Research and Technology Symposium*, (Quebec City, Canada, CCRP, 2002), p. 2, http://www.dodccrp.org/events/7th_ICCRTS/Tracks/pdf/059.PDF.

[4] Jiang Zemin, *江泽民文选第三卷 [Jiang Zemin's Selected Works, Volume III]* (Beijing: People's Publishing House, 2006), pp. 578–579. The referenced enlarged meeting of the CMC took place in December 2002. Hu Jintao had replaced Jiang Zemin as the Chinese Communist Party general secretary during the Sixteenth National Party Congress in November 2002. However, Jiang retained the CMC chairmanship until 2004.

[5] While these insights on informationized warfare were credited to Jiang as the CMC chairman, given the nature of the organization, Jiang's observations likely reflected the consensus position of the CMC and PLA leadership.

[6] PRC National Defense University (NDU), *战役学 [Science of Campaigns]*, ed. Zhang Yuliang et al. (Beijing: NDU Press, 2006), pp. 23-27.

[7] PRC NDU, *战役学 [Science of Campaigns]*, 24. For a more recent source describing information power, see, Wu Siliang and Zhao Shiheng, "探寻战斗力生成释放科学路径" [Explore the Scientific Path to Generate and Release Combat Power], *解放军报 [PLA Daily]*, January 27, 2022, http://www.81.cn/jfjbmap/content/2022-01/27/content_308367.htm, or Wu Siliang, "现代战争视阈下的'歼灭战'" ['War of Annihilation' from the Perspective of Modern Warfare], *解放军报 [PLA Daily]*, July 7, 2022, http://www.81.cn/jfjbmap/content/2022-07/07/content_319275.htm.

[8] PRC Academy of Military Science, *战略学 (2013 年版) [Science of Military Strategy (2013 Edition)]*, ed. Shou Xiaosong (Beijing: Military Science Press, 2013), pp. 129-130.

[9] Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China (aka China Military Power Report (CMPR))*, (Washington, DC: DoD, 2023, 94. https://media.defense.gov/2023/Oct/19/2003323409/-1/-1/1/2023-MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUBLIC-OF-CHINA.PDF.

[10] A career communications officer, Dai Qingmin was promoted to major general in 1995 and served as the dean of the PLA's Academy of Electrical Engineering through 1999. Between 2000 and 2006, Dai was the head of the General Staff Department (GSD), 4th Department (4PLA). 4PLA was responsible for radar and electronic warfare. 4PLA may have also adopted responsibility for the emerging field of computer network attack in the early 2000s. In retirement, Dai Qingmin continued to serve as the director of the PLA's Informationization Expert Advisory Committee. See, Dai Qingmin, *求道无形之境 [Seeking the Invisible Realm]* (Beijing: People's Liberation Army Press, 2009), IX.

[11] Dai Qingmin, "论夺取制信息权" [On Seizing Information Supremacy (English as provided in article)],

中国军事科学 [Chinese Military Science] 16, no. 2 (2003): pp. 9–10.

[12] "Active offense" - 积极进攻. Dai Qingmin, "创新、发展信息作战思想" [Innovating and Developing Views of Information Operations (English as provided in article)], *中国军事科学 [Chinese Military Science]* 13, no. 4 (2000): p. 75.

[13] Dai, "论夺取制信息权" [On Seizing Information Supremacy], p. 16.

[14] Dai Qingmin, "论信息化作战的'四种能力'" [On the "Four Capabilities" of Informationized Operations], *解放军报 [PLA Daily]*, July 1, 2003, p. 6.

[15] Dai, "创新、发展信息作战思想" [Innovating and Developing Views of Information Operations], 76.

[16] Dai Qingmin, "论网电一体战" [On Integrating Network and Electronic Warfare], *中国军事科学 [Chinese Military Science]* 15, no. 2 (2002): pp. 113–114.

[17] Dai, "创新、发展信息作战思想" [Innovating and Developing Views of Information Operations], p. 76, also, Dai Qingmin, "论军队信息化建设与信息战建设" [On Development of Military lnformationization and Information Warfare (English as provided in article)], *中国军事科学 [Chinese Military Science]* 15, no. 6 (2002): p. 69.

[18] PRC National Defense University (NDU), *战略学 (2020) [Science of Military Strategy(2020)]*, ed. Xiao Tianliang (Beijing: NDU Press, 2020), pp. 182-185.

[19] Ibid, p. 265.

[20] Ibid, p. 265

[21] NDU, *战略学 (2020) [Science of Military Strategy (2020)]*, p. 183 (note "C4ISR" is rendered "C4ISRK"). See also, Wang Ronghui and Deng Shifeng, "辩证认识联合作战的单域与多域" [A Dialectical Understanding of Single-Domain and Multi-Domain Aspects of Joint Operations], *解放军报 [PLA Daily]*, January 20, 2022, http://www.81.cn/jfjbmap/content/2022-01/20/content_307852.htm.

[22] Xi Jinping, "在中国共产党第二十次全国代表大会上的报告" [Report at the 20th National Congress of the Communist Party of China] (October 16, 2022), *Xinhua News Agency [新华社]*, October 25, 2022, http://www.gov.cn/xinwen/2022-10/25/content_5721685.htm.

[23] Michael Dahm, "Chinese Debates on the Military Utility of Artificial Intelligence," *War on the Rocks*, June 5, 2020, https://warontherocks.com/2020/06/chinese-debates-on-the-military-utility-of-artificial-intelligence/.

[24] This subsection section draws material directly from "'Above-the-Neck' Reforms and Operational Command & Control (C2)" in J. Michael Dahm and Alison Zhao, "China Maritime Report No. 28: Bitterness Ends, Sweetness Begins: Organizational Changes to the PLAN Submarine Force Since 2015," China Maritime Report No. 28, China Maritime Studies Institute, June 2023, https://digital-commons.usnwc.edu/cmsi-maritime-reports/28.

[25] Edmund J. Burke and Arthur Chan, "Coming to a (New) Theater Near You: Command, Control, and Forces," in *Chairman Xi Remakes the PLA*, ed. Phillip C. Saunders, Arthur S. Ding, Andrew Scobell, Andrew N.D. Yang, and Joel Wuthnow (Washington, DC: National Defense University Press, 2019), p. 237.

[26] Ryan D. Martinson, "China's Far Seas Naval Operations, From the Year of the Snake to the Year of the Pig," *Center for International Maritime Security*, February 18, 2019, https://cimsec.org/chinas-far-seas-naval-operations-from-the-year-ofthe-snake-to-the-year-of-the-pig/, and 南部战区海军远海联合训练编队紧贴实战练兵影像 [Images of the Southern Theater Command Navy Far seas Joint Training Task Force's Actual Combat Training], *解放军报 [PLA Daily]*, February 19, 2019, p. 9, cited in Roderick Lee and Morgan Clemens, "Organizing to Fight in the Far Seas: The Chinese Navy in an Era of Military Reform," China Maritime Report No. 9, China Maritime Studies Institute, October 2020, p. 6, https://digital-commons.usnwc.edu/cmsimaritime-reports/9/.

[27] While PLAN carrier strike group operations east of Taiwan would most likely be controlled or at least coordinated through the Eastern Theater, the carrier strike groups belong to the Northern TC Navy (CV-16 *Liaoning*) and Southern TC Navy (CV-17 *Shandong*). Michael Dahm, "Lessons from the Changing Geometry of PLA Navy Carrier Ops," *Proceedings* 149/1, no. 1439 (January 2023), https://www.usni.org/magazines/proceedings/2023/january/lessons-changing-geometry-pla-navy-carrier-ops.

[28] Terms for sub-centers appear in a number of Chinese language sources. See, for example, Xun Ye, Li Wenyuan, Wu Dongdong, and Ji Yongsong, "新体制下战区战时联勤组织指挥模式研究" [Research on the Command of Theater Wartime Joint Logistics Organizations Under the New System], *军事交通学院学报 [Journal of the*

Military Transportation University], 22, no. 11 (November 2020), p. 69, Zeng Zhudong, "实战实训,锤炼新任干部" [Practical Training Tempers New Cadres], *人民海军 [People's Navy]*, 22 October 2020, p. 3.

[29] Dahm and Zhao, p. 5.

[30] For a detailed assessment of PLA Rocket Force organization, see, Ma Xiu, *PLA Rocket Force Organization,* (Montgomery, AL: China Aerospace Studies Institute, 2022), https://www.airuniversity.af.edu/CASI/Display/Article/3193056/pla-rocket-force-organization/.

[31] The PLANAF retained control of its three J-15 aircraft carrier fighter battalions and a single land-based J-11 fighter battalion on Hainan Island for operations over the South China Sea. The PLANAF also retained control of its special mission aircraft and uncrewed aerial vehicle (UAV) regiments for maritime surveillance, communications, and airborne command and control of PLAN forces. For an excellent overview of the PLANAF reorganization, see, Rod Lee, "PLA Naval Aviation Reorganization 2023," *China Aerospace Studies Institute*, July 31, 2023, https://www.airuniversity.af.edu/CASI/Display/Article/3475163/pla-naval-aviation-reorganization-2023/.

[32] Bryan Krekel, *Capability of the People's Republic of China to Conduct Cyber Warfare and Computer Network Exploitation,* Report prepared for the USCC, (McLean, VA: Northrop Grumman, 2009), p. 32, https://www.govinfo.gov/content/pkg/GOVPUB-Y3-PURL-LPS123422/pdf/GOVPUB-Y3-PURL-LPS123422.pdf.

[33] Costello and McReynolds, p. 21.

[34] Kristin Burke, *The PLA's New Base for Space Situational Awareness*, (Mongomery, AL: China Aerospace Studies Institute, September 2023), 1. https://www.airuniversity.af.edu/CASI/Display/Article/3498588/the-plas-new-base-for-space-situational-awarenessopportunities-and-challenges-f/.

[35] Costello and McReynolds, p. 22.

[36] Ibid.

[37] Ibid.

[38] Western assessments that the SSF has leading role in PLA psychological operations are probably overstated. While there appear to be many military academics that write on psychological operations, there is little evidence to suggest that the SSF has organizational responsibly for the type of PLA/PRC psychological operation that might be directed against the U.S. or its allies in a counter-intervention operation. As part of the 2015 reforms, the SSF reportedly inherited the 311 Base (61716 部队) from the former General Staff Department, General Political Department (GPD). Limited, but credible open-source intelligence indicates the 311 Base is focused exclusively on psychological warfare and propaganda that targets public opinion on Taiwan. Very little evidence has emerged that the SSF has control over psychological or propaganda operations against other targets, regionally or globally. SSF cyber capabilities certainly may play a role in collecting intelligence and spreading disinformation as part of a broader malign influence campaign, but there is scant evidence that the SSF has overall responsibility for political warfare within the PLA or the PRC government. See, Mark Stokes and Russel Hsiao, *The People's Liberation Army General Political Department* (Washington, DC: 2049 Institute, 2013), 29, https://project2049.net/wp-content/uploads/2018/04/P2049_Stokes_Hsiao_PLA_General_Political_Department_Liaison_101413.pdf, also, John Costello and Joe McReynolds, *China's Strategic Support Force: A Force for a New Era*, (Washington, DC: National Defense University, 2018), p. 17, https://ndupress.ndu.edu/Portals/68/Documents/stratperspective/china/china-perspectives_13.pdf.

[39] Mark Stokes, *The PLA General Staff Department Third Department Second Bureau,* Project 2049 Institute, July 27, 2015, 13, https://project2049.net/wp-content/uploads/2018/04/P2049_Stokes_PLA_General_Staff_Department_Unit_61398_072715.pdf.

[40] Krekel, p. 32.

[41] Elsa B. Kania and John Costello, "Seizing the Commanding Heights: The PLA Strategic Support Force in Chinese Military Power," Journal of Strategic Studies, 44, no. 2 (2021): p. 253, https://doi.org/10.1080/01402390.2020.1747444, see also, Zhang Dapeng, Kang Zizhan, Wang Lingshuo, and Zhang Shaobo, "淬炼新域新质'新锋刃'" [Tempering the New Domain, New Quality, 'New Forward Edge'], *解放军报 [PLA Daily]*, December 21, 2022, http://www.mod.gov.cn/gfbw/wzll/yw_214068/4928766.html.

[42] Chen Xin and Zhang Nenghua, "连长翁春芳: 守护挖不断冲不垮的高原通信线" [Company Commander Weng Chunfang: Guarding and Constantly Excavating Plateau Communication Lines that Cannot be Broken], (source *央广网 [CCTV]) PRC Ministry of National Defense*, December 3, 2018, http://www.mod.gov.cn/gfbw/tp_214132/zgjr/4831084.html.

[43] Kania and Costello, 253. Note, the Information Communication Base (ICB) should not be confused with the CMC Joint Staff Department ICB – Information and Communications Bureau (信息通信局) or JSD ICB.

[44] Zhang Dapeng, Yu Tao, Xu Yuzhe, and Zhang Shaobo, "体系支撑 信息制胜" [System Support, Information Victory], *解放军报 [PLA Daily]*, October 22, 2022, http://www.81.cn/2022zt/2022-10/22/content_10194235.htm. Apparently, as part of the ICB subordination/reorganization, in 2020, the ICB (61001 部队) launched the official "The Eternal Wave" (永不消逝的电波) across seven social media platforms, Yang Fanfan, "永不消逝的电波" 官方授权号开通试运行" [The Official Authorized Account of "The Eternal Wave" has been Launched for Trial Operation], *中国军网 [China Military Network]*, November 20, 2020, http://www.81.cn/yw_208727/9939915.html. In media articles highlighting ICB personnel, images show uniformed personnel with SSF shoulder patches. See, for example, Zhang Xiushan et al, "'金键'精兵" ['Golden Key' Elite Soldier], *解放军报 [PLA Daily]*, December 20, 2022, http://www.81.cn/jfjbmap/content/2022-12/20/content_330242.htm.

[45] Zhang Xiaohan, "学思践悟, 重点突破备战保通" [Study, Think and Practice, Focus on Breakthroughs & Prepare for Success], *解放军报 [PLA Daily]*, April 2, 2023, http://www.mod.gov.cn/gfbw/wzll/yw_214068/16213872.html. There is conflicting information about the organization and subordination of PLA information communication forces. On the one hand, it seems clear that the lead IC Base (61001 Unit), which sources indicate is physically located in southwest Beijing, commands several SSF ICB brigades throughout China. However, PLA media makes numerous references to apparently remote "information communication bases." This may be an informal term that simply describes where IC brigades and other ICB units are physically located. See, for example, "情注一缆通滇藏 – 记某信息通信基地四营五连连长翁春芳" [A Cable Connects Yunan and Tibet – A Record of Weng Chunfang, Commander of the Fourth Battalion Fifth Company of an Information Communications Base], *新华网 [XinhuaNet]*, December 3, 2018, http://www.xinhuanet.com/politics/2018-12/03/c_1123801663.htm. Attempts to sort out these inconsistencies are further exacerbated by the fact that other PLA services maintain their own information communication brigades and information communication units. See, "正赛 (通信兵专业比武邀请赛)" [Main Match (The Signal Corps Professional Competition Invitational Tournament)], *永不消逝的电波 [The Eternal Wave]*, June 27, 2023, https://m.thepaper.cn/newsDetail_forward_23645590. Additional research on PLA communication and signal corps organization, roles, and responsibilities is required.

[46] Per the 2023 CMPR, the SSF Space Systems Department is also called the Aerospace Force (ASF) (航天部队); the SSF Network Systems Department is also called the Cyberspace Force (CSF) (网络空间部队), see, Office of the Secretary of Defense, p. 70.

[47] See, for example, Zhuang Yong and Qu Liang, "向战发力！地方专家骨干走进某预备役信息通信大队" [Applying Force to War! Key Local Experts Visited a Reserve Information Communication Group (Brigade)], *解放军报 [PLA Daily]*, June 13, 2023, http://www.81.cn/zz_208563/jdt_208564/16230833.html.

[48] U.S. Air University's China Aerospace Studies Institute (CASI) briefly mentions that "The Network Systems Department likely commands… an information and communications base…" See, CASI, *PLA Aerospace Power: A Primer on Trends in China's Military Air, Space, and Missile Forces*, 3rd ed. (Montgomery, AL: China Aerospace Studies Institute, 2022), 72, https://www.airuniversity.af.edu/Portals/10/CASI/documents/Research/Other-Topics/2022-08-15%20PLA%20Primer%203rd%20edition.pdf.

[49] See, for example, references to the SSF Eastern Base, "区领导开展 '八一' 走访慰问活动" [District Leaders Carried Out 'Bayi' Visit and Condolence Activities], *Xinjian District People's Government*, August 8, 2020, http://xjq.nc.gov.cn/xjqrmzf/zhxw/202008/e28802a974aa465abf061339f918cbd1.shtml, or Central Base listed as a technology customer in, 星环信息科技（上海）股份有限公司, 首次公开发行股票并在科创板上市申请文件 [Xinghuan Information Technology (Shanghai) Co., Ltd., Application Documents for Initial Public Offering of Shares and Listing on the Science and Technology Innovation Board], May 13, 2022, p. 8-1-1-84, http://static.sse.com.cn/stock/information/c/202205/222fed3f8d34438594d79de57679386f.pdf.

[50] For an earlier assessment, see, Costello and McReynolds, p. 32.

[51] Graphic derived from J. Michael Dahm, *Introduction to South China Sea Military Capabilities Studies*, (Laurel, MD: Johns Hopkins Applied Physics Laboratory, 2020), p. 6. https://www.jhuapl.edu/sites/default/files/2022-12/IntroductiontoSCSMILCAPStudies.pdf.

[52] In over twenty-years of counterterrorism/counter-insurgency operations in Southwest Asia and elsewhere, the U.S. military quickly learned that its sophisticated C4ISR system-of-systems was often challenged and, in some cases, defeated by a primitive adversary C4ISR system-of-systems that consisted of human lookouts, cell phones, and messengers.

[53] For a comprehensive examination of PLA concepts of system-of-systems confrontation, see, Jeffery Engstrom, *Systems Confrontation and System Destruction Warfare*, RR-1708-OSD (Santa Monica, CA: RAND, 2018), https://www.rand.org/pubs/research_reports/RR1708.html.

[54] Unidentified PRC National Defense University authors, "信息化战争 – 未来战争基本形态" [Informationized Warfare – The Basic Form of Future Warfare], *北京日报 [Beijing Daily]*, February 21, 2001, http://www.people.com.cn/GB/junshi/192/3868/20010221/400680.html.

[55] Liu Jixian, "世界新军事变革形势与应对思考" [Reflections on the Situation and Response to the World Revolution in Military Affairs], *学习时报 [Study Times]*, June 11, 2007.

[56] Office of Navy Intelligence, *The PLA Navy: New Capabilities and Missions for the 21st Century* (Washington, DC: Office of Navy Intelligence, 2015), p. 28, https://www.oni.navy.mil/portals/12/intel agencies/china_media/2015_pla_navy_pub_print_low_res.pdf?ver=2015-12-02-081233-733.

[57] Li Xiaokun, "China sails through 'first island chain,'" *China Daily,* August 2, 2013, https://www.chinadaily.com.cn/cndy/2013-08/02/content_16864064.htm.

[58] For example, Michael Dahm, "Lessons from the Changing Geometry of PLA Navy Carrier Ops.

[59] Yue Jiucheng, 亲历国防通信网建设 30 年 [30-Years' Experience Building the National Defense Communication Network], *新华月报 [Xinhua Monthly]*, no 8. (2008). https://web.archive.org/web/20240313114400/http://www.wenxue100.com/baokan/58246.thtml.

[60] Xie Feng, Li Haiqiang, and Wu Yanmei, "军民互联确保网络无限畅通" [Military and Civilian Interconnection Ensures Unlimited Network Connectivity], *Science & Technology Daily*, September 24, 2015, p. 12.

[61] J. Michael Dahm, *SCS MILCAP Study: Undersea Fiber-Optic Cable and Satellite Communications*, NSAD-R-20-046 (Laurel, MD: Johns Hopkins University Applied Physics Laboratory (JHU/APL), 2020), pp. 2-3, https://www.jhuapl.edu/sites/default/files/2022-12/UnderseaFiber-OpticCableandSATCOM.pdf.

[62] Robert S. Ross, "The 1995-1996 Taiwan Strait Confrontation," *International Security*, Vol. 25, No. 2 (Fall 2000), pp. 120-121.

[63] "Qu Dian" – "区电" for "区域综合电子系统." Andrew Erickson and Ryan Martinson, *China's Near Seas Combat Capabilities*, CMSI Red Book, no. 11 (Newport, RI: U.S. Naval War College, 2014), p. 89. https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=1010&context=cmsi-red-books.

[64] Michael Dahm, "China's Desert Storm Education," *Proceedings,* 147/3 no. 1,417 (March 2021), https://www.usni.org/magazines/proceedings/2021/march/chinas-desert-storm-education.

[65] Kevin Pollpeter et al, *Enabling Information-Based System of System Operations, The Research, Development, and Acquisition Process for the Integrated Command Platform*. SITC Policy Briefs no. 9 (San Diego, CA: Study of Innovation and Technology in China, 2014), https://escholarship.org/uc/item/6f26w11m.

[66] The likely skywave OTH radar transmitter is in Hubei, China at 32°20'16.9"N 112°42'14.6"E https://maps.app.goo.gl/2sqmyr41oxhDLa9E6. The receiver is located at 31°37'19.7"N 111°54'51.2"E, https://maps.app.goo.gl/d5ErfVHqKn6wXruQ6.

[67] J. Michael Dahm, *SCS MILCAP Study: Special Mission Aircraft and Unmanned Systems,* NSAD-R-20-090 (Laurel, MD: Johns Hopkins University Applied Physics Laboratory (JHU/APL), 2020), p. 5, https://www.jhuapl.edu/sites/default/files/2022-12/SpecialMissionAircraftandUnmannedSystems.pdf.

[68] "运-9 到底有多厉害?" [How Powerful is the Y-9?], CCTV.com, November 24, 2018, http://news.cctv.com/2018/11/24/ARTIPC0zeumXkIhGFoWUTsZS181124.shtml, cited in J. Michael Dahm, *SCS MILCAP Study: Air & Surface Radar,* NSAD-R-20-047 (Laurel, MD: Johns Hopkins University Applied Physics Laboratory (JHU/APL), 2020), p. 9

[69] Liu Xuanzun, "China Mass-Produces Special Mission Aircraft," *Global Times,* December 8, 2019, https://www.globaltimes.cn/content/1172715.shtml, cited in cited in J. Michael Dahm, *SCS MILCAP Study: Air & Surface Radar,* 5.

[70] Eli Turk, *PLAN Special Mission Aviation Air Base Renovation and Expansion Activities*, (Montgomery, AL: China Aerospace Studies Institute, 2022), 1, https://www.airuniversity.af.edu/CASI/Display/Article/3505090/plan-special-mission-aviation-air-base-renovation-and-expansion-activities/.

[71] Japan Joint Staff, press releases, 2020-2023, www.mod.go.jp/js/press/index.html.

[72] Bill Gertz, "Exclusive: China begins military flights from disputed South China Sea Bases: AWACS, surveillance planes on two reef bases signal routine PLA air operations from Spratlys," *The Washington Times*, July 13, 2021, https://www.washingtontimes.com/news/2021/jul/13/china-begins-military-flights-disputed-south-china/.

[73] Japan Ministry of Defense, Joint Staff, press releases, 2020-2023, www.mod.go.jp/js/press/index.html.

[74] Japan Joint Staff Press Release: Chinese Military Aircraft Trends (Tokyo: Ministry of Defense, August 23, 2023), 1, https://www.mod.go.jp/js/pdf/2023/p20230825_04.pdf.

[75] J. Michael Dahm, *SCS MILCAP Study: Undersea Fiber-Optic Cable and Satellite Communications*, pp. 6-7, 11.

[76] Andrew S. Erickson, "Quick Look Summary – CMSI's 11-13 April 2023 Conference: Chinese Undersea Warfare: Development, Capabilities, Trends," *Andrew S. Erickson* (blog), May 5, 2023, https://www.andrewerickson.com/2023/05/quick-look-summary-cmsis-11-13-april-2023-conference-chinese-undersea-warfare-development-capabilities-trends/.

[77] Rick Joe, "The Chinese Navy's Growing Anti-Submarine Warfare Capabilities," *The Diplomat,* September 12, 2018, https://thediplomat.com/2018/09/the-chinese-surface-fleets-growing-anti-submarine-warfare-capabilities/.

[78] *United States Strategic Command and United States Space Command in review of the Defense Authorization Request for FY 2025 and the Future Defense Program*, 118th Congress, February 29, 2024, (statement of General Stephen N. Whiting Commander, United States Space Command), https://www.armed-services.senate.gov/imo/media/doc/whiting_statement.pdf.

[79] Prior to 2000, the only military related satellites previously operated by the PRC were the Jianbing-1/1A JB-1 electro-optic imagery satellites, which conducted 14 missions between 1975-1993. The JB-1/1A returned film to earth using recoverable capsules.

[80] For comparison, the U.S. conducted 116 space launches in 2023. Andrew Jones, "Chinese Satellite Internet Mission Rounds Off Record Year for Global Launches," *Space News*, December 31, 2023, https://spacenews.com/chinese-satellite-internet-mission-rounds-off-record-year-for-global-launches/

[81] Union of Concerned Scientists (UCS) Satellite Database, 1 May 2023, (PRC owned and operated satellites in GEO, accessed March 13, 2024), https://www.ucsusa.org/resources/satellite-database Supplemented by current information from Gunter D. Krebs, "Gunter's Space Page," accessed March 13, 2024, from https://space.skyrocket.de/index.html.

[82] Clayton Swope, *No Place to Hide: A Look into China's Geosynchronous Surveillance Capabilities* (Washington, DC: Center for Strategic and International Studies, 2024), https://www.csis.org/analysis/no-place-hide-look-chinas-geosynchronous-surveillance-capabilities.

[83] Andrew Jones, "China launches first geosynchronous orbit radar satellite," *Space News*, August 14, 2023, https://spacenews.com/china-launches-first-geosynchronous-orbit-radar-satellite/.

[84] The 213 LEO ISR satellites plus the 14 probable GEO ISR satellites is 227 ISR satellites. This is well short of the PRC's reported 359 ISR satellites. The larger number probably included "one-off" systems not included in this report as well as "Earth observation" satellites that have legitimate scientific, surveying, or meteorological uses.

There are also a number of older PLA LEO satellites that are still in orbit that are either beyond their service life or may not provide significant capabilities in a PLA counter-intervention operation.

[85] Karthik Naren, "China Launches Gaofen 11-04," *Space Intelligence*, December 27, 2022, https://www.spaceintel101.com/post/china-launches-gaofen-11-04.

[86] See, for example, Chris Formeller, "Introducing 15 cm HD: The Highest Clarity From Commercial Satellite Imagery," *Maxar* (blog), November, 12, 2020, https://blog.maxar.com/earth-intelligence/2020/introducing-15-cm-hd-the-highest-clarity-from-commercial-satellite-imagery.

[87] Chang Guang Satellite Technology Co., Ltd., "About," Accessed March 15, 2024, https://www.jl1global.com/about/.

[88] Ling Xin, "China Sends Record 41 Satellites to Join Jilin-1 Hi-Res Constellation," *South China Morning Post*, June 19, 2023, https://www.scmp.com/news/china/science/article/3224636/china-sends-record-41-satellites-join-jilin-1-hi-res-constellation.

[89] "China's Commercial CERES-1 Y8 Rocket Launches New Satellite," *Xinhua*, August 25,2023, https://english.news.cn/20230825/8dc82f06f7ae4557ac5626c2e13dc4b9/c.html.

[90] Gosnold, "China Completes the Yaogan-30 Constellation," *SatelliteObservation.net* (blog), November 25, 2020, https://satelliteobservation.net/2020/11/25/china-completes-the-yaogan-30-constellation/.

[91] Andrew Jones, "China Launches Trio of Yaogan-31 Ocean Reconnaissance Satellites," *Space News*, February 24, 2021, https://spacenews.com/china-launches-trio-of-yaogan-31-ocean-reconnaissance-satellites/.

[92] Yaogan-36 03A/B/C orbits, August 28, 2023, ~1700 GMT, data and visualization from SatFlare, http://www.satflare.com.

[93] "GLOBALink | Open-sea testing of China's first low-Earth orbit broadband communication test constellation is conducted in the South China Sea," *Xinhua,* June 17, 2023, https://english.news.cn/20230617/da2429ac13e0486c99b5dc054594a659/c.html.

[94] Stephen Chen, "Private Internet Satellite Company Joins China's Hypersonic Race," *South China Morning Post,* April 22, 2023, https://www.scmp.com/news/china/science/article/3217714/private-internet-satellite-company-joins-chinas-hypersonic-race.

[95] Colin Demarest, "China May Struggle in Electromagnetic Spectrum Fighting, Pentagon Says," *C4ISRNet,* October 23, 2023, https://www.c4isrnet.com/electronic-warfare/2023/10/23/china-may-struggle-in-electromagnetic-spectrum-fighting-pentagon-says/. See also, Mark Pomerleau, "China Perceives Shortfalls Operating in Complex Electromagnetic Spectrum Environment: Pentagon," *DefenseScoop,* October 19, 2023, https://defensescoop.com/2023/10/19/china-perceives-shortfalls-operating-in-complex-electromagnetic-spectrum-environment-pentagon-report/.

[96] Larry Wortzel, *The Chinese People's Liberation Army and Information Warfare,* (Carlisle, PA: U.S. Army War College Press, 2014), p. 11. https://press.armywarcollege.edu/monographs/506/.

[97] Bernard Cole, "China's Navy Prepared: Domestic Exercises, 2000–2010," in *Learning by Doing, the PLA Trains at Home and Abroad*, ed. Roy Kamphausen, David Lai, and Travis Tanner (Carlisle, PA: US Army War College Press, 2012), 25–26, cited in J. Michael Dahm, *Electronic Warfare and Signals Intelligence*, South China Sea Military Capability Series (Laurel, MD: Johns Hopkins Applied Physics Laboratory, 2020), p. 2. https://www.jhuapl.edu/sites/default/files/2022-12/EWandSIGINT.pdf.

[98] Hu Jintao, then Party Secretary and Chairman of the CMC stated, "*Information dominance is in effect electromagnetic dominance; therefore, we should not only place high-tech weapons and equipment into complex electromagnetic environments to get them trained and tested, but also should carry out comprehensive exercises and drills with tactical backgrounds under such conditions."* Leng Feng, *Toward the Transformation of PLA Military Training Under Conditions of Informationization* (Stockholm: Institute for Security and Development Policy, 2014), p. 23, https://web.archive.org/web/20201231030347/https://isdp.eu/content/uploads/publications/2014-leng-feng-toward-the-transformation-of-PLA-military-training.pdf.

[99] PRC State Council Information Office, "中国的军事战略 (2015 年 5 月) [China's Military Strategy (May, 2015)]," see section V, "Preparation for Military Struggle," November 1, 2017, http://www.81.cn/jwzl/2017-11/01/content_7808797_7.htm.

[100] PRC State Council Information Office, "新时代的中国国防" [China's National Defense in the New Era], see section II, China's Defensive National Defense Policy in the New Era, July 2019, http://www.81.cn/zt/2023nzt/rmjdlsyct/16230673.html.

[101] See, for example the likely SSF ECM brigade garrison and vehicles in Qinhuangdao, Hebei, PRC at 39°53'17.7"N 119°26'36.8"E, https://maps.app.goo.gl/TgxKbq8VDn69NK3W8.

[102] Michael R. Gordon and Jeremy Page, "China Installed Military Jamming Equipment on Spratly Islands, U.S. Says," Wall Street Journal, April 9, 2018, https://www.wsj.com/articles/china-installed-military-jamming-equipment-on-spratly-islands-u-s-says-1523266320, cited in, J. Michael Dahm, *Electronic Warfare and Signals Intelligence*, p. 4.

[103] J. Michael Dahm, *Electronic Warfare and Signals Intelligence*, p. 7.

[104] As of mid-2023, the PLAAF may have only had seven J-16D. See, Akhil Kadidal, "China Adds Additional J-16s, J-20s to Operational Units," *Janes,* July 7, 2023, https://www.janes.com/defence-news/news-detail/china-adds-additional-j-16s-j-20s-to-operational-units.

[105] Andrew Tate, "PLAAF Operating ECM Variant of Y-9 Aircraft," *Janes*, March 11, 2019, https://www.janes.com/defence-news/news-detail/plaaf-operating-ecm-variant-of-y-9-aircraft.

[106] Guo Yuandan, Liu Xuanzun, and Leng Shumei, "PLA's J-16D Electronic Warfare Aircraft Spotted for 1st Time Near Taiwan," *Global Times,* January 25, 2022, https://www.globaltimes.cn/page/202201/1246818.shtml.

[107] An unidentified missile suspected of being an anti-radiation missile appeared in a PLAAF video in 2020. See, Liu Xuanzun, "Air Force Video Reveals Chinese Fighter Jet's Mysterious New Missile," *Global Times,* November 11, 2020, https://www.globaltimes.cn/content/1206531.shtml.

[108] "TL-30 Anti-Radiation Loitering Missile," *China Defence*, accessed March 10, 2024, https://www.militarydrones.org.cn/tl-30-missile-p00664p1.html.

[109] Defense Intelligence Ballistic Missile Analysis Committee, *2020 Ballistic Missile and Cruise Threat,* (Dayton, OH: National Air and Space Intelligence Center (NASIC), 2020), p. 14, https://media.defense.gov/2021/Jan/11/2002563190/-1/-1/1/2020 BALLISTIC AND CRUISE MISSILE THREAT_FINAL_2OCT_REDUCEDFILE.PDF.

[110] The technology in the PRC-produced ASN-301 probably originated with the Israeli Harpy program. See, Ami Rojkes Dombe, "China Unveils a Harpy-Type Loitering Munition," *Israel Defense,* January 3, 2017, https://www.israeldefense.co.il/en/node/28716. See also, "ASN-301 Anti-Radiation Radar Loitering Munition Suicide Drone System," *China Defence*, accessed March 10, 2024, https://www.militarydrones.org.cn/china-asn-301-anti-radiation-uav-system-p00145p1.html.

[111] Kristin Burke, PLA Counterspace Command and Control, (Mongomery, AL: China Aerospace Studies Institute, September 2023), 30. https://www.airuniversity.af.edu/CASI/Display/Article/3612979/pla-counterspace-command-and-control/.

[112] See Google Earth archived images, January 5, 2021; June 18, 2021; and March, 2022 of Langfang, China, 39°34'13.9"N 116°45'38.7"E, https://maps.app.goo.gl/v41mXoqV4kwNiqgy6.

[113] Steve Trimble, "Satellite Imagery Exposes China's Space Jammer Buildup," *Aviation Week*, November 1, 2022, https://aviationweek.com/defense-space/sensors-electronic-warfare/satellite-imagery-exposes-chinas-space-jammer-buildup.

[114] Matthew P. Funaiole, Joseph S. Bermudez, Jr., and Brian Hart, "China is Ramping Up its Electronic Warfare and Communications Capabilities Near the South China Sea," *Center for Strategic and International Studies*, December 17, 2021, https://www.csis.org/analysis/china-ramping-its-electronic-warfare-and-communications-capabilities-near-south-china-sea. This article identifies a new SSF base near Mumian, Hainan Island. The suspected EW vehicles identified in the article are, in fact, SATCOM jammers.

[115] J. Michael Dahm, *SCS MILCAP Study: Air and Surface Radar,* NSAD-R-20-047 (Laurel, MD: Johns Hopkins University Applied Physics Laboratory (JHU/APL), 2020), pp. 2-12, https://www.jhuapl.edu/sites/default/files/2022-12/AirandSurfaceRadar_v3.pdf.

[116] J. Michael Dahm, *SCS MILCAP Study: Inter-Island Communications,* NSAD-R-20-048 (Laurel, MD: Johns Hopkins University Applied Physics Laboratory (JHU/APL), 2020), pp. 2-6, https://www.jhuapl.edu/sites/default/files/2022-12/Inter-IslandCommunications.pdf.

[117] The Joint Staff, *Joint Pub 3-85 – Joint Electromagnetic Spectrum Operations,* (Washington, DC: Department of Defense, 22 May 2020), p. v, https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_85.pdf.

[118] PRC Radio Management Bureau, "中华人民共和国无线电管制规定, 2010" [PRC Radio Control Regulations, 2010], *PRC Ministry of Industry and Information Technology*, November 3, 2021, https://wap.miit.gov.cn/jgsj/wgj/flfg/art/2021/art_1f8b7b710b444344abe4c530fd3c5c8a.html.

[119] Liu Yiwei, 频谱管控大队转隶军委联合参谋部 [Spectrum Management and Control Group (Dadui) Transferred to the CMC Joint Staff Department], *解放军报 [PLA Daily],* March 21, 2016, https://web.archive.org/web/20160403034749/https://military.china.com/news/568/20160321/22221894.html.

[120] "Request for Proposals on China's Advanced Remote Sensing Technologies and Applications," *U.S.-China Economic and Security Review Commission*, August 8, 2023, https://www.uscc.gov/research/request-proposals-remote-sensing.

[121] U.S. GAO, *Battle Management: DoD and Air Force Continue to Define Joint Command and Control Efforts,* GAO-23-105495, (Washington, DC: GAO, 2023), p. 16, https://www.gao.gov/assets/gao-23-105495.pdf.

[122] J. Michael Dahm, *SCS MILCAP Study: Special Mission Aircraft and Unmanned Systems*, p. 6.

[123] J. Michael Dahm, *SCS MILCAP Study: Special Mission Aircraft and Unmanned Systems*, p. 22. Data from "BZK-005C," 北京北航天宇长鹰无人机科技有限公司 [Beihang UAS Technology Co, Ltd.], "Wing Loong I UAS," "Wing Loong I-D UAS," "Wing Loong II UAS," trade brochures (中国航空工业集团公司 [Aviation Industry Corporation of China, Ltd.], 2018); Deng Xiaoci and Liu Xuanzun, "Maritime Version of China's CH-5 Drone Makes First Test Flight," *Global Times*, July, 16, 2020, https://www.globaltimes.cn/content/1194771.shtml; "Tengden TB-001 Drone," *China Defence*, accessed March 10, 2024, https://www.militarydrones.org.cn/tb001-reconnaissance-strike-drone-p00209p1.html; Thomas Newdick, "Japanese Fighters Intercept China's High-Flying WZ-7 Drone For First Time, *The Warzone*, January 2, 2023, https://www.twz.com/japanese-fighters-intercept-chinas-high-flying-wz-7-drone-for-first-time.

[124] Data aggregated from multiple databases, visualization tools, and media sources including: UCS Satellite Database, https://www.ucsusa.org/resources/satellite-database; Gunther's Space Page, https://space.skyrocket.de/index.html; Satflare, https://www.satflare.com/home.asp; and N2YO, https://www.n2yo.com/.

[125] Ibid.

[126] Ibid.

OPENING STATEMENT OF CRISTINA L. GARAFOLA, POLICY RESEARCHER, RAND CORPORATION

MS. GARAFOLA: Thank you, Co-Chair Price, Co-Chair Schriver, Commissioners, and staff for organizing this hearing. I'll first make three points about how the PLA approaches logistics and maintenance and then focus on implications for counter-intervention and options for U.S. policymakers. I primarily focus on the PLA's approach to maintenance, given recent research on this topic. Although other logistics sub-functions such as supply, transportation, and others are key to operating sustaining forces during high-end conflict, the PLA's capabilities in these areas remain under study to date.

My first point is that the PLA have used both logistics and maintenance as key enablers for its warfighting approach. Specifically, logistics and maintenance are seen as important within systems of systems thinking and integral to systems confrontation. As the other witnesses have mentioned, both of these concepts are foundational in how the PLA seeks to organize and execute modern warfare to prevail against opponents.

Second, the PLA has long recognized weaknesses in its approach to logistics. Three drivers have shaped its efforts to improve these capabilities. The first is the PLA's own assessments of logistics challenges that it's encountered during historical conflicts through to the Cultural Revolution.

The PLA's approach to logistics often emphasize self-sufficiency to compensate for the lack of a production base and lack of a coherent logistics system. Early on, this included capturing supplies from opponents or borrowing them from the local populace. Later on, military units grew their own crops and ran small businesses. Needless to say, these activities detracted from building a sustaining combat capability.

The second driver is PLA observations of logistics and maintenance advances by Western militaries. For example, the PLA has recognized that the United States could deliver forces and supplies halfway around the world and perform timely maintenance for fighting in places like Afghanistan, even as the PLA has struggled to support forces back home in China at the scale, speed, and efficiency needed for modern combat.

The third factor is a desire to realize greater efficiencies within the logistics system, including reducing redundancy within logistics organizations, achieving cost savings, and increasing reliance on civilian entities and the commercial sector.

Third, I'll highlight both the progress and challenges the PLA has experienced with regard to maintenance as one element of logistics. Four themes illustrate maintenance strengths and weaknesses that we observed in ground combined arms units and PLA Air Force combat aviation units.

First, a critical maintenance -- a critical weakness is a lack of a professionalized maintenance force. There's a particularly large divide between the skills of junior technicians and more senior maintainers who are predominantly senior non-commissioned officers. These so-called hero maintainers, as described in PLA propaganda, accumulate key skills and knowledge over decades, but opportunities for junior personnel to learn from them can be siloed. Skilled maintainers also lack institutionalized approaches to pass on their knowledge to the rest of their unit prior to their retirement.

Second, a lack of pride in the profession shapes how maintenance is conducted. Soldiers and officers appear to take an outdated view of support services as less prestigious than other specialties, such as pilots. Related dynamics include lack of attention to detail leading to sloppy

or unsafe work environments, the fear of failure leading to risk aversion for experimentation or innovation, and feeling pressure to hide mistakes or problems in order to comply with a zero-defect mentality.

Third, the PLA has prioritized improving self-identified maintenance weaknesses by institutionalizing process reforms such as separating maintenance and inspection teams in the PLA Air Force. These solutions mitigate some gaps in maintenance proficiency. However, the fast-based evolution of Chinese weapon system technology may outpace other attempts to compensate for low skill levels by developing technological solutions.

Fourth, reforms aimed at maintenance standardization are not institutionalized in terms of knowledge sharing within and across units and also because of the top-down dictation of some maintenance procedures. Both of these dynamics create inefficiencies in the system and increase maintenance times.

So how might these dynamics be relevant in a conflict? High-end PLA operations such as counter-intervention activities would levy significant requirements across the PLA maintenance and logistics apparatus, even for units operating short distances from the mainland. Kinetic operations in support of counter-invention could involve, for example, anti-ship cruise missiles fired by modular multiple rocket launchers, out-of-area surface or subsurface naval operations, long-range packages of PLA Air Force aircraft, and cruise or ballistic missile strikes by PLA rocket force units.

In all four of these examples, PLA operations to interdict and engage opposing forces may need to transition from initial surge activities to longer-term sustained field operations, patrols, or sorties. Maintainers would be crucial for both of these phases, performing routine diagnostic checks prior to operations and conducting post-mission maintenance, performing emergency maintenance on damaged platforms, and troubleshooting equipment failures.

Whether the PLA can sustain new types of maintenance challenges at scale, such as for increasingly advanced platforms like the low-observable J-20 or for maritime and air assets operating from punishing locations like China's artificial islands in the South China Sea, could also impact operations, resulting in, for example, low platform availability rates, reduced sortie generation, or degraded platform performance.

In terms of geography, even for PLA operations reaching out to the second or third island chain, sustainment activities will mostly take place quote, unquote, at home, once the bomber has landed or the missile unit has conducted a launch. Key exceptions might be navy surface or submarine assets which require at-sea logistics support that's more challenging to provide far from Chinese shores during wartime.

To conclude, the PLA's hybrid approach of compensation and improvement to address maintenance weaknesses and bolster -- bolster strength could affect its wartime performance. Areas in which the PLA attempts to compensate for deficiencies include maintainer skill levels, lack of innovation, and poor knowledge sharing.

All three of these areas could see significant stresses and strains during high-end combat. Given that logistics and maintenance, from this perspective, may be an area of comparative advantage for the U.S. over the PLA, Congress and the Department of Defense have an opportunity to ensure that this balance remains favorable.

To do so, U.S. policymakers might consider the following options. First, strengthen protections and security for U.S. logistics and maintenance data. For example, DoD could consider implementing stronger data protection measures with the aim of slowing or denying the PLA's ability to access U.S. data. Second, engage with U.S. allies and partners to curtail military

logistics exchanges or relevant information-sharing with the PLA. For example, Congress could stipulate restrictions on U.S. armed sales with countries that continue to engage in logistics exchanges or exercises with the PLA.

Third, evaluate the utility of potential export controls on logistics systems. Department of Commerce could consider export controls to limit the sale of potential dual-use technology or software or other enables -- enablers for military logistics. And fourth, fund additional research on China's military logistics capabilities. Thank you again for the opportunity to speak with you today. And I look forward to your questions.

PREPARED STATEMENT OF CRISTINA L. GARAFOLA, POLICY RESEARCHER, RAND CORPORATION

Testimony

CRISTINA L. GARAFOLA

Maintaining the Edge?

The People's Liberation Army's Logistics and Maintenance Lessons Learned and Approaches Relevant for Counterintervention

CT-A3272-1

Testimony presented before the U.S.-China Economic and Security Review Commission on March 21, 2024

For more information on this publication, visit **www.rand.org/t/CTA3272-1**.

Testimonies

RAND testimonies record testimony presented or submitted by RAND associates to federal, state, or local legislative committees; government-appointed commissions and panels; and private review and oversight bodies.

Published by the RAND Corporation, Santa Monica, Calif.

Maintaining the Edge? The People's Liberation Army's Logistics and Maintenance Lessons Learned and Approaches Relevant for Counterintervention

Testimony of Cristina L. Garafola[1]
RAND[2]

Before the U.S.-China Economic and Security Review Commission

March 21, 2024

In the event of a high-end contingency involving the People's Republic of China, the United States, and Indo-Pacific allies and partners, the ability of the People's Liberation Army (PLA) to project and sustain combat power beyond the Chinese mainland will depend on its logistics capabilities, systems, and processes. In particular, understanding the PLA's approach to maintenance management, a subfunction of logistics, is essential in assessing the PLA's ability to sustain its rapidly modernizing force in a potential conflict.[3]

After first noting the important role that logistics and maintenance play in the PLA's systems-of-systems thinking, this testimony will then examine key drivers of PLA logistics reforms to understand the lessons learned that the PLA has applied in modernizing its logistics capability. Because many elements of the Chinese military logistics system are not well understood, this testimony next focuses on assessing the PLA's approach to maintenance as one component of logistics and sustainment activities necessary to support the PLA's

---

[1] The opinions and conclusions expressed in this testimony are the author's alone and should not be interpreted as representing those of RAND or any of the sponsors of its research.

[2] RAND is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's mission is enabled through its core values of quality and objectivity and its commitment to integrity and ethical behavior. RAND subjects its research publications to a robust and exacting quality-assurance process; avoids financial and other conflicts of interest through staff training, project screening, and a policy of mandatory disclosure; and pursues transparency through the open publication of research findings and recommendations, disclosure of the source of funding of published research, and policies to ensure intellectual independence. This testimony is not a research publication, but witnesses affiliated with RAND routinely draw on relevant research conducted in the organization.

[3] This testimony draws on Joslyn Fleming, Cristina L. Garafola, Elisa Yoshiara, Sale Lilly, and Alexis Dale-Huang, *Kicking the Tires? The People's Liberation Army's Approach to Maintenance Management,* RAND Corporation, RR-A1995-1, 2023, https://www.rand.org/pubs/research_reports/RRA1995-1.html. The author thanks Nathan Beauchamp-Mustafaga, Joslyn Fleming, and Edmund Burke for their review and feedback on this testimony.

counterintervention efforts. The conclusion will focus on implications and recommendations for Congress and the broader federal government to consider.

Logistics and Maintenance Assessed as Integral to PLA Systems-of-Systems Confrontation

The PLA views logistics and maintenance as integral components of its approach to *systems-of-systems thinking* and *systems confrontation*—the foundational concepts by which the PLA seeks to organize and execute modern warfare to prevail against opponents.[4] Two dynamics regarding the PLA's approach to logistics and maintenance requirements, strengths, and weaknesses are particularly relevant for assessing implications for counterintervention and other high-end contingencies in the Indo-Pacific. By *counterintervention*, I mean PLA operations to defeat third-party intervention against a Chinese campaign or campaigns, such as by the United States and/or its allies and partners on behalf of Taiwan.[5]

First, the U.S. doctrinal approach to logistics and sustainment takes as a precondition that the likely requirement of most contingencies is to project power globally. The U.S. Department of Defense (DoD) defines *logistics* as "[p]lanning and executing the movement and support of forces," and *sustainment* as "[t]he provision of logistics and personnel services required to maintain and prolong operations until successful mission accomplishment."[6] Together, these two concepts provide options for commanders by facilitating the global deployment—and redeployment if necessary—of armed forces to fulfill military objectives.[7] As this testimony will discuss, however, current expectations for PLA logistics capabilities differ in that the PLA is not expected to deploy or fight globally for key contingencies but rather to support and sustain fighting to achieve the Chinese Communist Party's (CCP's) objectives on China's periphery.

Second, many of the PLA's logistics subfunctions are important enablers for high-end contingencies but remain understudied to date. Maintenance, however, has been the subject of recent research. The PLA's approach to maintenance is crucial in the broader context of PLA logistics and sustainment capabilities. This is because the PLA's rapid force modernization, combined with its lack of recent combat experience, means that its ability to conduct maintenance to sustain a high-end fight is not battle-tested. Authoritative PLA sources evince concern on this point. Regarding maintenance and support capability for high-technology weapons and equipment, one 2020 professional military education textbook states that "most of our new weapons and equipment have not been tested in actual combat, and under harsh battlefield conditions may have a higher failure rate." The textbook concludes that "it is

---

[4] I thank Joel Wuthnow for raising this point. For more information on the role of the support system within the PLA's system-of-systems thinking, see Jeffrey Engstrom, *Systems Confrontation and System Destruction Warfare: How the Chinese People's Liberation Army Seeks to Wage Modern Warfare*, RAND Corporation, RR-1708-OSD, 2018, https://www.rand.org/pubs/research_reports/RR1708.html.

[5] For more discussion of counterintervention, see Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China*, DoD, 2023.

[6] DoD, *DOD Dictionary of Military and Associated Terms*, November 2021, pp. 132, 206.

[7] Joint Chiefs of Staff, *Joint Logistics*, Joint Publication 4-0, July 20, 2023, p. ix.

necessary to further strengthen the construction of equipment maintenance support teams, conduct targeted professional training and comprehensive drills, and effectively enhance the battlefield repair capabilities of high-tech weapons and equipment."[8]

PLA Lessons Learned and Reforms Likely Shape Current Logistics and Maintenance Requirements Relevant for High-End Contingencies

In line with the above statements, the PLA has long recognized weaknesses in its approach to logistics. Three key lessons learned spurred a 10-year effort begun in 1998 to reform the PLA's organization and approach to logistics and continue to shape its approach to improving relevant capabilities today.[9] The first driver of these reforms is PLA self-assessments of the logistics challenges it encountered during conflicts fought between the 1930s and the 1970s. During World War II and the Chinese Civil War, the infantry-centric PLA was sometimes able to compensate for the lack of a production base and logistics system through the capture of weapons and supplies from enemy forces and the seizure of food from local peasants. CCP leaders, including Mao Zedong, recognized the latter was particularly unpopular with the public, and, subsequently, military units adopted self-sufficiency measures to reduce these demands by growing crops and raising animals—roles Mao described as having "an army for fighting as well as an army for labor."[10] However, these roles detracted from the PLA's combat capabilities in subsequent conflicts, particularly during the Cultural Revolution, when self-sufficiency activities were at their peak and some PLA units were even deployed domestically to support factional struggles among China's top leaders. The time and effort spent on these activities degraded units' efforts to build and sustain operational capability.

Major logistics challenges emerged in key conflicts, such as the Korean War, including an understaffed regional logistics command; repeated American air raids on materiel storage stations, rail lines, and road networks that disrupted Chinese supply truck movements; inexperienced logistics officers and truck drivers; and rapidly lengthening supply lines, a particular challenge for maintenance.[11] Compensatory approaches, such as borrowing food and

---

[8] Xiao Tianliang [肖天亮], ed., *Science of Military Strategy* [战略学], National Defense University Press [国防大学出版社], 2020, p. 443.

[9] Although China attempted to reform the structure of the PLA's logistics forces prior to 1998, Western analysts have argued that the military reforms that began under Jiang Zemin in 1998 were "a necessary precursor to real joint logistics command integration" (LeighAnn Luce and Erin Richter, "Handling Logistics in a Reformed PLA: The Long March Toward Joint Logistics," in Phillip C. Saunders, Arthur S. Ding, Andrew Scobell, Andrew N. D. Yang, and Joel Wuthnow, eds., *Chairman Xi Remakes the PLA: Assessing Chinese Military Reforms*, National Defense University Press, 2019, p. 262).

[10] As quoted in Dennis J. Blasko, "PLA Ground Forces Lessons Learned: Experience and Theory," in Laurie Burkitt, Andrew Scobell, and Larry M. Wortzel, eds., *The Lessons of History: The Chinese People's Liberation Army at 75*, Strategic Studies Institute, July 2003, p. 64.

[11] Hong Xuezhi, "The CPVF's Combat and Logistics," in Xiaobing Li, Allan R. Millett, and Bin Yu, eds., *Mao's Generals Remember Korea*, University Press of Kansas, 2001, pp. 123–130. See also John J. Tkacik, Jr., "From Surprise to Stalemate: What the People's Liberation Army Learned from the Korean War—A Half-Century Later," in Burkitt, Scobell, and Wortzel, eds., 2003, p. 305.

grain from the local Korean populace, failed in conflict zones that were already devastated by the war. During the 1979 Sino-Vietnamese War, of course, the PLA could not requisition supplies in hostile territory, and fighting units faced significant food and water shortages despite logistics forces spending months preparing for the invasion.[12] The inability of the PLA's logistics system to sustain operations in Vietnam prompted a 1980 assessment by the PLA General Logistics Department that reforms were needed to improve logistics support to operational units.[13]

The second driver of logistics reforms is the PLA's observations of logistics and maintenance advances by Western militaries, which PLA analysts have often identified in terms of successes by the U.S. armed forces and failures by U.S. opponents in a given conflict. Key logistics and maintenance lessons that the PLA drew included protecting supply lines between rear areas and front lines; optimizing timely and consistent arrival of goods, ammunition, and support equipment; pre-positioning supplies near front lines; leveraging strategic airlift for rapid mobility; conducting field maintenance; and proactively addressing long-term maintenance needs.[14] Of note, these PLA analyses date from the mid-1990s onward, indicating that PLA analysts have been drawing modern lessons learned and associated warfighting requirements even from conflicts as far back as World War II. In summary, the PLA has recognized that the United States could deliver supplies halfway around the world and perform timely maintenance for fighting in such places as Afghanistan even as the PLA has struggled to support forces at home in China at the scale, speed, and efficiency needed for modern combat.

The third driver of reforms is a desire to realize greater efficiencies within the logistics system. As the PLA began to rebuild its operational capability after the Cultural Revolution, it retreated from some of its civilian-type roles to refocus on military tasks and missions.[15] Key desired areas of logistics improvement and reform included reducing redundancy and improving efficiency in logistics organizations' capacity and staffing (along with associated cost-savings) and increasing reliance on civilian entities and the commercial sector. Curbing the corruption that persisted in the logistics system through the 1980s and 1990s was also a goal, given that corruption impeded logistics-specific efficiencies and undermined broader military operational effectiveness.

The reforms from 1998 to 2008 therefore sought to implement two major initiatives that would modernize logistics capabilities: (1) merging redundant but common support activities conducted by each service into a logistics department for each military region and (2) *socialization*, or moving non-military activities of the PLA to be performed by civilian

---

[12] Edward C. O'Dowd, *Chinese Military Strategy in the Third Indochina War: The Last Maoist War*, Routledge, 2007, pp. 70–71; Susan M. Puska, "Taming the Hydra: Trends in China's Military Logistics Since 2000," 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, 2010, p. 554.

[13] Nong Qinghua [农清华], "Reform of PLA Logistics Support System in the Past 40 Years" [人民解放军后勤保障体制改革攻坚 40 年], *Military History* [军事历史], No. 1, 2019, p. 11.

[14] For more information, see Fleming et al., 2023, pp. 14–19.

[15] Puska, 2010. Thanks go to Joel Wuthnow for highlighting this driver.

organizations.[16] However, since 2008, three dynamics have continued to challenge the PLA's progress in improving its logistics capability. First, China's military services continued to lack a robust capability to quickly respond and flow necessary supplies throughout the country, let alone outside China's borders. Examples include logistics deficiencies affecting PLA command centers following the 2008 earthquake in Sichuan and a mixed story regarding logistics support following the outbreak of the coronavirus disease 2019 pandemic.[17]

Second, corruption has lingered as a major issue for PLA logistics reforms because of the likely long-term consequences of poor acquisitions decisions. In a recent example, PLA officials currently or previously affiliated with the Equipment Development Department (EDD), as well as leaders of key aerospace and defense state-owned enterprises, were purged in 2023 as part of an anti-corruption investigation, and in July 2023, the EDD announced it was investigating corruption dating back to 2017, a period in which recently ousted defense minister Li Shangfu had led the department.[18] Although this bout of corruption appears to have been focused on the PLA's acquisition process, long-term sustainment and maintenance costs make up a considerable portion of a weapon system's overall cost, meaning that any impact of corruption on the sustainment and maintenance of fielded equipment could result in significant operational inefficiencies down the road.

Third, the PLA has also struggled to provide the necessary training for logistics personnel—a topic explored in greater detail in the next section.[19]

The PLA's Approach to Maintenance Incorporates a Hybrid Approach of Compensation and Improvement

To understand the strengths and weaknesses of the PLA's approach to maintenance in the broader context of its logistics capabilities, a 2023 RAND report developed logistics success factors leveraging organizational theory, military studies, and historical cases—and then applied them to the PLA with a focus on PLA Army (PLAA) ground combined arms units and PLA Air

---

[16] Roger Cliff, *China's Military Power: Assessing Current and Future Capabilities*, Cambridge University Press, 2015, p. 148; Luce and Richter, 2019, p. 268; Dennis J. Blasko, *The Chinese Army Today: Traditions and Transformation for the 21st Century*, Routledge, 2012, p. 35; Lonnie Henley, "PLA Logistics and Doctrine Reform, 1999-2009," in Susan M. Puska, ed., *People's Liberation Army After Next*, Strategic Studies Institute, August 2000, p. 60; Erin Richter, Leigh Ann Ragland, and Katherine Atha, "General Logistics Department Organizational Reforms: 2000–2012" in Kevin Pollpeter and Kenneth W. Allen, eds., *The PLA as Organization v2.0*, Defense Group Inc., 2012, p. 178.

[17] Cliff, 2015, p. 150; Joel Wuthnow, "Responding to the Epidemic in Wuhan: Insights into Chinese Military Logistics," *China Brief*, Vol. 20, No. 7, April 13, 2020.

[18] Nectar Gan, "Xi's Latest Purge Targets the Military. Why Did Powerful Generals Fall Out of Favor?" CNN, January 5, 2024; Simone McCarthy, "China Names New Defense Minister Months After Removing Predecessor Without Explanation," CNN, December 29, 2023; William Yang, "China Launches New Wave of Purges Against Key Defense Industry Leaders," VOA, December 29, 2023; "China's Military Probes Slew of Graft Issues Going Back to 2017," Bloomberg News, July 26, 2023.

[19] Puska, 2010, pp. 568–569. See also Cliff, 2015, p. 149.

Force (PLAAF) combat aviation units.[20] I focus on four logistics factors below that are relevant for maintenance and for which PLA sources included relevant discussion:

- An **ability to recruit and retain quality personnel** can improve organizational performance and is linked to positive morale within the force.
- A **culture of learning** can bolster effectiveness when a military organization continuously analyzes procedures to identify improvements, invests in new technologies or processes, and applies lessons learned throughout the organization.
- By **routinizing and prioritizing maintenance functions**, a military can create, promulgate, and institutionalize organizational knowledge and procedures via a shared understanding of roles and responsibilities.
- Fostering **latitude for independent decisionmaking by logisticians** at the unit level can leverage flexibility and autonomy to enable problem-solving, contributing to higher reliability even in organizations operating complex and dangerous equipment.

In reviewing these logistics success factors within the PLA, four key themes emerged regarding maintenance strengths and weaknesses.[21]

First, a critical weakness in the PLA's maintenance system is the lack of a professionalized maintenance force. PLA operators and junior maintainers appear to lack the knowledge, skills, and abilities to perform routine maintenance functions, leading to an overreliance on senior maintainers. There is a particularly large divide between the skills of junior technicians and more-senior maintainers, who are predominantly senior noncommissioned officers (NCOs). Social and organizational biases within the PLA create separation between the enlisted and officer ranks, influenced by differences in compensation, trust issues, and quota systems that limit NCO participation on military party committees. One PLA media source reflected these dynamics by characterizing NCOs as "afraid . . . [and] unwilling to take action."[22]

The PLA recognizes the need for a skilled maintainer force and has made some progress in enhancing skill levels. Efforts include employing shifts of junior technicians for dedicated tasks to build their practical experience, improving NCO training, and imbuing NCOs with more responsibility. However, it is difficult to overcome the large differentiation in skill level between junior and skilled maintainers, particularly when the organizational culture does not prioritize innovation and knowledge-sharing. For example, when junior technicians are siloed into shifts focused on completing basic tasks, they have fewer opportunities to obtain ad hoc on-the-job training opportunities with the elite "hero maintainers" (so-described by PLA propaganda).

Some propaganda articles attempt to instill pride in the profession—and perhaps attract new recruits—by lauding maintenance heroes as "part of the team" just like pilots or other operators.

---

[20] Fleming et al., 2023.

[21] This research leverages Chinese language articles published between 2018 and 2022 in the *PLA Daily*, professional military education texts, a wider array of PLA maintenance-focused articles published in the *PLA Daily* from 2008 to 2022, PLA academic research, other Chinese state media and military sources (such as the *People's Daily*), PLA service and theater command news sites, provincial and regional news outlets, select nonauthoritative Chinese media sources, and key English-language secondary sources.

[22] Marcus Clay and Dennis J. Blasko, "People Win Wars: The PLA Enlisted Force, and Other Related Matters," *War on the Rocks*, July 31, 2020.

These articles nevertheless reveal hardships faced by senior maintainers, noting that PLAAF senior maintainers can go over a year without returning home to their families or describing a PLAA senior maintainer working until 3:00 in the morning.[23] PLA sources also reveal a lack of institutionalized approaches for skilled maintainers to pass on their accumulated knowledge to the rest of the unit prior to retirement.[24] We also found few examples of sharing best practices and lessons learned across similar units, beyond short-term "internships" by maintenance instructors from the Air Force Engineering University's NCO School to some field units.[25]

Second, a lack of pride in the maintenance profession affects attention to detail and independent judgment. Soldiers and officers appear to take an outdated view of support services, believing that support services are in some respects lesser than those specialties that conduct more-traditional warfighting responsibilities, such as pilots. A lack of pride in the profession also leads to a tendency for maintainers to lack attention to detail. Articles that detail quality assurance processes include examples of procedure-cutting practices that affect the quality of maintenance and jeopardize safety. Related dynamics include risk aversion, which leads maintainers to fear innovation- and experimentation-related failures, and pressures to comply with a zero-defect mentality, which create incentives to maintain the appearance of perfect records and resent process reforms that strengthen quality assurance.[26] This dynamic is not unique to the PLA, but in the U.S. armed forces, for example, certain logistics specialties are prized as benefiting service members by providing options for their post-military service careers. U.S. Navy carrier aviation flight operations also provide an example of U.S. forces operating at a low error rate while eschewing a zero-defect mentality.[27]

Third, the PLA has prioritized improving its self-identified maintenance weaknesses by instituting process reforms and compensating for low skill levels by developing technological solutions. These solutions mitigate some gaps in PLA maintenance proficiency. Process reforms, such as transitioning from organizing maintenance repair teams by weapon systems (e.g.,

---

[23] Li Weixin [李伟欣], Wei Yumeng [卫雨檬], Shu Xiquan [殳细泉], and Wu Lihua [吴李华], "'This Is My Fighter Jet!' Salute! Air Force Mechanic" ["这是 我的战机!" 致敬!空军机务兵], *PLA Daily* [解放军报], January 7, 2021; Liu Hanbao [刘汉宝], "Approaching 4 Soldiers 'Craftsmen' in Equipment Maintenance Posts: Dedication and Perseverance in the Rear Area of the Battlefield" [走近 4 名装备维修岗位的士兵"工匠":战场后方的执着与坚守], *PLA Daily*, April 12, 2022.

[24] See, for example, Jia Baohua [贾保华], Yang Lei [杨磊], and Xiang Shuangxi [相双喜], "Compiling an 'Encyclopedia' for Equipment Maintenance" [为装备维修编制"百科全书"], *PLA Daily*, April 5, 2018.

[25] Yang Fan [杨帆] and Li Jianwen [李建文], "Instructors from the Air Force Engineering University Aviation Non-Commissioned Officer School Arrive with the Troops to Follow the Flight Practice" [空军工程大学航空机务士官学校教员到部队跟飞实践], *PLA Daily*, August 30, 2020; Zhang Yuqing [张玉清], Zhou Zhengxin [周正信], and Yang Fan [杨帆], "Air Force Engineering University Aviation Non-Commissioned Officer School Organizes Teachers to Go Fly with the Troops" [空军工程大学航空机务士官学校组织教员赴部队跟飞 学习], Xinhua, August 15, 2019.

[26] Xu Xu [徐徐], Sun Qilong [孙启龙], and Xing Zhe [邢哲], "From One Person to a Team, Explore the 'Correct Way to Open' Equipment Maintenance Support" [从一个人到一个团队，探寻装备维修保障的"正确打开方式"], *PLA Daily*, May 28, 2021; "As the 'Gatekeeper' of Aircraft Safety, He Is Willing to Be the 'Bad Guy'" [作为机务安全"把关人"，他甘当"坏人"], *China Military Online* [中国军网], March 30, 2018.

[27] See Fleming et al., 2023, pp. 49–51.

vehicles) to organizing repair teams by objects (e.g., chassis) in the PLAA and separating maintenance and inspection teams in the PLAAF, are the most likely to improve PLA performance. As another example, PLAAF maintenance support teams at unit repair shops delineate simpler tasks, such as clearing and testing aircraft to the flight line, while a workshop with the most-skilled technicians conducts technically challenging maintenance tasks. One Eastern Theater Command Air Force air brigade using this approach reported reducing engine inspection and maintenance times by 130 minutes per engine.[28] However, the fast-paced evolution of Chinese weapon system technology might outpace some technology-based compensations. Articles may discuss the PLAA transitioning from paper to digital "medical records" for equipment or the PLAAF developing network-based solutions, but some sources still highlight maintainers' use of personal handwritten logbooks as sources of documentation for previous repairs.[29] Ad hoc practices may also be linked to the rapid rate of modernization, with one PLAA repair unit being responsible for maintaining over 40 vehicle types "spanning more than 60 years" of service.[30]

Fourth, reforms aimed at maintenance standardization are not institutionalized—both in terms of knowledge-sharing within and across units as previously mentioned and because of top-down dictation of maintenance procedures—which creates inefficiencies in the system and increases maintenance times. Multiple articles reference that the brigade party committee has the authority to institute changes to the maintenance procedures. Approval for certain maintenance fixes is retained further up the chain of command, adding time to the process and centralizing decisionmaking further up in the organization. Some maintainers, not trusting the allocation system, purchase materials required for maintenance tasks themselves.[31]

Implications for Counterintervention

Building on the previous sections, this section draws out implications for the PLA's maintenance performance during high-end conflict. Of note, the PLA may pursue counterintervention operations in conjunction with, or isolated from, other efforts, such as conducting a large-scale invasion of Taiwan. Efforts to expand the PLA's global presence are different in that they primarily occur in peacetime, for reasons described below. The following sections highlight PLA maintenance approaches that are especially relevant for counterintervention, as well as dynamics likely to affect its performance during a range of high-end scenarios.

High-end PLA operations, such as counterintervention activities, would levy significant requirements across the PLA maintenance and logistics apparatus, even at short distances from the mainland. Kinetic operations in support of counterintervention could leverage an anti-ship

[28] Kenneth W. Allen and Cristina L. Garafola, *70 Years of the PLA Air Force,* China Aerospace Studies Institute, April 12, 2021, p. 270.

[29] On logbooks, see Jia, Yang, and Xiang, 2018.

[30] Liu, 2022.

[31] Li, Wei, Shu, and Wu, 2021.

cruise missile from a modular multiple rocket launcher (PLAA),[32] out-of-area surface or subsurface naval operations (PLA Navy), long-range air packages (PLAAF), and cruise or ballistic missile strikes (PLA Rocket Force).

In all four examples, PLA operations to interdict and engage opposing forces may need to transition from initial "surge" activities to longer-term "sustained" field operations, patrols, or air sorties. Maintainers would be crucial for both phases, performing routine diagnostic checks prior to operations and conducting postmission maintenance, performing emergency maintenance on damaged platforms, and troubleshooting equipment failures.[33] Whether the PLA can sustain new types of maintenance challenges at scale—such as for increasingly-advanced platforms like the low-observable J-20 or for maritime and air assets operating from punishing locations like China's artificial islands in the South China Sea—could result in operational effects, such as lower platform availability rates, reduced sortie generation, or degraded platform performance. More broadly, approaches to such activities as resupply, the location of expected maintenance activities, and the extent to which maintenance trades near-term for long-term benefits (e.g., cannibalizing for parts versus swapping or repairing components) could provide indications as to the expected intensity and duration of wartime operations.

Although the Joint Logistics Support Force (JLSF) could play a key role in supporting broader logistics efforts during a major contingency, such as provisioning common-use food, fuel, and ammunition stores, it would likely have a limited role regarding maintenance.[34] A review of the position of maintenance organizations and units within the PLA's broader organizational structure and descriptions of unit-level maintenance activities indicates that most maintenance activities remain service-specific functions that are separate from the JLSF's activities.[35]

Maintenance dynamics that could differ for a large-scale invasion of Taiwan could include maintenance activities to support a large volume of ships (both naval and civilian), aircraft, and other platforms to transport and protect PLA ground forces crossing the Taiwan Strait as part of the joint island landing campaign. Recent research has detailed cross-strait logistics and mobilization needs, such as the leveraging of civilian maritime assets for cross-strait operations.[36] Although a portion of the PLA's logistics needs are intended to be supported by the

---

[32] On the PLAA system, see Joshua Arostegui, *The PCH191 Modular Long-Range Rocket Launcher: Reshaping the PLA Army's Role in a Cross-Strait Campaign*, China Maritime Studies Institute, November 2023.

[33] For specific examples, see Fleming et al., 2023, pp. 29–31.

[34] On the JLSF, see Joel Wuthnow, "Joint Logistic Force Support to Theater Commands," in George R. Shatzer and Roger D. Cliff, eds., *PLA Logistics and Sustainment: PLA Conference 2022*, US Army War College Press, 2023; Joel Wuthnow, "A New Era for Chinese Military Logistics," *Asian Security*, Vol. 17, No. 3, September– December 2021; and Luce and Richter, 2019. Wuthnow (2023) notes that continued reforms to the JLSF could alter its role and includes PLA analyst discussion of other potential reform options for PLA joint logistics.

[35] For more discussion, see Fleming et al., 2023, pp. 27, 36–37.

[36] On cross–Taiwan Strait logistics and mobilization, see Chung Chieh and Andrew N. D. Yang, "Crossing the Strait: Recent Trends in PLA 'Strategic Delivery' Capabilities," in Joel Wuthnow, Arthur Ding, Phillip C. Saunders, Andrew Scobell, and Andrew N. D. Yang, eds., *The PLA Beyond Borders: Chinese Military Operations in Regional and Global Context*, National Defense University Press, 2021; Chieh Chung, "PLA Logistics and Mobilization

national defense mobilization system, given the service-specific and often platform-specific nature of maintenance, PLA maintenance needs are likely specialized enough that this support will be modest or even minimal.[37]

Requirements for maintenance and other logistics support for the PLA's expanding global presence operations would be fundamentally different, given the PLA's much greater emphasis on improving capabilities for its near-periphery—and therefore relatively low overall requirements and capabilities for maintenance and other logistics support abroad.[38] Research on PLA expeditionary overseas operations has identified a host of challenges that the PLA has yet to overcome in peacetime, including for maintenance and logistics.[39] Government and military coordination to send PLA forces overseas appears to remain ad hoc at some level.[40] Additionally,

---

Capacity in a Taiwan Invasion," in Joel Wuthnow, Derek Grossman, Phillip C. Saunders, Andrew Scobell, and Andrew N. D. Yang, eds., *Crossing the Strait: China's Military Prepares for War with Taiwan*, National Defense University Press, 2022; J. Michael Dahm, *Chinese Ferry Tales: The PLA's Use of Civilian Shipping in Support of Over-the-Shore Logistics*, China Maritime Studies Institute, November 2021; Lonnie D. Henley, *Civilian Shipping and Maritime Militia: The Logistics Backbone of a Taiwan Invasion*, China Maritime Studies Institute, May 2022; Kevin McCauley, *Logistics Support for a Cross-Strait Invasion: The View from Beijing*, China Maritime Studies Institute, July 2022; J. Michael Dahm, *More Chinese Ferry Tales: China's Use of Civilian Shipping in Military Activities, 2021–2022*, China Maritime Studies Institute, January 2023; J. Michael Dahm, *Beyond Chinese Ferry Tales: The Rise of Deck Cargo Ships in China's Military Activities, 2023*, China Maritime Studies Institute, February 2024.

[37] For the limited discussion of maintenance support in the national defense mobilization system, see Erin Richter and Benjamin Rosen, "China's National Defense Mobilization System: Foundation for Military Logistics," in Shatzer and Cliff, 2023, p. 47.

[38] For two examples of this prioritization, the PLA's most-recent reforms in 2015–2016 both reaffirmed and strengthened the orientation of the PLA's operational forces into five regionally focused Theater Commands, which DoD notes "are organized based on the PRC's perception of peripheral threats." Each conventional PLA service likewise has a "strategic task" to participate in the "primary strategic direction," which Western analysts typically take to refer to a Taiwan contingency, as well as supporting potential contingencies involving a range of U.S. allies and partners. A 2022 RAND study found that the PLA's pursuit of overseas basing and access supports senior leaders' domestic political and economic objectives that are oriented around peacetime economic development (Cristina L. Garafola, Timothy R. Heath, Christian Curriden, Meagan L. Smith, Derek Grossman, Nathan Chandler, and Stephen Watts, *The People's Liberation Army's Search for Overseas Basing and Access: A Framework to Assess Potential Host Nations*, RAND Corporation, RR-A1496-2, 2022, https://www.rand.org/pubs/research_reports/RRA1496-2.html). On prioritization, see Office of the Secretary of Defense, 2023, p. ix; and Shou Xiaosong, [寿晓松], ed., Science of Military Strategy [战略学], Academy of Military Science Press [军事科学院], 2013, pp. 199, 209, 221.

[39] On the expeditionary PLA, see Kristen Gunness, *China's Overseas Military Diplomacy and Implications for U.S. Interests,* RAND Corporation, CT-A2571-1, 2023, https://www.rand.org/pubs/testimonies/CTA2571-1.html; Garafola et al., 2022; Isaac B. Kardon, "China's Overseas Bases, Places, and Far Seas Logistics," and other chapters in Joel Wuthnow, Arthur S. Ding, Phillip C. Saunders, Andrew Scobell, and Andrew N.D. Yang, eds., *The PLA Beyond Borders: Chinese Military Operations in Regional and Global Context*, National Defense University Press, 2021; Joel Wuthnow, Phillip C. Saunders, and Ian Burns McCaslin, "PLA Overseas Operations in 2035: Inching Toward a Global Combat Capability," *Strategic Forum*, No. 309, National Defense University Press, May 2021; Wuthnow, 2021; Kristen Gunness, "The Dawn of an Expeditionary PLA?" in Nadège Rolland, ed., *Securing the Belt and Road Initiative: China's Evolving Military Engagement Along the Silk Road*, National Bureau of Asian Research, September 2019*;* Luce and Richter, 2019; Cristina L. Garafola and Timothy R. Heath, *The Chinese Air Force's First Steps Toward Becoming an Expeditionary Air Force*, RAND Corporation, RR-2056-AF, 2017, https://www.rand.org/pubs/research_reports/RR2056.html.

[40] Garafola et al., 2022, p. 53.

the JLSF does not operate overseas, and whether it would eventually fulfill this role is not known.[41] A 2022 RAND report analyzing historical case studies of competitors expanding their overseas basing additionally noted that many past competitors benefited from compatible military standards with their hosts, such as spare parts. Although China's arms sales and transfers are growing, and it may share some Russian-derivative equipment with potential future hosts, the PLA may not be able to take advantage of significant system-level or parts compatibility to support overseas maintenance needs.[42]

Overall, the PLA's hybrid approach of compensation and improvement to address maintenance weaknesses and bolster strengths would likely also apply to a high-end contingency. Areas in which the PLA attempts to compensate for deficiencies include maintainer skill levels, lack of innovation, and poor knowledge-sharing. All three areas could see significant stress and strain during high-end combat. Likewise, evolving technological advances in military equipment could outpace the PLA's maintenance capabilities, and a compensating approach might be tested under those conditions. When new systems were fielded to one PLAA unit, for example, the maintainers lacked sufficient time to learn the maintenance of those systems before the equipment was exercised.[43] In other areas, the PLA's approaches to maintenance improvements have led to gains in efficiency, such as process reforms and military-civil fusion.[44] These improvements can lead to better operational outcomes, such as a reduced number of required maintainers, increased sortie generation, and higher levels of equipment availability for training and exercises.

One last factor to consider is geography. For operations within the first island chain, China's maintenance and logistics apparatus potentially benefits from leveraging in-garrison or other prepared infrastructure likely affected by the transition from peacetime to wartime but still fundamentally local to the fight. Hong Xuezhi, the logistics department head for the Chinese military during the Korean War, noted some comparative strengths in China's logistics system that remain relevant for a modern conflict in China's near-periphery—mainly the significant disparity in length of supply lines for U.S. and other United Nations Command forces compared with the Chinese military benefiting from close rear areas.[45]

---

[41] Wuthnow, 2021; Luce and Richter, 2019, pp. 257–292.

[42] Garafola et al., 2022, p. 52.

[43] Lei Zhaoqiang [雷兆强], Wen Suyi [闻苏轶], and Li Peijin [李沛锦], "How to Face the New Challenges Brought by the New Position? This 'Ace Maintenance Worker' Gives the Answer" [如何面对新岗位带来的新挑战?这名"王牌维修工"给出答案], *PLA Daily*, April 9, 2021.

[44] There is some evidence that top-down military-civil fusion-related reforms have sought to shape maintenance practices. Also, there may be service-specific dynamics. For example, in 2009 the PLAN established its first integrated civil-military vessel equipment center, which has enhanced equipment support to vessels throughout South China. On top-down initiatives, see Fleming et al., 2023, pp. 79–81; on the PLAN, see Susan M. Puska, "Taming the Hydra: Trends in China's Military Logistics Since 2000," 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, 2010.

[45] Hong Xuezhi, "The CPVF's Combat and Logistics," in Xiaobing Li, Allan R. Millett, and Bin Yu, eds., *Mao's Generals Remember Korea*, University Press of Kansas, 2001, p. 116.

For many PLA operations that reach out to the second or even third island chain, maintenance or other logistics dynamics may change because of support requirements for different types of, or potentially smaller quantities of, specialized units conducting high-intensity operations. However, most key sustainment activities will continue to take place "at home" once the bomber has landed or the transporter-erector-launcher has fired its missile. Key exceptions might be Navy surface or submarine assets, which require at-sea logistics support that is more challenging to provide far from Chinese shores during wartime.[46]

Implications and Recommendations for U.S. Policymakers

Although less quantifiable than some aspects of the U.S.-China military balance, logistics and maintenance are the lifeblood of military operations and will be a crucial factor in determining the success or failure of the PLA, as well as the U.S. armed forces and like-minded U.S. partners, in a high-end conflict. Logistics and maintenance can set conditions for operational success at a conflict's outset, but their importance is especially pronounced in a protracted war, when the ability to sustain one's remaining military assets vis-à-vis an opponent can potentially change the course of the war. In this light, the U.S. government and broader policy community's limited understanding of PLA logistics and maintenance capabilities represents a critical gap in the ability to assess PLA wartime performance. Following from recent, foundational research that has begun to fill this gap,[47] logistics and maintenance may be an area of U.S. advantage over the PLA. Congress and DoD have an opportunity to ensure that this balance remains favorable.

As illuminated by the Russian military's initial failures during its invasion of Ukraine, a military's approach to maintenance may prove insightful regarding the strengths and weaknesses of its overall logistics capability and the influence of maintenance and logistics on its broader warfighting capability.[48] Three specific themes within the PLA's approach to maintenance are worth highlighting for their broader implications. First, there are indications that PLA operators and junior-level maintainers do not have the knowledge, skills, and abilities to perform some routine maintenance functions, meaning that senior maintainers shoulder a heavier maintenance burden. This skill gap could impede operators' ability to use systems to their full capability and is of particular interest as the PLA continues to modernize its weapon systems.

---

[46] Justin Boggess and Travis Dolney, "PLA Navy At-Sea Sustainment Capabilities," in Shatzer and Cliff, 2023, pp. 128–130. Boggess and Dolney note that there is considerable uncertainty over how the PLAN would conduct at-sea logistics during wartime.

[47] Shatzer and Cliff, 2023; Fleming et al., 2023; research on the JLSF cited throughout this testimony; maritime-focused research by the China Maritime Studies Institute; Wuthnow et al., eds., 2021.

[48] Marta Kepe, *Logistics and Sustainment in the Russian Armed Forces,* RAND Corporation, RR-A2523-1, 2023, https://www.rand.org/pubs/research_reports/RRA2523-1.html.

Second, maintenance shapes a military's pattern of adaptation.[49] When maintenance proficiency is low, an organization can either compensate for deficiencies through operational design, or it can attempt to improve its capabilities. Within the PLA, the system is not always responsive when addressing the needs of maintainers, as demonstrated by such deficiencies as the lack of appropriate maintenance materials and manuals that do not adequately address maintenance requirements. To overcome these deficiencies, maintainers compensate through individual efforts. However, these individual solutions do not appear to feed into systemic improvement across the organization.

Third, maintenance practices can also shed light on how a military might plan to operate and provide insight into plans or assumptions regarding the duration of operations. These plans are not known for the PLA, but the stovepiped nature of the PLA's maintenance practices indicates that cross-unit interoperability could be constrained. Stovepiping could slow the PLA's tempo in operations, particularly in sustaining high-tempo operations in a stressing contingency. However, some of these constraints could be overcome by the PLA's ability to leverage the civilian sector, which would provide more flexibility.

Given these findings, U.S. policymakers might consider the following options:

- **Strengthen data protections and security for U.S. logistics and maintenance data while encouraging allies and partners to do the same.** China is both a keen observer of other militaries' logistics and maintenance performance and a consumer of others' data, whether acquired via licit or illicit means, particularly at the platform level. Many U.S. logistics data systems reside on unsecure systems or with limited protections, making them vulnerable to exfiltration. DoD could consider implementing stronger data protection measures with the aim of slowing or denying the PLA's ability to obtain U.S. logistics data. Congress could also consider requesting risk assessments by DoD to inform improved data protection standards. The executive branch could work with allies and partners to strengthen their protections as well.
- **Engage with U.S. allies and partners to curtail military logistics exchanges or relevant information-sharing with the PLA**. While logistics-related exchanges may appear to be a low-risk engagement with the PLA compared with combined exercises involving advanced weapon systems and platforms, sharing logistics best practices may improve PLA capabilities and erode potential U.S. and allied military advantages. DoD could consider conducting risk assessments for such activities. Congress could also stipulate restrictions on U.S. arms sales or other forms of security cooperation with countries that continue to engage in logistics exchanges or exercises with the PLA.
- **Evaluate the utility of potential export controls on logistics systems.** Although much of the current dialogue surrounding export controls and data protection focuses on advanced components in key sectors and high-profile software applications, controlling access to lower-profile logistics systems could complicate the PLA's modernization efforts, especially given that the PLA already recognizes shortcomings in its logistics capabilities and is working to address them. The Department of Commerce's Bureau of

[49] James S. Powell, *Taking a Look Under the Hood: The October War and What Maintenance Approaches Reveal About Military Operations*, Institute of Land Warfare, Association of the United States Army, August 2019, p. 30.

Industry and Security could consider export controls to limit the sale of potential dual-use software or other enablers for military logistics. Congress could also consider mandating a report on dual-use military-civil fusion technology relevant for PLA logistics and maintenance capabilities, given that many military logistics subfunctions, such as supply and transportation, may benefit from commercial applications but remain understudied.

- **Fund additional research on China's military logistics capabilities.** Fundamentally, PLA logistics remains an understudied topic, with few pieces of research to date on the PLA's capabilities within various logistics subfunctions in a joint or service-specific context.
  - Congress could consider mandating studies on the PLA's capabilities relevant for each logistics subfunction, including those listed in the Joint Publication 4.0 definition of logistics, as well as subfunctions listed in the PLA's definition.[50]
  - Service-specific analyses are currently a gap, particularly for the logistics and maintenance capabilities of the PLA Navy, Rocket Force, and branches within the PLAA and PLAAF important for counterintervention, such as surface-to-air missiles.
  - New research could also explore the PLA's approach to logistics success factors beyond the maintenance-specific factors highlighted in this testimony, including the other factors listed in Table A.1 of the appendix. This approach may illuminate other attributes of the PLA's organizational culture that have implications for its ability to wage high-end conflict.
  - Research on the interaction of multiple logistics subfunctions, such as maintenance and supply or transportation and health services, would additionally help build a picture of PLA strengths and weaknesses relevant for high-end contingencies.
  - Initial analysis of weapon systems that are fielded to the PLA and exported abroad showed maintenance issues affecting customers. These issues include unavailable repair parts because of insufficient supply chains, with the parts shortage affecting system availability.[51] Although it is unclear whether the PLA faces these same challenges at home, analyzing the increasing Chinese exports of the systems that the PLA fields could provide additional insights regarding maintenance and logistics going forward.

[50] The seven core subfunctions for the U.S. armed forces are "deployment and distribution, supply, maintenance, logistics services, operational contract support, engineering, and joint health services" (Joint Chiefs of Staff, 2023, p. xi). The PLA's definition of *military logistics* (军事后勤) focuses on "activities carried out by the state and armed forces to support the needs of military struggle and military force building," specifically in the areas of "finance, quartermaster, materiel, fuel, medical, transportation, infrastructure and barracks, and others" (Academy of Military Science All-Military Military Terminology Committee [全军军事术语管理委员会，军事科学院], *Chinese People's Liberation Army Military Terminology* [中国人民解放军军语], Academy of Military Science Publishing House [军事科学出版社], 2011, p. 475). The term for "force building" is literally "construction" (建设) but in the abstract sense.

[51] Fleming et al., 2023, pp. 84–86.

Appendix. Logistics Success Factors

This appendix lists the 11 logistics success factors identified in recent RAND research on the PLA's approach to maintenance management.[52] Table A.1 lists each factor, provides a detailed description of it, and offers examples of success or failure related to the factor.

Table A.1. Factors Present in Successful Logistics Organizational Cultures

Factor in Success	Description of Factor and Results	Examples of Operational or Strategic Success or Failure
Culture of learning	• Continual analysis of logistics procedures • Investment in new technologies or processes during peacetime • Application of lessons learned	• U.S. Army's Center for Army Lessons Learned, Haiti, 1994 • Chinese People's Volunteer Force • Korean War, 1950–1953
Agility leveraging the civilian sector	• Ability to leverage civilian infrastructure • Knowledge-sharing between civilian and military organizations • Interoperability between civilian and military sectors	• The U.S. Department of Defense's (DoD's) application of the Defense Production Act for Mine-Resistant Ambush-Protected vehicles, 2000s • Vietnam War, Viet Cong and North Vietnamese Army forces' integration of civilians into a military logistics system, 1955–1975
Routinization and prioritization of maintenance functions	• Maintenance of equipment on a regular basis • Allocation of sufficient time to perform essential equipment maintenance • Documentation and practice of maintenance triage • Processes to ensure that inspections and maintenance are performed to standard	• Russian invasion of Ukraine, 2022 • Flight operations on U.S. Navy carriers, 1980s
Latitude for independent decisionmaking by logisticians at the unit level	• Reliance on logisticians to exercise independence and judgment in carrying out their duties rather than following strict rules • System of maintenance management that reflects the needs of performing organizations as opposed to the objectives of the controlling agencies	• Flight operations on U.S. Navy carriers, 1980s
Cradle-to-grave view of sustainment	• Life-cycle management (LCM) approach to acquisition that incorporates logistics from the initial design of a system • Level of collaboration between acquisition and sustainment branches	• DoD acquisition reforms, 1980s–1990s • Defense LCM in the PLA's General Armament Department (GAD), 2010s

[52] Fleming et al., 2023.

Factor in Success	Description of Factor and Results	Examples of Operational or Strategic Success or Failure
Ability to recruit and retain quality personnel	• Provision of benefits and incentives that affect morale and retention to military personnel, such as adequate housing, food, and wages • Resolution of issues related to unequal treatment of different groups • Prioritization of training and education in a given field or specialty, such as training in specific maintenance tasks	• U.S. transition to an all-volunteer force, 1970s
Integration of logistics personnel into operational units	• Colocation of logistics personnel with operational units • Use of military exercises that include both operations and support elements working together in realistic scenarios • Integration and coordination of logistics plans with strategic plans	• United States in the Pacific War, 1941–1945 • World War I, Mobile Ordnance Repair Shops, 1917–1918
Unified chain of command	• Unified command structure with a clear chain of command • Clear lines of communication • Span of control	• U.S. military information operations, 2010s
Appropriate balance between competing priorities in a constrained environment	• Appropriately balanced cost, quality, and timeliness factors related to maintenance and supply • No prioritization of cost, quality, or timeliness factors at the expense of each other	• Flight operations on U.S. Navy carriers, 1980s
Low prevalence of corruption	• Lack of corruption that diverts scarce resources and has negative effects on operational performance	• Russian invasion of Ukraine, 2022
Balanced emphasis between support and combat elements	• Sufficient support to combat soldier ratio • Protection provided to support units	• Russian invasion of Ukraine, 2022 • United States in the Pacific War, 1941–1945

SOURCE: Reproduced from Fleming et al., 2023, Table 3.1.

COMMISSIONER SCHRIVER: Great. Thank you so much. We will proceed with questions in alphabetical order. So we will begin with the Commission chairperson, Ms. Cleveland.

CHAIRMAN CLEVELAND: Who is wholly unqualified to address this issue. But I -- I think I really appreciated, Ms. Garafola, your -- the detail because I do understand logistics and -- and maintenance. And I think the way you've cast it, particularly in the context of the possibility of human failure in -- in this process, it really crystallizes all of the issues for me.

What I'd like each of you to address, if you could, is -- you've talked about logistics and maintenance. Mr. Shugart, you talked about larger systems and capabilities. And, Mr. Dahm, you -- you expertly captured the elements of -- of C4ISR and electronic warfare. In my perhaps oversimplified view of the world, there are things and people in training, and then there's decision-making. And what I'm curious is how you see the nexus of the two in each of the areas that you've just defined.

I think, Mr. Shugart, you said that -- that we need to undermine China's ability to strike, deny them access to easy targets, build resilience in the command and communication structure. When you say undermine the ability to strike, what I'm curious in each of these areas is, what does that look like for the -- somebody who's going to make the decision? Because you're each talking about preparing in areas -- visibly preparing for war. How is that having an impact on decision-makers in Beijing as to whether they use the tools, the -- the capabilities that they're developing? Mr. Shugart, you want to start?

MR. SHUGART: Yes. Thank you, Chairman Cleveland. So when I -- if -- if -- if the question is, what are the things that we can do to undermine their -- what -- whether what they think they're going to do is going to work or not -- so what I -- what I talk about in my written testimony is things that we shouldn't count on necessarily if -- once the shooting starts. So I say, for example, we shouldn't count on any fixed objects in the Western Pacific that are difficult to replace.

So if you have a fixed -- and maybe out -- even out to Hawaii, quite frankly, before long, since the last -- the last China military power report talked about them developing conventional intercontinental range weapons. So there you go. So if you have a command center, if you have a -- if you have a communication center, if you have ships that are at the pier, if you have aircraft that are on the ramp, don't count on using them after about 30 minutes into the war, if -- assuming that's how they decide to start things.

CHAIRMAN CLEVELAND: But it's that assuming they decide part that I'm really curious about.

MR. SHUGART: That is one of the hardest questions. I mean -- because on the one hand, there -- obviously, there's clear downsides to them picking a -- picking a fight with the United States and picking it in a manner that echoes Pearl Harbor, for example, and mobilizes American opinion. However, their doctrine talks about striking preemptively. I mean, it's all throughout it. Like --

CHAIRMAN CLEVELAND: Okay.

MR. SHUGART: -- counter-intervention we talk about a lot, but they mention suddenness and rapidness and seizing the initiative and striking by surprise way more than they talk about counter-intervention. So they -- they -- it's all through their doctrine. And then the

force that they have built, it's difficult to imagine putting the resources in as they have without -- that they haven't built something to do that.

Look at 1,000 medium-range ballistic missiles, weapons that are clearly first-strike weapons. They're much more effective if the adversary is not dispersed and on the airfields and at the piers. 1,000 weapons, weapons whose range are -- they're too long to use on Taiwan. It's -- or it's -- you know, Taiwan's too close, but too short of a range to hit Guam. What is it for? India? I don't think so, right? I think it's for Japan. 1,000 weapons.

So when I think about that, again, I think, don't rely on anything that -- that's fixed. I want to think about how do we deal with that and how we maintain command control and -- and all that. I think about nuclear command and control. And I -- I did that for a while back in my days in uniform.

And nuclear command and control, you don't count on anything that's fixed sticking around. That's why we have mobile command centers or we have the mobile, you know, aircraft that fly around and that sort of thing. So -- so that -- that's what I -- I worry about, and one -- the kind of thing I think we should do to -- to build that resilience and not tempt them quite so much, as we are right now, to -- to take that first shot.

CHAIRMAN CLEVELAND: Okay. So temptation is the issue, maybe, in -- in summarizing your testimony. Mr. Dahm. Thank you very much. Appreciate it.

MR. DAHM: Yeah. No, I would -- I would simply -- I would simply observe that, you know, the -- the human factors that -- that were -- were described are -- are probably the most understudied element of the PLA. We -- we spent a lot of time -- I mean, even within the intelligence community where I used to reside, boy, I got 1,000 guys looking at things that go beep and squeak and blow up.

CHAIRMAN CLEVELAND: Right.

MR. DAHM: But you know, tell me about the day in the life of a PLA maintainer, I don't know. So -- so I think we could definitely focus more on that. I will say, you know, specific to my area of testimony in C4ISR, the amount of data that is flowing into the Chinese system is simply overwhelming. And so we're not -- I don't think we're really going to address it here this morning, but I know there's a lot of interest in intelligentized warfare and artificial intelligence.

And I think the PLA is looking to artificial intelligence with a lot of promise, not necessarily for killer robots, but to process the large volumes of data that the C4ISR architecture is ingesting to help PLA decision-makers make those decisions and achieve that information dominance early in a conflict.

CHAIRMAN CLEVELAND: I'm going to leave to Commissioner Helberg the issue of how AI is helping that. But -- but I do feel the training, the skill level of the people that are on the receiving end of this is critically important. And we did some contracted research on the quality of the PLA, so -- which keeps buzzing in the back of my mind. Ms. Garafola, before my time is up.

MS. GARAFOLA: Very briefly on this dichotomy between people, human talent, and equipment. I think there's kind of two areas of concern that we see the PLA talking about.

One is in their professional military education texts, where they say, you know, our -- the rate of our equipment modernization is very significant, but our ability to -- to maintain these equipment with these ever higher levels of requirements -- you know, the equipment is more sophisticated and so on -- is a concern. And that's where we need to improve maintenance. And that particularly comes to the fore when they're worried about the proficiency of the maintainers themselves.

The second angle, of course, would be corruption. We've seen, you know, very recent high-profile purges within the equipment development department. And that affects maintenance as well, right? If the maintenance designs embedded into equipment are perhaps less than ideal, there can also be challenges going forward. So I think those are two kind of seam areas.

COMMISSIONER SCHRIVER: Commissioner Friedberg.

COMMISSIONER FRIEDBERG: Thank you very much. Thanks to all of our witnesses for their very interesting statements. Mr. Shugart, I wanted to start with you. You -- one of your recommendations is that we should be visibly preparing for a protracted war. Is this something that you see discussed in Chinese open-source literature? And if so, what -- what is being said about it? And aside from whether it's being discussed or not, would you assess that there's evidence of Chinese preparations for protracted conflict? And what is that evidence?

MR. SHUGART: Thank you. Thank -- thank you, Commissioner Friedberg. So there actually is a specific mention of protracted war. It's -- and what's interesting to me is that it was is -- there's a excerpt that I'd actually never really noticed before I started doing the research for this hearing, where they -- specifically with respect to an intervention. And I forget which book it's in.

But in one of their documents, they talk about how, if there is an intervention, you have to be ready for protracted war in particular because a quick decision may be denied to you. And that makes sense, right? I mean, that -- that -- it -- absent the U.S. intervention, for example, for Taiwan, they may be able to seize the island relatively quickly. If we get involved, well, then our -- our source of strategic strength is, you know, 8,000 miles away, so much harder for them to finish that fight. So -- so there is -- there are very specific mentions of, in particular, if the U.S. gets involved, to be ready for -- for protracted conflict.

As to whether they are making the preparations for a protracted conflict, I -- I think this is where their military-civil fusion strategy really starts to come to the fore, where they can bring online just really incredible assets to -- to support an ongoing fight. When I think about, for example, naval combat, and I look at our shipyards -- I mean, so many of our -- the public shipyards that we used to -- to repair ships and build ships in World War II are now movie studios and craft breweries, and you know, they're -- they're just not in that business anymore.

All you need to do is to go on Google Earth and just scroll across the Shanghai waterfront. And the scale of the infrastructure they've built is just unbelievable, and they're clearly using it. I mean, you see -- I watch these Chinese ships go -- you know, warships going to the shipyards, and they get major upgrades and -- I mean, they're -- they're taking care of their stuff. And so I see no reason to see why they wouldn't be able to do that at this point at a greater scale in many ways than we are.

COMMISSIONER FRIEDBERG: Okay. Thank you. Further on that point, one of your recommendations here is conducting -- that we should conduct joint exercises with allies and partners focused on interdiction of Chinese maritime commerce in the event, presumably, of protracted conflict. Is this something that you see discussed, this possibility -- discussed in the open PLA literature, first? And secondly, to your knowledge, is this something that we are currently thinking about preparing for? And if not, why not?

MR. SHUGART: Well, there is clearly concern within -- I mean, the -- the term Malacca Dilemma is one that China themselves -- the Chinese themselves came up with. They're obviously very concerned about their ability to maintain their access to resources, and in particular energy, in the event of a conflict. So we know they're worried about that. And they're taking steps to address it.

I mean, we're struggling to get our first frigate built, you know, here in the -- in generations since the end of the Cold War. And they just -- they're rolling into their second Type 054Bs. You know, serial production, bam, here they come. Those are exactly the kind of ships you'd want to use, along with their corvettes, to escort vessels through places like that. So they're clearly concerned about it.

Are we preparing for it? I don't know of any evidence of us getting together with the Japanese and practicing, how do we actually do this? I mean, if you go -- go look at AIS from -- on marinetraffic.com and look at the Malacca Strait and see how many ships are going through there, and imagine trying to stop all of them and search them. I think, too, this is a harder problem than people think it is.

I always like to talk about the Ever Given, the ship that ran aground in the Suez Canal, right? Because that is the ship by which all other ships are compared now, by the way, I've noticed. That ship was Japanese built, Japanese owned, chartered by a Taiwanese company, with an -- with Indian officers on board, carrying trade from China to Europe. That's part of the Chinese trade. Are you going to sink that ship?

I mean, this is not an easy decision. And I think the question is much more complicated than people think it is, when they just say we'll just cut off their trade with China, which is why I'm saying we -- this can't be a pickup game. We need to practice this ahead of time if we think we're going to use that to deter them.

COMMISSIONER FRIEDBERG: But again, to your knowledge, this is not something that's currently being explored or actively planned for on our part?

MR. SHUGART: I don't know -- I have not seen any evidence in the open source world that -- that -- that we are practicing that with our allies.

COMMISSIONER FRIEDBERG: So there's something of an anomaly here. They seem -- the Chinese seem to be deeply concerned about this possibility, even though we don't seem to be doing very much actively to enhance that concern.

MR. SHUGART: I think maybe there's some -- a bit of assumption on our part that this would be easy to do, you know, we -- that we -- we can deal with -- you know, we exercise sanctions against place like -- places like Iraq and North Korea and interdict shipping that's going there or did in the past, at least for Iraq. I mean, China has more than 8,000 merchant ships, an entirely different game than anything we've dealt with in the past.

COMMISSIONER FRIEDBERG: Thank you.

COMMISSIONER SCHRIVER: Commissioner Glas.

COMMISSIONER GLAS: Thank you all so much for your expert testimony. It was -- it's apparent from all three of you that the Chinese are rapidly, in an unprecedented way, expanding their military -- their capabilities, their technologies. And this is a real threat to the United States and our allies.

Mr. Shugart, you talked about the rapid escalation of the Chinese shipbuilding industry to help with the rapid mobilization in the Indo-Pacific with other kinds of intelligent communi-- innovations, yet in the United States, as a result of unfair trade practices, we have let a lot of these technologies and innovations go offshore for shipbuilding and while the Chinese are continuing to rapidly grow in this particular sector.

The United States used to have more than 30 shipbuilding yards. As you had mentioned, a lot of those have been mothballed, and now we're down to a handful. And just in the most recent days, United Steelworker Union as well as other industrial unions filed a urgent trade

case, a 301, to help bolster our domestic industrial base and to stabilize it because of the unfair trade practices of the Chinese.

So I have two questions, and I'm going to direct them first to you, Mr. Shugart, but please -- please add to this other panelists. What do you think a weakened shipbuilding industry communicates to the Chinese about our capabilities and our posture? And then, do you support administration action on a 301 to help stabilize the shipbuilding industry here in the United States?

MR. SHUGART: Thank you, Commissioner Glas. So what do I think the Chinese see? I mean, I -- I think they see a -- a nation that doesn't take seriously the idea that -- that we want to stay the world's premier maritime power. Because to be clear, China is, by every measure but one, the world's premier maritime power now. They have the world's largest shipbuilding, the world's largest merchant marine. They recently -- if you count Hong Kong, and I certainly would, as part of China for this type of thing, they are the world's largest shipowners now. They recently passed the Greeks on that.

They are the world's largest fishing fleet. They have the world's largest maritime law enforcement. They're now numerically the world's largest navy. There is only one measure, sheer naval tonnage, by which we are still the world's premier maritime power. And they -- and in the last decade, they built 50 percent more tonnage than we do, so they're going to catch up there eventually.

So I think they probably see a nation that hasn't really thought about what it's -- what it's going to be like to not be -- to not have naval primacy anymore, which I think we should remember that naval primacy has been in the hands of one or another democratic market capitalist type nation for the last 500 years, other than -- it was the Dutch Republic, then it was the Royal Navy, and then it was the United States.

So I -- I think they probably see a nation that just isn't that serious about it anymore and -- and hasn't really considered the fact that once we lose it, it may be kind of like oxygen. You don't think about it until you don't have it anymore, and all of a sudden you can't do anything else but think about it.

As for the Section 301 action, I'm not an expert on trade relations and the -- the legalities of that. I do -- my sense is that much of the -- the complete collapse, essentially, of American shipbuilding since the 1980s is through the withdrawal of subsidies that were not withdrawn on the Chinese side, that they very much still continue to pursue in support of their state-owned enterprises. So clearly, it's not a level playing field. That's obvious enough to me as -- even as a military analyst. What exactly we do about it? I'm not sure, but we need to do something.

COMMISSIONER GLAS: Yes, Mr. Dahm?

MR. DAHM: I think there's also something to consider in terms of -- and again, I -- I don't want to just keep calling for further study of things. But I know in the work that I've done with the Naval War College and some of the research that they've looked at -- you know, there is a huge maintenance bill that comes with a ship. If any of you own personal watercraft, you might define it as a hole in the water into which you pour money. But after that initial procurement bill, you know, these ships are sitting in salt water for 20, sometimes 30 years, an aircraft carrier maybe 40 years.

And so the PLA and -- and China shipping, in general, has engaged in this huge growth curve, which 10, 15 years down the road is going to come with a huge maintenance curve. Now, you know, Captain Shugart has -- has talked about the -- the massive shipbuilding capabilities, which also translates into maintenance capabilities in -- in the PLA.

But I don't know that it's all coming up roses, especially given some of the comments that were just made about shortcomings in PLA maintenance. It is not a maintenance culture. They would probably just as soon build a new ship as to do depot-level maintenance on a ship halfway through its life cycle.

MS. GARAFOLA: Very briefly, I just wanted to add that we identified that there's -- with -- even within the PLA Navy, some shortage of key personnel with the right technical proficiency, like maintainers. So just to augment that discussion, you know, this is a area where the maintenance bill will only grow, and they already are having some struggles with personnel.

COMMISSIONER SCHRIVER: Commissioner Helberg.

COMMISSIONER HELBERG: Thank you, Co-Chair Schriver and Co-Chair Price, and thank you to our witnesses for your testimony today. My first question is for Ms. Garafola: can you help define what the Chinese government means by system of systems, with more specifics and concrete examples?

And separate but related, Beijing's Ministry of Industry and Information and Technology, which oversees the country's industrial sector, published a guideline last November detailing goals for China's -- to mass-develop advanced humanoid robots. We know that here in the United States, NVIDIA, Microsoft, OpenAI, Tesla, and Amazon are all working on the development of advanced humanoids. Are you aware of this effort? And what impact do you think this might have on how China thinks of its systems of systems approach to warfare?

MS. GARAFOLA: Thank you for the question. To the first part on defining systems of systems, what I would say with regard to this topic and the -- the broader topic of logistics and counter-intervention is that China approaches modern warfare in harnessing systems of capabilities, technologies, equipment, and personnel, to get back to the talent angle, in thinking about how it wants to wage war and how it wants to confront the opponent that -- against its -- which it is fighting.

So for example, we could talk about a logistics system. We could talk about a fire system. In a campaign context, we could talk about an amphibious or an island landing system, right? These are all areas and systems that might be relevant for counter-intervention activities.

With respect to the guideline you raised on mass development of robots, I haven't focused as much of my research on supply or -- or transportation. These might be the relevant areas, for example, of logistics that would carry over into military logistics where robotics would be hugely key.

So I'm -- I'm not tracking that specifics, but I -- I would say there's a -- certainly a question as to whether that type of capability is now transferring over, you know, via military-civil fusion to aspects of PLA military logistics and leveraging, you know, commercial advances and commercial innovation.

COMMISSIONER HELBERG: Thank you. My next question is about space. American information dominance relies heavily on assets and capabilities in space. And China and Russia have a history of militarizing space with offensive and defensive capabilities. Russia and China recently announced that they're working together to build a nuclear reactor on the moon by 2035, and Russia also reportedly may have plans to put a nuclear weapon in space.

Can one of you help me understand what the consequences would be to our capabilities if we lost our core assets in space, what impact that would have on our ability to conduct a regional counter-intervention in the Pacific and resupply our forces? And for practical purposes, for policymakers, is space the determinative warfighting domain that defines American power today, much like the mastery of the oceans defined British power in the 19th century?

MR. DAHM: These are difficult questions for U.S. -- for U.S. strategists. It is not -- it is not necessarily my -- my area of expertise, but I will -- I would respond by saying that the -- the PLA and Xi Jinping, in particular, has identified space as the strategic high ground.

You know, in my written testimony, you'll see that -- that -- that PLA C4ISR and -- and their efforts at information dominance is really foundationally built on terrestrial systems. A lot of attention has been focused on Chinese-emerging space capabilities, but that is like step two or three in their process. We need space, especially in a counter-intervention operation where we are coming at the problem from 8,000 miles away.

So -- so I -- I think -- I don't know that there's any U.S. military decision maker that would tell you that space is not a critical warfighting domain both now and in the future. There are other technologies that -- that are being explored in terms of -- of high-altitude systems or airborne layers that could compensate for the loss of space, but -- but the reality is that the space domain -- access to the space domain, I think, is something that the United States absolutely needs to preserve. And the PLA is keenly aware of that.

So you know, they're going to challenge us in space. They're going to challenge us with -- with capabilities. In some of my written testimony, I talked about, you know, there -- there are very few things about Chinese electronic warfare that are -- that are visible via open sources. But working with Mark Stokes when he was still at the 2049 Institute, I was able to help identify a number of PLA facilities that are involved in jamming communication satellites. Over the last four years, those facilities have grown by over 500 percent, a fivefold increase in the numbers of antennas and the capacity to search out signals in space and then deliver electronic effects against them. So, you know, it is clearly an area of focus for the PLA.

COMMISSIONER HELBERG: And I have one last question if we have time. This week, Admiral John Aquilino said that China is building its military nuclear arsenal on a scale not seen since World War II and that all signs suggest it's sticking to its ambition of being ready to invade Taiwan by 2027.

Some of you have alluded to the need to prepare stockpiles. Several other reports have noted in recent months that Beijing is shifting its economy to a war time footing by using its massive production infrastructure to meet the needs of a rapidly growing military.

Is China priming its internal production and manufacturing economy for war, and is it time for the U.S. government to invoke the Defense Production Act to start ramping up our own domestic factories from Tesla to Caterpillar towards weapon supplies? And if so -- and if not, at what point would it be appropriate to start preparing for our own production of weapons? What is the threshold, and what types of products and raw materials do you foresee as critical to stockpile to prepare for all scenarios?

MR. DAHM: Commissioner, I would -- I would say that we can have an academic discussion about whether the United States thinks it is in active conflict with China. I think both China and U.S. -- China and Russian leaders, rather, would -- would respond that they are in active conflict with the United States.

So to some of your questions about economics, which is not my area of expertise, I would observe that China is aware and sensitive to the actions that the United States government has taken against Russia in response to its military action in Ukraine. And they have looked at things like the CHIPS Act and -- and what has been done to hamstring Chinese technological development.

And so Xi Jinping has gone to organizations like Ministry of Industry and -- and Information Technology that you identified earlier and said we need our own -- you know, China needs its own capacity to build advanced computer chips to build the things, and they're going to need resources to do that.

So all of those resources that, you know, go into high technology endeavors are going to be places where we are going to be competing as China tries to develop its own domestic capability, you know, to -- to shore themselves up should a conflict occur and the sanctions hammer comes down on Beijing.

COMMISSIONER HELBERG: Thank you.

COMMISSIONER SCHRIVER: Did you want to add just very briefly? We're a little over time for this round, but.

MS. GARAFOLA: Very briefly to -- and to build on that, the PLA has clearly been studying some of the logistics related failures of, you know, Russia's advance into Ukraine, and -- and we see some of those lessons that may apply to more of that sustaining a longer-term conflict. So in terms of lessons learned that, you know, China -- Russia was able to mass force at the border and use rail to move supplies to the front.

But as the advance wore on, they identify a host of logistics and maintenance-related issues where I think we -- you know, further research is needed, but we'll start to see areas where they will try to improve and areas, frankly, where the organizational culture and challenges are sticky and really difficult for them to address.

COMMISSIONER SCHRIVER: Thank you. Commissioner Miller.

COMMISSIONER MILLER: Thank you all for your testimonies. I'd like to continue to build on some of Commissioner Helberg's line of questions. Advanced technology is something that we are, as a Commission, constantly trying to get a better handle on and determine to what degree developments in advanced technology will alter the U.S.-China playing field or in this case, the actual battlefield. And I'd like to ask a question about AIs in particular.

It would be helpful if we could better understand the correlation between China's access to advanced technology, especially state-of-the-art chips, to potential leaps in capabilities for artificial intelligence, particularly in -- in relation to counter-intervention in theory.

Very specifically, do you foresee this advanced technology, these developments in advanced technology, leading to a gradual incremental improvement in China's ability to engage AI, whether it's drone warfare, whether it's logistics coordination? Or do you see us approaching a point in which we may be hitting a quantum leap, where China's ability to develop or get access to advanced chips will allow us to take a quantum leap in -- in their capabilities to -- to engage in some of these artificial intelligence-related defense mechanisms? Mr. Shugart?

MR. SHUGART: Thank you, Commissioner Miller. So in terms of whether we're on a gradual scale or a quantum leap, I'd say for now we're on a gradual scale because I think they're probably already using AI in -- probably for pattern recognition. So as I included in the -- my written testimony, we've seen examples of where China -- for example, their ballistic missile impact ranges is using exact mock-ups of very specific U.S. aircraft types and Japanese-only aircraft types as well.

My guess is that -- what that looks like it is to me is maybe a target where they want to be able to train a warhead to recognize and hit very specific aircraft types on a very specific part of an airfield, for example.

So I think between that and the carrier targets we've seen -- we've seen in the desert, it -- there's indications to me that they're already -- I imagine there's probably some AI -- you know,

when we talk about the problems of AI, I mean, in many cases, it's overstated, but I think one of the things that AI is definitely very good at is recognizing things. And -- as we see in the training, what -- what looks like probably training warheads to do that, I think they're already starting to use those.

How it would affect the fight? I think that -- I really worry about the combination the intersection of very wide-scale and persistent earth observation, combined with AI/ML image recognition, making it really hard for warships to hide, for example, on the surface or to be able to hide aircraft that airfield, even if they're dispersed. So I think for somebody who's playing an away game, that could bring some real challenges to the fore.

COMMISSIONER MILLER: Mr. Dahm, over to you. Same line of question in relation to informationalized warfare. Do you see the push from the Chinese military? Is it -- is it more important that -- is it a matter of more of funding for these increased capabilities? Is it a matter of focus and prioritization, or is it a matter of -- of access to advanced technology? What is actually moving the needle in terms of developments in -- in the -- in informationalized space?

MR. DAHM: So, Commissioner, thank you for the question. I -- I would say that the -- there is a lot of focus on advanced technology, and it is going to matter. I think one of the most significant areas that you mentioned obliquely but not directly -- you said a quantum leap. And I would say quantum technology is probably one of these areas that we really need to watch. We're -- we're years away from -- from -- from real quantum capabilities, but I -- in -- in some other work that I've done in the intelligence community, have -- have expressed concern about the amount of data that China is harvesting from global sources.

And much of this data is encrypted. They -- they might be able to break it down, but it would take decades to do. If we reach a quantum technology tipping point where they can mass decrypt large -- these large volumes of information and then use artificial intelligence to put a story together with that, that could be very, very concerning on -- on many different levels, from security to economics to resource development to everything else.

But I would caution against focusing, I think, too much on technology. I -- I can tell you with almost certainty that in most areas there are some exceptions, but in the vast majority of areas, the U.S. and the west are far ahead of Chinese technology, but China is building a lot of things that with -- they -- they've moved away from this sort of good enough technology that I think they focused on for many, many decades.

And they are -- you know, Chinese technology is legitimately high tech, but there is no way Chinese satellites on orbit are as good as the National Reconnaissance Office technology that's on orbit right now. But they have built hundreds of satellites that are all focused on East Asia. You know, in my work at the Mitchell Institute for -- for Aerospace Studies, there is no way a Chinese J-20 is as good as an F-22 or an F-35 fighter in the United States Air Force. But China is building 1,000 J-20s between now and the early 2030s.

There is a certain quality in quantity. And so I think China recognizes that it is behind in high technology, and we have to recognize that they are compensating for that just with volume, shipbuilding volume, aircraft building volume, satellites on orbit, you know, on and on and on, missiles. Thank you. And -- and so, you know, if -- if we are not going to recognize that -- that that is kind of the fundamental challenge right now is technology vs. volume, with China constantly catching up in the technology field, that -- you know, that's how we're going to find ourselves behind.

COMMISSIONER MILLER: I'd like to quote, there is a certain quality in quantity. We're going to have to revisit that. Thank you.

MS. GARAFOLA: And on applications for logistics, I think where this manifests is at least a vision for precision logistics that incorporates elements of predictive nature, so timely decision-making, prediction for inventory, things like that.

But again, where we see the development of potentially sophisticated tools for maintainers to use, you also see this dynamic where at the end of the day, that skilled maintainer is going back to his handwritten log of previous maintenance on that system or platform. So I think, you know, there's a -- a top-down vision often from Xi Jinping down on how military-civil fusion can benefit these different support areas, and then the -- the reality at the unit level or perhaps a higher level might be different.

COMMISSIONER SCHRIVER: Thank you. Madam Vice Chair?

VICE CHAIR PRICE: Thank you. And my -- quickly my apologies to our witnesses and to the Commissioners. Spring in Washington is magnificent unless you're allergic to it. Mr. Dahm, I have a question. You said that you were concerned the U.S. military doesn't understand the havoc the Chinese could play, or some sentence like that. Can you revisit that a minute?

MR. DAHM: Yes, Vice Chair Price. Thank you for the question. So this is a -- this is something I've been concerned about for some time, and I do not profess to speak for the U.S. military or any U.S. military program that might be addressing some of these areas.

I want to -- I definitely want to stay in my lane, but -- but what I am highlighting is the fact that this system's destruction warfare that all three of us have talked about and China's focus on battlespace information dominance is at the center of what it is that they're going to try to do to us. They have looked at the U.S. playbook. Like I said in my -- in my opening statement, they looked at what the U.S. did to the Iraqis in 1991. They looked at pretty much what we, the United States military, have done to every adversary we have faced.

You make your enemies deaf, dumb, and blind, and then step two is you pick them off with long-range fires. So we put a lot of attention on how can I defeat the ballistic missile? How can I defeat the cruise missile? How can I defeat the aircraft and the ships and the submarines and the hardware? But I am suggesting perhaps there is not enough focus on how do we protect the exquisite but expansive C4ISR system of systems.

And I will say that in my exploration of this topic, the biggest challenge for the military, the biggest challenge for the U.S. government is no one owns that system of systems. The NRO owns the space-based system of systems, but within the Department of Defense, the services own part of C4ISR. The joint world owns part of C4ISR. Commercial providers provide part of C4ISR.

So if you go to any individual program office, they can tell you what the threats are to their system, but who is the authority that is responsible for understanding what the threat to the system of systems is? And I -- I would be hard pressed to identify that person myself. Yeah.

VICE CHAIR PRICE: So what would be the answer? I mean, you know, how -- how do you get them to readjust thinking so that somewhere in there, someone's looking at the whole system of systems?

MR. DAHM: So my role in this process has been to highlight the fact that this is the object of China's affection, that they are going to go after this system of systems mercilessly. And I do put a -- I think I've got a -- I -- well, I know I have a quote here from a GAO study on -- on JADC2. So Joint All-Domain Command and Control must connect headquarters to forces so that Joint Command and Control decisions are executed at a faster pace than potential adversaries to maximize operational effectiveness. And that's awesome. It should absolutely do that.

But creating a system of systems that makes decisions faster and better than the adversaries may not have the same characteristics as a JADC2 that can take a hit, take multiple hits that the Chinese can keep punching at and still perform that function. There's very little that has been publicly released about, you know, this -- this interoperability that the DOD hopes to create about how it is going to stand up to the kinds of attacks that I've described in my -- in my oral and -- and written testimony.

VICE CHAIR PRICE: Thank you. And both you and Ms. Garafola indicate in your recommendations that we need to study or assess risks better in certain areas; have they not? Those studies haven't been done at all, or you just don't have the depth you need for new -- new systems? What -- what is your thinking of the -- the -- what we're missing there?

MS. GARAFOLA: Happy to start. I think --

VICE CHAIR PRICE: Your mic.

COMMISSIONER WESSEL: Mic's not on.

MS. GARAFOLA: Is it on now?

VICE CHAIR PRICE: Yeah.

MS. GARAFOLA: Perfect. I'm happy to start. I think some of the areas and challenges may be, again, from that logistics perspective of how China is seeking to either observe, exfiltrate either via licit and illicit means our -- our data. So I know there's been recent concerns, for example, about Chinese-made cranes at U.S. ports or other technologies or data partnerships at U.S. ports where China could potentially leverage those capabilities and obtain data access. So that might be one example.

But making those assessments for where China is interested or whether -- whether there's a critical vulnerability, that remains open and hasn't been addressed vs. where there might be active activity -- activities by China. I haven't seen public reports on the -- those topics making that distinction.

VICE CHAIR PRICE: Thank you.

MR. DAHM: I -- I think, again, I would -- I would go back to -- to build on what I said earlier. There is no institutional champion for C4ISR within the Pentagon. Therefore, I question -- I do not know for sure, but I question whether the right questions are being asked of the intelligence community or even the open-source community about counter C4ISR. Similarly, there is no institutional champion for electronic warfare. This is a well-known deficiency within the Department of Defense. We do not have to create a strategic support force to bring focus to C4ISR and electronic warfare.

But if there is no institutional champion for electronic warfare in the Pentagon, who is asking the questions about electronic warfare capabilities? It -- it falls to the services. It falls to organizations that have many competing priorities. So -- so I'm suggesting that at -- at the very least, Congress and policymakers should be asking the right questions to bring attention to those issues.

VICE CHAIR PRICE: Thank you.

COMMISSIONER SCHRIVER: Thank you. It may be the case that the -- the greatest champion is the war fighter, the combatant in command, but they're not the ones that buy stuff. And so we -- I'm -- we're seeing some tension there in the specific area, but I wanted to ask you, you know, it's -- it's really useful to see where the Chinese have invested in and where they've arrived at this point in time.

But, you know, you mentioned, Mr. Dahm, our underappreciation of the vulnerability of our system of systems and -- and the gaps that could be created if that was interfered with. And I

think, Mr. Shugart, you also said, as the Chinese have mirrored our approach to developing a kill chain - I don't remember your exact words - but they have themselves new vulnerabilities. So I'm wondering -- Mr. Dahm, I think you briefly touched in your statement about countering their reconnaissance capabilities.

It -- I mean, it seems to me disaggregating the kill chain and looking at some key nodes, first one of which would be, you know, seeing and sensing targets. Could you speak a little bit more about do the Chinese themselves understand Mr. Shugart's point as they've developed these capabilities, they are also creating new vulnerabilities, and -- and how resilient would they be if we invested in some of the areas that you've suggested?

MR. DAHM: Certainly. I think, you know, in the area that I focus on in my testimony on C4ISR, you know, much is made about the seemingly unlimited nature of Chinese military budgets, but they are not unlimited. They're having to make choices just as we do in our budget priorities.

But, you know, the PLA doesn't believe that if some C4ISR is good, then more C4ISR must be better, so let's just buy more. They're investing in the levels of C4ISR and electronic warfare capabilities that they are investing in because they expect that the U.S. will take some of it away. And in this competition for information dominance that I described, the idea is you're going to hit our -- you know, satellite capabilities. You're going to hit some of our landline communications. You're going to hit all these things.

But the PLA will retain the ability to move information around the battlespace and will, by -- by default, you know, retain -- retain battlespace information control, so -- so they're -- they're heavily invested in this idea that -- that these are the capabilities that they need. So as they expand out, I don't know that I would see it as more -- creating more vulnerabilities necessarily because, well, they're becoming like us because they have space-based capabilities.

Now, here in this -- in this hearing, we're talking about counter-intervention. If we want to talk about a fight in Africa in 2035, that might be different. Both sides are playing the -- the away game, and -- and that might be fundamentally different from what we're discussing here today.

But certainly, with that home field advantage that I described, you know, China is layering these space capabilities on top of each other and -- and, in fact, solidifying their kill chains or -- or -- I'm struggling for the words, but to -- to better establish those -- you know, those types of kill chains and build those out to be -- to be more capable features of their -- of their system of systems. Does that answer your question, sir?

COMMISSIONER SCHRIVER: It does. That's very helpful. Thank you. I have another question about how good we think the Chinese are in light of pretty rapid modernization fielding of these capabilities, but to me, that says more complexity. And more complexity is a challenge if you aren't practicing, meaning training and exercising, in highly complex environments, or you're not doing things in the real world not battle tested. What do we think about their level of training?

You -- you made some reference to mock-ups of -- of things that they're training against, but a very exquisite system of systems in a -- in a combat environment, contested environment, that's -- that's a complexity to manage that I'm -- I'm not sure we see them training in that kind of environment that would really stress-test them against countermeasures we might take. But I'd -- I'd be interested in thoughts on that. And maybe, Ms. Garafola, you would start that.

MS. GARAFOLA: Sure. So to use some maintenance examples we observed, we do see some examples of training for more -- in more austere environments. So, for example, in the PLA Army, rapid repairs conducted in the field. For PLA Air Force, we saw discussion of training under harsh weather conditions like in the winter. So clearly, the PLA has moved away from the stand down for Lunar New Year and now modernizing their training cycle to -- to incorporate all weather and poor weather conditions.

Some of the uncertainties involve, you know, what is the level of preparation for these field activities or key training events and exercises? So if you're building up your maintenance levels and readiness to conduct those exercises so the exercises are a success, what does that say necessarily about your ability in wartime when you don't have that luxury or you're entering that kind of sustained phase?

So I think that's where, you know, it gets to the complexity of the systems and requirements. You know, the requirements to maintain a low observability are going to be higher on your J-20 than your, you know, U.S. fourth gen J-16 or other aircraft, right?

COMMISSIONER SCHRIVER: Yeah. And brief -- brief comment?

MR. DAHM: Yeah. Very, very briefly, I would say China -- China is concerned about its capabilities. We do see criticism within the PLA system and from Xi Jinping himself about, you know, the -- is it the five cannots or the five incapables --

MR. SHUGART: Five incapables.

MR. DAHM: -- the five incapables of, you know, that -- that PLA -- the PLA cannot fight a modern war. Now, I don't know that we should be less worried that they are criticizing themselves or more, because if they are -- if they are sober and honest about their deficiencies and there's -- and they are criticizing themselves, then, you know, that -- that is perhaps very worrisome in terms of the trajectory of change within the PLA.

MR. SHUGART: Again, briefly, I -- I would say that I think those -- those concerns are warranted. I think -- I think that's why I think that the risk of, like, an unintended escalation-type conflict is relatively low because I don't -- I think China recognize those limitations, and they don't want to probably get involved in a conflict when they're on the back foot.

I do worry more about where, for example, a very specific determination is made by the leadership -- CCP leadership, we're going to take Taiwan, it's going to be on this day. And they set in motion machinery, it doesn't take a lot of decision-making. That's -- that's carefully planned and scripted and -- and on a -- on their timeline.

And also, one that is based around the missile center force, which if you think about how that works, there's a lot less coordination involved to -- to make a ballistic missile go from here to there. There's some, but -- but nothing like the complexity that's required for us to do kind of a -- a more platform-centered way of warfare using lots of aircraft and ships.

COMMISSIONER SCHRIVER: Thank you. Commissioner Sims, who's joining us virtually.

COMMISSIONER SIMS: Thank you. Thank you to the Commission co-chairs or the hearing co-chairs for highlighting this important topic and the witnesses for taking the time to speak to us today. I've learned a lot already. I had a couple of questions specifically for Mr. Shugart but obviously would love to hear from others as well.

You mentioned in your opening statement the traditional metrics of what it takes to be the world's best military. Naval capacity would presumably be one of those, which you referenced. But how are you seeing those metrics changing, and what is China doing to build capacities to bolster those metrics, whether they're asymmetric or new technologies or whatever they may be?

And related, how would you compare China and the United States' building capacity in -- in whatever those new metrics are?

MR. SHUGART: Well, I mean, if you're looking at the metrics of shipbuilding, I mean, that's a pretty easy answer. I mean, they just absolutely dwarf the U.S.'s capabilities at this point. I mean, the U.S. -- I met -- I did the numbers the other day, and trying to build 1.1 million tons of naval shipping over the last decade, we built a little -- I think, less than 800,000 tons. So you're looking at 80,000 or so tons a year of U.S. naval shipbuilding.

And then last year in 2022, we built 70,000 tons of commercial shipbuilding. So added up, less than 200,000 tons. China built 26 million tons of -- of commercial shipping last year. We're talking hundreds of times larger shipbuilding industrial base at this point. So that's an easy one.

If you're looking at -- I mean, I think in aircraft, we still probably have a -- may have a building advantage at that point maybe. We still have a very robust civilian aircraft industry. And then, of course, we have a -- our, you know, major -- the world -- U.S. Air Force is the largest -- world's largest air force. missile building.

I mean, the numbers are what they are. They -- even I was shocked when I saw the 2023 China military power report, 1,000 medium-range missiles, 300 -- or 500 intermediate range missiles. This is going from dozens. You know, they had a few dozen IRBMs five years ago and dozens of -- I believe, dozens of MRBMs ten years ago.

So really, I mean -- and when you talk about comparing metrics and asymmetry, I mean, as far as I know, the U.S. has zero deployed medium or -- or intermediate range ballistic missiles because of the -- it's kind of a hangover from the INF Treaty days while China was merrily building what they've built. I don't know if that answers the question, but that's a stab at.

COMMISSIONER SIMS: Well, it's -- you know, yes, that -- that certainly did it in part. I think what I was trying to get at, though, is, you know, some of the things that you just mentioned, I would put in the bucket of like traditional metrics for what it takes to be the world's best military. What are you seeing as emerging metrics or new metrics that we should be paying more attention to, and what are they doing compared to what we're doing and whatever those metrics might be?

MR. SHUGART: What I think we have to -- I don't ever like to get too much into direct comparison. Is our submarine force better than their submarine force? Is our navy bigger than -- better -- bigger than their navy? Because we have to look at the -- there's a huge asymmetry in defense objectives. I mean, we're not trying to keep China from taking -- we're not -- or we're not trying to keep China from keeping us to take an island 80 miles from our shore, right? That's -- or 100 miles from our shore.

Here we are, trying to maintain essentially sea control so we can maintain freedom of the seas and -- and resupply to our ally or -- or our partner, at least, and an ally that's not too far away that's right on China's doorstep. So -- so when I look at that asymmetry of objectives, I think you have to look at asymmetry of measures as well, and what are the things that we need to do to -- to support our defense objectives vs. theirs.

You know, I like to talk a lot about the civilian shipping. I mean, they're really leveraging that in a way that just doesn't have any comparison on our side to maybe be able to achieve their defense objectives in a way we hadn't predicted. So it's -- I think it's tough to come up with measures that, you know, compare to -- compare because, to be clear, if we're -- if we're equal and we are fighting each other in the center of the central -- of the Pacific Ocean and the Central Pacific, we've lost our defense objectives that we have today.

MR. DAHM: I'd also --

COMMISSIONER SIMS: Great. Thank you. I give back the rest of my time.

MR. DAHM: I'd like to chime in, Commissioner Sims --

COMMISSIONER SIMS: Yeah. Please do.

MR. DAHM: -- on the -- on the -- on the metrics part. It is interesting if -- if you study informationized warfare long enough as -- as I have, you know, the -- the -- what they say -- what the Chinese say in their doctrine, what the Chinese military says in its doctrine is that, you know, the future of warfare, this informationized warfare, perhaps future intelligentized warfare really de-emphasizes the importance of the different platforms that it is, in fact, the network, the system of systems.

I -- I know I sound like a broken record. I keep coming back to that, but it -- it is about how all of these platforms, whether it's, you know, numbers of ships, numbers of aircraft -- it's about how all of these things are -- are tied together.

I would -- I would hasten to point out just one point, that the United States Air Force numerically might be superior, but in terms of the age of the aircraft, I talked about ships lasting 20, 30, sometimes 40 years. Aircraft don't age as well, so that the -- the age of the United States Air Force fleet compared to some of the -- the fourth gen and fifth gen fighters that Chinese factories are cranking out should -- should be of -- of great concern.

But I -- but I think the -- you know, we have to focus more, you know, from a policy perspective or from a strategy perspective in terms of capabilities. It's -- it's great to look at a graph at -- at numbers of ships or -- or numbers of aircraft or numbers of missiles, but the real question in a counter-intervention fight is what capabilities do those systems and the ISR and the communications and the commanding control that support it -- what capabilities do those bring to the fight? And -- and that's a much more complicated question, but I -- but I think it -- it is an important one to raise.

MS. GARAFOLA: I had briefly offered two potential metrics where we might need another RAND study to figure out how you would assess them. But first would be the ability to intake and process information in a flexible way. You leverage your alternate result -- reserves, your backups in a redundant and resilient way and fast enough to -- to levy effects. And then the second would be the proficiency from a personnel or a human talent perspective and other ability to levy effects, whether kinetic or non-kinetic, when things go wrong. So how do you adapt in those uncertain environments?

COMMISSIONER SCHRIVER: Thank you. Commissioner Stivers.

COMMISSIONER STIVERS: Hello. Good morning. Thank you to the witnesses for being here today for your testimony and your expertise. I -- I -- I agree. I've learned a lot already today and from reading your testimonies. So on -- this -- this could be a question for any of the witnesses.

On preemption, it seems very risky for the Chinese government to preemptively attack U.S. assets because it would guarantee a U.S. response essentially. They would probably more -- be more likely to do that if they were 100 percent sure that the U.S. would come and intervene on -- on Taiwan's behalf and in that contingency.

There's a debate, you know, in congressional committees about the strategic ambiguity vs. strategic clarity, and we've even seen President Biden take a bit of a different position than his advisors on that debate. So my question is does that messaging or does that debate have any impact on counter-intervention strategies from China's decision-makers, and does it lead to more confusion on their part in terms of how they would approach counter-intervention?

MR. SHUGART: Well, I -- so I talked about preemption a bit. So I'll -- I'll start here. I -- I think the messaging probably does matter. I mean, we have to think about the fact that there's a huge tension here for -- for the Chinese and -- and how they would want to pursue that. And -- and to be clear, like, there's obviously huge downsides from them acting preemptively, both from a messaging standpoint -- and obviously, you know, we're in at that point.

But we have to remember is that the effectiveness of a strike, if done preemptively and if done by with at least some level of surprise, will be much, much greater than one that is later down the road after U.S. -- U.S. and allied forces have dispersed, you know, hardened, concealed, et cetera.

So I would agree that it's -- it sounds like it's a terrible idea for so many reasons, but they -- they talk about it all the time in their doctrine, and they've built this enormous force that exists -- seems built for that. I mean, so when I see that all lined up together, maybe it's just for insurance purposes. Maybe they just want to tell us hey, stay out of this, and hope that we stay out of it, and they don't have to use it. But there are big downsides to them for waiting, and I really -- I really worry about that.

So the worst place I -- I think we can be, if you look at the corners of the box, like, speak loudly, you have a small stick, but, you know, big stick, speak, you know, softly, that kind of thing -- I think the last -- the worst place you want to be is convincing them that you're going to -- you're 100 percent going to be in this fight and then not taking the measures to deter them from striking you. That's the worst place you can be.

MR. DAHM: I -- I think I'd add that -- that -- well, a couple of things. That -- that, you know, this idea of preemption, I -- I don't know that -- that Chinese military scholars would characterize it as preemption because, you said it yourself, once they are convinced that the U.S. is going to strike or is going to intervene, then, you know, even if the -- if the -- if -- if it's the Chinese weapons that are exploding first, they see that as responding to an imminent threat.

So it doesn't necessarily -- it's not necessarily misaligned with this idea of -- of they would not preempt if they thought it was -- if -- if they thought it was imminent. You know, the other thing is much -- much has been made about this -- this Sun Tzu phrase, win without fighting. China wants to win without fighting.

And I -- I don't think most people appreciate what that really means because, see, in -- in Chinese culture, like, fighting is a dialectical thing, right? If you and I are fighting, then both of us are actively fighting. But if you just come up behind somebody and beat them and -- and destroy like that, just like that and destroy their capabilities, right, that's not fighting. So what Sun Tzu actually meant was that to win without fighting is to destroy your enemy before they are able to form orderly ranks in ancient Chinese warfare.

So the idea is that you deliver a decisive blow with these capabilities that Captain Shugart talked about. You deliver a blow against their C4ISR system of systems so that the -- you know, before they have organized themselves so that the enemy cannot respond, and you have -- you have created conditions in which you can maintain the operational initiative in -- in a conflict.

MS. GARAFOLA: Briefly, I think the PLA assumes and is a planning organization that the worst-case scenario involves intervention by the U.S. and allies and partners. So from that perspective, as a planning organization, that's something they -- they take into account and they -- they focus on, and they feel they cannot afford not to focus. That leads to, you know, concerns or perhaps intense interest by the PLA where there's gaps between our messaging and our approach narratively and then our actions. So that speaks to, you know, posture, training, and exercise with our allies and partners and other capability development.

COMMISSIONER SCHRIVER: Thank you. Commissioner Wessel.

COMMISSIONER WESSEL: Thank you all for being here. Mr. Shugart, welcome back. Good to have you back. And, Ms. Garafola, appreciate the focus on repair maintenance logistics. That's something that we have actually spent time on the Commission going to -- including the -- the strength of Chinese systems' minimum time before failure and many other things that relate to the quality and nature of their system. So thank you for the focus on that, and it's something we have continued interest in.

I -- I want to turn to a separate question here that we have not addressed fully today. And about two years ago, I guess it was the Commission undertook a report, a commissioned report, regarding PLA personnel. So we've been talking about systems. We've been talking about AI and other things, but we have not really talked about the quality of the personnel.

You've talked, Ms. Garafola, in terms of, you know, maintainers in their training. But please, to the extent you can, how do you assess the quality of Chinese commanders, decision-makers, and the independence or the ability to maintain combat operations with certain nodes cut off, independent decision-making opportunities, et cetera?

You know, I think we have seen, unfortunately because of history, that we have a lot of experience here in the U.S. in military affairs, more than most other nations. China has little. So how do you assess the personnel? How do you assess the need to have political commissars and others involved in troop structures, et cetera? Mr. Shugart, do you have -- go down the list of the row of thoughts on the personnel issues?

MR. SHUGART: I -- I don't think there's any doubt that our officers are likely to have better flexibility, better ability to respond to unexpected situations. I mean, they've criticized themselves that they're not good at that, which is again, why I -- I think that if they want to pursue a military operation, that it's going to be lockstep, you know, scheduled time-tabled thing where they -- where -- where if a node gets cut off, it doesn't matter that much because whatever's coming behind, it's coming behind. And it's going to follow up, and they're going to do their thing.

So I think that's the case. I think that will change, though, probably over time out of necessity because they are pushing further afield. In particular, their navy is getting much larger, and naval operations just don't allow for the same kind of -- especially if you're talking about a larger submarine force -- don't allow for that kind of rigid control because this is not doable.

COMMISSIONER WESSEL: Let -- let me make sure I understand your point. So you're sort of -- it's -- you know, once they open the battle plan booklet, you know, or whatever, that it's going to continue whatever. There is a sort of rigid decision-making. Is that what you're suggesting?

MR. SHUGART: For something like an invasion? Yes. That -- that it's a -- it's a -- it's a prescheduled, very carefully detailed plan. You open the book, go -- be here this time, this date, and you're not talking to anybody. It won't be as efficient of an operation, but it will still overwhelm the enemy.

COMMISSIONER WESSEL: Okay. Mr. Dahm?

MR. DAHM: Thank you, Commissioner Wessel. I -- I think the -- you know, the thing that I -- that I try to tell my students is, you know, we have to be careful not to compare apples to oranges. Now, if you took 100,000 PLA troops and dropped them in the middle of Southwest Asia, you know, in a desert environment and said, you know, go -- go conduct a military operation like the type the U.S. has done, they would fail miserably.

But, you know, to Captain Shugart's point and -- and what he was saying about sort of these -- you know, Chinese command and control is often baked into the plan. That -- that right or wrong, the PLA believes that they can calculate the outcomes, and they have scripted this very detailed plan where if they have information dominance and if they have operational initiative, they can set the tempo and pace of operations.

So as this plan unfolds, hopefully, it goes to plan and every -- you know, one thing happens after another. And so your conscript just has to know, I have to drive the truck to this point. I have to raise the missile, you know, at this time, and then command is going to come, and the missile is going to fire. He doesn't have to figure out how to do that in Africa. He doesn't have to figure out how to do that in an environment he's never been in before. He's doing that in an environment that he has practiced and trained in his entire career even if it's just, you know, the two years of his conscription.

So, you know, what that leads you to is this idea that you need to get the PLA off plan. Because if they are allowed to have information dominance, if they are allowed to retain operational initiative and the U.S. is put in this position of constantly having to respond to the next thing the PLA is doing, it's going to be much more challenging for us than -- than it -- than it will be for them if they can stay on plan.

And -- and I would only say in closing that the prospect of intelligentized warfare, this use of artificial intelligent -- intelligence in warfare, the bar is much lower. If your artificial intelligence is just orchestrating a pre-planned event, you know, make -- make sure these things are here. If they're not here, make an adjustment to, you know, do this other thing, and the AIs can sort of orchestrate this rapidly unfolding plan. The bar is much higher if your military artificial intelligence has to figure out what's going on in a battle -- in a battlespace they cannot fully see or understand and react constantly to inputs.

COMMISSIONER SCHRIVER: Thank you. I think -- I think we're going to have to collect your response separately. We were very liberal in the first round, so there's no -- no time for a second round. But if -- if you'd be willing to entertain questions for the record, that would be appreciated. Thank you very much. Excellent first panel, and we reconvene in 10 minutes.

(Whereupon, the above-entitled matter went off the record at 11:42 a.m. and resumed at 11:52 a.m.)

PANEL II INTRODUCTION BY VICE CHAIR REVA PRICE

VICE CHAIR PRICE: Okay. We're going to reconvene. If any of our colleagues are in the hall, we can -- we'll start, and they'll join us, I'm sure, shortly. Okay. Our next panel will assess efforts by the United States and its Indo-Pacific allies to deter China's military aggression and if necessary, defeat its counter-intervention capabilities. It will also examine China's perception of those efforts.

We'll start with Ms. Maryanne Kivlehan-Wise, director of the China Studies Program at the Center for Naval Analyses. Ms. Kivlehan-Wise will examine China's views of evolving U.S. force posture in the Indo-Pacific region designed in part to counter China's anti-access/area denial, A2/AD, capabilities in a conflict.

Next, we'll hear from Mr. Christopher Johnstone, senior advisor and Japan Chair at the Center for Strategic and International Studies. Mr. Johnstone will analyze the role that U.S. allies and multilateral initiatives play in U.S. military strategy toward China.

And finally, we'll hear from Dr. Caitlin Lee, director of Acquisitions and Technology Policy Program and senior political scientist at the RAND Corporation. Dr. Lee will evaluate current and potential future U.S. efforts to counter the challenges posed by China's military.

Thank you all very much for your testimony. I would like to remind all of our witnesses to please keep their remarks to seven minutes to reserve time for questions and answers. So Ms. Kivlehan-Wise, we'll start with you.

OPENING STATEMENT OF MARYANNE KIVLEHAN-WISE, DIRECTOR, CHINA STUDIES PROGRAM, CENTER FOR NAVAL ANALYSES (CNA)

MS. KIVLEHAN-WISE: Thank you. Hearing co-chairs, vice chairs, and members of the Commission, thank you for this opportunity for -- to share my thoughts at today's hearing. My comments today will focus on Chinese perceptions of U.S. efforts to counter China's military strategy in the Indo-Pacific. I will draw data from PRC-produced news media and academic journals to address three of the Commission's questions and then provide some recommendations for legislative action. Before I begin, I would like to note that these comments are my personal views and should not be regarded as representing the opinions of CNA or any of its sponsors.

The first question is what are China's views of the U.S. security architecture in the Indo-Pacific region? To put it succinctly, Beijing views all elements of its U.S. security architecture in the Indo-Pacific region, including its allies, security partnerships, and military presence as attempts to contain and counter China.

Commentary and PRC media frequently argue that U.S. military leaders are designing and executing operations and activities in the region to achieve one of three objectives: to foment tensions and create instability along the PRC's periphery, to enlist the support of regional allies and partners to advance U.S. security objectives in the region, or three, to better position the U.S. military as well as the militaries of our partners and allies for a potential contingency involving the PLA. These arguments are ubiquitous in China and the lenses through which any U.S. military capability in the -- in the Indo-Pacific is viewed.

The second question is which U.S. military capabilities is China most concerned about in a scenario where the PLA may seek to constrain or restrict U.S. military operations in the region? The PRC concerns on this issue fall into two main baskets. The first is concerns about the U.S. strengthening its alliances and security partnerships, and the second is concerns about the U.S. increasing the quality and quantity of its military capabilities and platforms in the region.

Looking at the first basket, among PRC defense and security thinkers, the degree of strategic alignment between the U.S. and its Indo-Pacific allies is a topic of perennial interest. In my opinion, the event that caused the most significant change in PRC views of U.S. alliances and security partnerships in the region over the past decade was the announcement of AUKUS in 2021, and I say this for three reasons.

First, it was a surprise. The AUKUS agreement was announced suddenly and with very little buildup in the press or socialization of the concept in the region. Second, through its technology sharing plans, AUKUS created a new ceiling in the potential for interoperability between the United States and other advanced militaries as they operate in Asia. And third, AUKUS solidified a perception in Beijing that Canberra is now openly aligned with Washington and fully on board with what Beijing sees as a U.S. effort to contain the PRC. And all three of these assessments have potential implications for PRC strategies and plans.

Shifting gears to the second basket of improving U.S. military capabilities and platforms in the region. It's difficult to rank which development the PLA finds most or least concerning based on information that's found in PRC media reports and academic journals. These sorts of ranking assessments would likely be tightly controlled.

It is clear, however, that PRC military and strategic thinkers have tracked U.S. force posture developments in the Indo-Pacific with interest, and these -- and the developments that are most concerning for the -- for Beijing are when improvements in U.S. military relations with

an ally are coupled with agreements that change the U.S. military footprint in a country or region. And I discuss PRC media commentary on several such changes in my written remarks, especially with regards to changing U.S. force posture in the southwest islands off of Japan.

The third question I will address is how do Chinese writings assess new U.S. operational concepts? Over the past few years, the U.S. has spoken publicly about a number of new operations and concepts, such as multi-domain operations or MDO, agile combat employment or ACE, distributed maritime operations or DMO, and expeditionary advanced base operations or EABO. And over the past few years, we've conducted a number of exercises and operations that are portrayed as having employed these concepts and tested them. And the PRC has watched these developments with interest.

Common themes in PRC public discussion of these activities include, one, an assumption that these concepts were developed solely to counter the PRC military, especially within the first island chain. Two, an assessment that if successfully employed, these concepts have the potential to improve U.S. military stealth, strike, and survivability. And three, a contention that PRC long-range missile capabilities have the potential to counter forces employing these news -- these new concepts and raise the cost of conflict. With my remaining time, I will shift to some recommendations.

A common element of many PRC concerns I discussed today is the central role of U.S. allies and partners. To have confidence that we will retain the access and support of our allies and partners, it is imperative that the U.S. sustain confidence in both its commitment to the region and its reliability as a partner, and at the same time, where necessary, the U.S. is called upon to counter disinformation campaigns designed to generate opposition or discontent with U.S. presence in the region.

With this in mind, I make the following recommendations: first, support legislation to provide funding and military assistance to Ukraine to demonstrate the staying power of U.S. commitment to partners and its commitment to resisting aggression, and two, reauthorize the Global Engagement Center to ensure that the U.S. has the tools required to counter PRC mis-, dis-, and malinformation activities that seek to degrade and undermine support for U.S. presence in the Indo-Pacific. And with that, I will conclude my comments, and I look forward to your questions. Thank you.

VICE CHAIR PRICE: Thank you very much. And Mr. Johnstone?

PREPARED STATEMENT OF MARYANNE KIVLEHAN-WISE, DIRECTOR, CHINA STUDIES PROGRAM, CENTER FOR NAVAL ANALYSES (CNA)

Prepared Testimony by

Maryanne Kivlehan-Wise

Director, China Studies Program, CNA

With contributions from Brian Waidelich and James Bellacqua

Testimony before the U.S.-China Economic and Security Review Commission

Hearing titled: “China's Evolving Counter-Intervention Capabilities and Implications for the U.S. and Indo-Pacific Allies and Partners”

Panel II: Countering China’s Military Strategy in the Indo-Pacific Region

March 21, 2024

Introduction

Hearing co-chairs, Vice Chair Reva Price and Commissioner Randall Schriver, members of the Commission: Thank you for this opportunity to share my thoughts on China's Evolving Counter-Intervention Capabilities and Implications for the U.S. and Indo-Pacific Allies and Partners.

We have already heard from several specialists today about China's capabilities and concepts for "counter-intervention."

My comments below focus on countering China's military strategy in the Indo-Pacific region. More specifically, I use data drawn from PRC-produced news media and academic journals to discuss PRC views of U.S. military operations, activities, and investments designed to counter the PRC military in the Indo-Pacific.[1] I address three of the Commission's questions:

1. What are China's views of the U.S. security architecture in the Indo-Pacific region?
2. What U.S. military capabilities is China most concerned about in a scenario where the People's Liberation Army (PLA) may seek to constrain or restrict U.S. military operations in the region?
3. How do Chinese authoritative writings assess new U.S. operational concepts such as Multi-Domain Operations (MDO) for the Army and Air Force, Agile Combat Employment (ACE) for the Air Force, Distributed Maritime Operations (DMO) for the Navy and Marine Corps, and Expeditionary Advanced Base Operations (EABO) for the Marine Corps?

The remainder of my comments examine each of these three questions and then provide some recommendations for legislative action.

What are China's views of the U.S. security architecture in the Indo-Pacific region?

China views the U.S. Indo-Pacific security strategy and all elements of the U.S. security architecture in the Indo-Pacific region, including its alliances, security partnerships, and military presence, as attempts to contain and counter China.

Subject matter experts commenting in PRC media argue frequently that U.S. military leaders are designing and executing operations and activities in the region to achieve one of three objectives:

1. To foment tensions and create instability along the PRC's periphery[2]
2. To enlist the support of regional allies and partners to advance U.S. security objectives both in the region and globally, including the (perceived) containment of China[3]

---

[1] This testimony draws, in part, on previous analysis done by CNA analysts James Bellacqua, Josiah Case, Annette Lee, and Brian Waidelich. The author would like to acknowledge these contributions and express appreciation for their efforts. Any faults or errors are the sole responsibility of the author.

[2] Zhang Yunbi, "US Blasted for Inciting Instability in South China Sea," *China Daily*, July 13, 2023, https://www.chinadaily.com.cn/a/202307/13/WS64aed0eaa31035260b81609b.html; Xu Ke, "US's Indo-Pacific Strategy Brings Instability Only," China Military Online, Oct. 8, 2023, http://eng.chinamil.com.cn/OPINIONS_209196/Opinions_209197/16257081.html.

[3] "US Steps Up Efforts to Rope in Regional Countries, Engage in Camp Confrontation to Bring Harm to Asia-Pacific," Xinhua, May 5, 2023, http://www.news.cn/world/2023-05/05/c_1129592332.htm; Rachel Zhang and Teddy Ng, "Can the US Enlist the Philippines to Help Contain China in the Indo-Pacific?," *South China Morning Post*, Feb. 14, 2021, https://www.scmp.com/news/china/diplomacy/article/3121582/can-us-enlist-philippines-help-contain-china-indo-pacific.

3. To enhance training and force posture and improve interoperability to better position the U.S. military, as well as the militaries of our partners and allies, for a potential contingency involving the PLA[4]

These arguments are ubiquitous in PRC government and media commentary on U.S. military activities in the region and are used to frame all discussions of the Indo-Pacific security architecture. They are the lens though which any U.S. military capability in the Indo-Pacific is viewed.

Which U.S. military capabilities is China most concerned about in a scenario where the PLA may seek to constrain or restrict U.S. military operations in the region?

PRC media and academic journals' discussion on this topic falls into two main baskets: (1) concerns about the U.S. strengthening its alliances and security partnerships, and (2) concerns about the U.S. increasing the quality and quantity of its military capabilities and platforms in the region.

Among PRC defense and security thinkers, the degree of strategic alignment between the U.S. and its Indo-Pacific allies is a topic of perennial interest. In a potential scenario where the PLA may seek to constrain or restrict U.S. military operations in the region, the PLA would likely differentiate these countries based on assumptions about their willingness to side with and militarily support theU.S.in a conflict. Such an effort by the PLA could consider, for example, which countries would send troops to conduct combined operations alongside U.S. forces and which countries (without committing their own troops) might make infrastructure such as ports and airfields available for use by the U.S. military.

Over the past 2–3 years, Japan and Australia have been portrayed generally in PRC writings as the counties that are the most willing and supportive of U.S. security objectives in the region. Since 2022, the newly elected governments in the Republic of Korea and the Philippines have often been portrayed as moving closer to the U.S. and increasingly willing to support the U.S. in countering the PRC—but not with a commitment as solid as that of Japan and Australia. Other nations in the region are usually portrayed in PRC writings as unwilling to align openly and consistently with the U.S. against the PRC.

In addition to formal alliances, Beijing would likely be concerned with the implications of existing multilateral security partnerships, such as the Quadrilateral Security Dialogue (the Quad), a strategic security dialogue between Australia, India, Japan, and the U.S., and the trilateral security partnership for the Indo-Pacific region between Australia, the United Kingdom, and the U.S. (AUKUS), as well as emerging trilateral partnerships such as US-Japan-Korea and U.S.-Japan-Australia. These multilateral groupings are often portrayed in PRC media as precursors to U.S.

[4] Wang Bing, "US Continues to Incite Allies to Disrupt Asia-Pacific, Liang Yongchun: Seeking to Forge New Model of 'Extraregional-Country Grouping to Interfere in South China Sea," China National Radio, Aug. 21, 2023, https://military.cnr.cn/jsrp/20230821/t20230821_526386999.shtml; "Japan's Massive Drills Intended to Challenge China's Sovereignty Militarily," *Global Times*, Sep. 15, 2021, https://www.globaltimes.cn/page/202109/1234413.shtml.

designs for a regional alliance to encircle and contain China that are designed to stoke divisions in the region and bring about a "new Cold War" or "mini-NATO in Asia."[5]

I would like to draw particular attention to two of the aforementioned security partnerships: AUKUS and developments in US-Philippine security cooperation.

AUKUS

I would argue that, for several reasons, the event that caused the most significant change in PRC views of U.S. alliances and security partnerships in the region over the past decade was the announcement of the AUKUS trilateral security partnership in 2021.

First, it was a surprise. The AUKUS agreement was announced suddenly and with very little buildup in the press or socialization of the concept in the region. Unlike the U.S.-Australia agreement to host rotational deployments of U.S. Marines in Darwin of the 2010s,[6] which was telegraphed some months in advance, the PRC had little opportunity to prepare a response, exert influence, or attempt to shape regional views in advance of the AUKUS announcement. Seemingly overnight, they were faced with a different reality of the regional security environment.

Second, the announcement was a historic and potentially game-changing development. The agreement marked the first time that the U.S. has shared its sensitive nuclear-propulsion technology with an ally since the 1958 Mutual Defense Agreement with the United Kingdom. Moreover, the scope of cooperation between the three countries was more expansive than anything PRC military writers had talked about previously. In addition to sharing nuclear-propulsion technology in pillar one of this agreement, the second pillar allows for cooperation and joint development of capabilities ranging from cyber, artificial intelligence, and quantum technologies to hypersonic and counter-hypersonic capabilities. Taken together, AUKUS created a new ceiling in the potential for interoperability between the U.S. and other advanced militaries as they operate in Asia.[7]

Third, AUKUS solidified the perception in Beijing that Canberra was now openly aligned with Washington to China's detriment and fully onboard with U.S. efforts to contain the PRC.

To be clear, PRC authors do not take all of the promises of AUKUS at face value—they are quick to point out the implementation challenges and to express skepticism that the governments of the U.S., UK, and Australia—and their respective defense industrial bases—are capable of meeting all of their AUKUS commitments. However, I would argue that the agreement itself has reshaped the PRC understanding of the universe of the possible with regard to alliances and security partnerships in Asia.

---

[5] Zhong Sheng, "Building a 'Mini-NATO' Trilateral Alliance Harms Peace and Stability in the Asia-Pacific," *People's Daily*, Aug. 29, 2023, p. 17, http://paper.people.com.cn/rmrb/html/2023-08/29/nw.D110000renmrb_20230829_2-17.htm.

[6] Donna Miles, "Rotational Force in Australia Paves Way for Big Growth in 2014," American Forces Press Service, Sept. 24, 2013, http://www.defense.gov/news/newsarticle.aspx?id=120844.

[7] For more, see Li Wei, "AUKUS, A Hot Topic at Beijing Xiangshan Forum Webinar 2021," China Military Online, Oct. 28, 2021, http://english.chinamil.com.cn/view/2021-10/28/content_10103144.; John Christianson, Sean Monaghan, and Di Cooke, "AUKUS Pillar Two: Advancing the Capabilities of the United States, United Kingdom, and Australia," https://www.csis.org/analysis/aukus-pillar-two-advancing-capabilities-united-states-united-kingdom-and-australia.

The US-Philippines Enhanced Defense Cooperation Agreement

A second security partnership development that the PRC would see as relevant to a scenario where the PLA may seek to constrain or restrict U.S. military operations in the region is the *US-Philippines Enhanced Defense Cooperation Agreement* (EDCA). EDCA is a 2014 agreement that grants the U.S. military temporary access to designated Philippine military facilities and allows the U.S. to pre-position military equipment at these sites. On February 2, 2023, the U.S. Secretary of Defense Lloyd Austin and his Philippine counterpart announced plans to expand the scope of the EDCA by granting the U.S. military access to four new locations in "strategic areas of the country" and by completing projects in the five existing EDCA locations agreed to in 2016. Two months later, the U.S. Department of Defense spokesperson stated that the locations of the four new sites were Naval Base Camilo Osias in Santa Ana, Cagayan; Camp Melchor Dela Cruz in Gamu, Isabela; Balabac Island in Palawan; and Lal-lo Airport in Cagayan.[8]

Various commentators in PRC media drew attention to the proximity of three of these sites (in northeast Luzon) to Taiwan and one of them (in Palawan) to the disputed Spratly Islands in the South China Sea. The commentators argued that the U.S. intended to use the new EDCA sites to deter or fight China in possible contingencies involving Taiwan or the Spratly Islands.[9]

For example, one PLA officer noted, "US is using the favorable strategic position of the Philippines to strengthen its military presence in the South China Sea and Taiwan Strait, drive a wedge between China and the Philippines, and promote the implementation of U.S.-Philippines military cooperation."[10] Another PRC commentator voiced concern that the three sites in northeast Luzon would strengthen U.S. control over the Bashi Channel between the Philippines and Taiwan, which he described as "a critical pathway" for the PLA Navy to "enter and exit the First Island Chain."[11]

Improving U.S. military capabilities and platforms in the region

Although it is difficult to rank which developments the PLA finds most or least concerning based on information found in PRC media reports and academic journals, it is clear that PRC military and strategic thinkers have tracked with interest numerous force posture adjustments in the Indo-Pacific. These developments are most concerning for Beijing when improvements in U.S. military relations with an ally are coupled with agreements that change the U.S. military footprint in a country or region. One key example concerns recent developments in Japan's Southwest Islands, which form part of the First Island Chain.

---

[8] David Vergun, "New EDCA Sites Named in the Philippines." https://www.defense.gov/News/News-Stories/Article/Article/3350297/new-edca-sites-named-in-the-philippines/.
[9] "Balance Between Powers Big Test for Manila: China Daily Editorial," China Daily, Feb. 1, 2023, https://www.chinadaily.com.cn/a/202302/01/WS63da5e80a31057c47ebac5f3.html; Liu Lin, "Observation | US to Build New Military Infrastructure at Four Philippine Bases, Where is the Sword of Strengthening Defense. Cooperation Directed?" The Paper, Feb. 3, 2023, https://m.thepaper.cn/newsDetail_forward_21786203 .
[10] Liu Lin, "Can US, Philippines Really Stand Shoulder to Shoulder?" The Paper, Apr. 7, 2023, https://m.thepaper.cn/newsDetail_forward_22597262.
[11] Fan Anqi, "US Intensifies Military Attempts in the Philippines, to 'Tie Manila Closer to Its Geopolitical Chariot,'" Global Times in English, Apr. 5, 2023, https://www.globaltimes.cn/page/202304/1288576.shtml.

Adjustments and investments around Japan's SW islands

Since 2022, PRC news media and academic journals have highlighted various completed, planned, and prospective U.S. and Japanese military deployments and exercise activities in Japan's Southwest Islands. Examples include the following:

- The potential deployment of intermediate-range ballistic or cruise missiles[12]
- The deployment of U.S. MQ-9 Reaper unmanned aerial vehicles to Kanoya Air Base[13]
- Planned upgrades to the Southwest Islands' logistics infrastructure related to airfields, ports, and medical facilities for Japanese Self-Defense Force use that were described in Japan's National Security Strategy, National Defense Strategy, and Defense Buildup Program[14]
- The planned deployment of an electronic warfare unit and surface-to-air guided missile unit to Yonaguni[15]
- The establishment of the U.S. Marine Corps'12th Marine Littoral Regiment on Okinawa[16]

PRC SMEs argue that the increased range, concentration, and resilience of offensive capabilities being deployed to the islands could better position the Japan and the U.S. to (1) track PLA submarines, surface combatants, and aircraft; (2) deny the PLA access to key straits needed to enter the Pacific, and (3) destroy infrastructure on the PRC mainland and offshore islands as well as PLA platforms operating in the vicinity of Japan.

Other missile developments

U.S. missile deployments in Asia are a source of concern for the PRC, both for their military capability and their geopolitical significance. Missiles deployed by the U.S., as well as those acquired by its allies and partners, could be used offensively in the land, sea, and air domains against PLA targets or defensively to intercept the PLA's own missiles. Furthermore, it is not lost upon PRC military thinkers that the act of accepting a missile deployment is a significant commitment. By agreeing to host such a U.S. asset, a host country is agreeing to bear the costs of any domestic political opposition and to assume the risk that the U.S. asset hosted on its soil could

---

[12] "Regular Press Conference of the Ministry of National Defense on July 28," PRC Ministry of National Defense, Aug. 5, 2022, http://eng.mod.gov.cn/news/2022-08/05/content_4917402.htm.

[13] CCTV-4: *China's Public Opinion Field*, Aug. 28, 2022, https://tv.cctv.com/2022/08/29/VIDEHy7ayomppYfmqv3Q4vwk220829.shtml?spm=C52507945305.PXjYs4J0rfFg.0.0; CCTV-4: *Focus Today*: Sept. 22, 2022, https://tv.cctv.com/2022/09/22/VIDE3NPrhml99ow0WfqdvaoJ220922.shtml?spm=C45305.PmBKBQYn4ReN.E2dBMI2VdbgJ.33.

[14] In one such example, a PRC state television report stated that airfield upgrades in the Southwest Islands would include modified runways on Miyako, Ishigaki, and Yonaguni to accommodate the takeoff and landing of F-35s. See CCTV-4: *Asia Today*, Dec. 19, 2022, https://tv.cctv.com/2022/12/19/VIDEFjxNr8lRU58IyQ32xZUA221219.shtml?spm=C45305.PiIkmPvmwrBJ.E3GBGR5JxwmC.17.

[15] CCTV-4: *Focus Today*, Jan. 12, 2022, https://tv.cctv.com/2022/01/12/VIDEXr8oSHhqHWTojVzBJvGW220112.shtml?spm=C45305.PmBKBQYn4ReN.E2dBMI2VdbgJ.32; Shenzhen TV: *Greater China Live*, Dec. 29, 2022, https://www.youtube.com/watch?v=SpI2_y4O7T8&ab_channel=%E7%9B%B4%E6%92%AD%E6%B8%AF%E6%BE%B3%E5%8F%B0GreaterChinaLive.

[16] "12th Marine Regiment Redesignates to 12th Marine Littoral Regiment," Nov. 14, 2023, https://www.marines.mil/News/Press-Releases/Press-Release-Display/Article/3588984/12th-marine-regiment-redesignates-to-12th-marine-littoral-regiment/.

one day make their country a target of aggression. Indeed, reminders of the implicit costs of such a bargain are a message frequently transmitted by the PRC propaganda apparatus.[17] Two recent missile deployment developments merit attention.

Tomahawk missiles to Japan. One high-profile missile development was the October 2023 announcement of an accelerated Tomahawk cruise missile sale to Japan. The announcement came just months after Japan's prime minister first confirmed that the country would purchase 400 Tomahawk missiles from the U.S. as part of efforts to develop "counterstrike capability," or the ability to use stand-off weapons to attack missile bases in enemy territory.[18] Although Tokyo views this capability as defensive in nature and a complement to the country's air and missile defense systems, PRC commentators have taken a darker view. They have portrayed the accelerated sale,[19] coupled with what they see as the development of "offensive" capabilities to strike enemy bases, as an indicator of increased Japanese militarism and willingness to side with the U.S. in challenging China's regional security interests.[20]

US Army plans to deploy ground-based intermediate-range missiles in the Indo-Pacific in 2024. In late 2023, the U.S. Army announced plans to deploy ground-based intermediate-range missiles in the Indo-Pacific during the coming year. According to *Nikkei,* which cited remarks from a U.S. Army spokesperson, two options are being considered—land-based versions of the Standard Missile-6 (SM-6) and the Tomahawk cruise missile.[21] The commanding general of U.S. Army Pacific said in a February 2024 *Proceedings* article that the Army was on track to deploy these midrange capabilities in the near term to "sink ships from land, at range, and with precision."[22] The PRC has been vocal in expressing its concern. A spokesperson of China's Ministry of Defense referred to the planned deployment as a "dangerous move" that would "pose a serious threat to other nations."[23] An arms control specialist at a PRC government-affiliated think tank went so far

---

[17] For example, see "Statement of the Spokesperson of the Chinese Embassy in the Philippines on U.S. Ambassador to the Philippines [Name Omitted] Remarks on EDCA Cooperation and South China Sea," Embassy of the People's Republic of China in the Philippines, Mar. 16, 2023, http://ph.china-embassy.gov.cn/eng/sgdt/202303/t20230312_11039384.htm; Ning Tuanhui, "AUKUS Deceitful Pact Should Not Deter Level-Headed New Zealand," *Global Times,* Nov. 3, 2021, https://www.globaltimes.cn/page/202111/1238065.shtml.

[18] *Defense of Japan 2023*, Japanese Ministry of Defense, p. 234.

[19] Lee Feraen, *Breaking Defense*, "US Clears $2.4B Deal with Japan for Hundreds of Tomahawk Missiles, Systems," Nov. 17, 2023, https://breakingdefense.com/2023/11/us-clears-2-4b-deal-with-japan-for-hundreds-of-tomahawk-missiles-systems/.

[20] "The Japanese Maritime Self-Defense Force Hides Its 'Military Expansion' Ambitions," *People's Daily,* Dec. 8, 2022, http://military.people.com.cn/n1/2022/1208/c1011-32583061.html.; also see Defense Review, television program, CCTV-7, Oct. 9, 2023, https://tv.cctv.com/2023/10/09/VIDE6kSIvvVl3qKWDiAYtRws231009.shtml?spm=C52346.PFNWz3WcJJ8I.Ee7M47yacO9u.33.

[21] Ryo Nakamura and Ken Moriyasu, "US to Deploy New Ground-Based Missiles to Indo-Pacific," *Nikkei,* Dec. 3, 2023, https://asia.nikkei.com/Politics/International-relations/Indo-Pacific/U.S.-to-deploy-new-ground-based-missiles-to-Indo-Pacific-in-2024.

[22] General Charles Flynn and Lieutenant Colonel Tim Devine, "To Upgun Seapower in the Indo-Pacific, You Need an Army," *Proceedings*, Vol. 150/2/1,452, Feb. 2024, https://www.usni.org/magazines/proceedings/2024/february/upgun-seapower-indo-pacific-you-need-army.

[23] "Regular Press Conference of China's Ministry of National Defense on November 30," Ministry of National Defense of the People's Republic of China," Dec. 6, 2023, http://eng.mod.gov.cn/xb/News_213114/NewsRelease/16271259.html.

as to assert that the deployment could trigger nuclear escalation because the missiles could be used to strike land-based nuclear targets of a potential adversary.[24]

How do Chinese writings assess new U.S. operational concepts such as MDO for the Army and Air Force, ACE for the Air Force, DMO for the Navy and Marine Corps, and EABO for the Marine Corps?

PRC military thinkers and strategists carefully study all of the world's major militaries with an eye toward identifying operational lessons learned and gaining a better understanding of potential adversaries. Not surprisingly, evolving U.S. operational concepts are of high interest. Over the past few years, the U.S. has conducted a number of exercises and operations that have employed such operational concepts as MDO, ACE, DMO, and EABO. Common themes in the PRC media response to these activities include (1) an assumption that these concepts were developed to counter the PRC military—especially within the First Island Chain; (2) an assessment that, if successfully employed, these concepts have the potential to improve U.S. military stealth, strike, and survivability; and (3) a contention that PRC long-range missile capabilities have the potential to counter forces employing these concepts and raise the costs of conflict.

Some examples are listed below.

Large Scale Exercise (LSE) 2021 and 2023 (LSE 21, LSE 23). LSE 21 and LSE 23 both employed operational concepts such as DMO and EABO. PRC military experts assessed that the operational concepts were designed with a goal in mind of countering China, portrayed the exercises as opportunities to practice these concepts on a global scale, and suggested that if the U.S. military were successful in integrating these concepts, it could gain an advantage in a notional future conflict. For example, a former researcher at the PLA Academy of Military Sciences, opined on PRC state television that if the U.S. military is successful in "merging together" its various new concepts, it "could very clearly seize the maritime advantage over China."[25]

Noble Fusion. Noble Fusion was a combined, multi-service exercise staged in the Philippine Sea east of the Luzon and Miyako Straits on February 3-7 2022. [26] The exercise featured the participation of units from the US Navy, US Marine Corps, US Air Force, and the Japan Maritime Self-Defense Force. PRC writings noted the application of EABO and MDO during this exercise and portrayed these concepts as likely to be employed in the event of a conflict.[27] For example,

---

[24] Guo Xiaobing, "US Land-Based Intermediate-Range Missile Deployment in Indo-Pacific May Trigger Nuclear Escalation," *Global Times*, Dec. 4, 2023, https://opinion.huanqiu.com/article/4Fcsy2Meo5E.

[25] Focus Today, television program, CCTV-4, Aug. 10, 2023, https://tv.cctv.com/2023/08/10/VIDEDg1cHLSSHiPQMh2Ll4HS230810.shtml?spm=C45305.PmBKBQYn4ReN.E2dBMI2VdbgJ.33.

[26] Gunnery Sgt. Dengrier Baez, "Exercise Noble Fusion Kicks Off with Joint Combined Expeditionary Training In Philippine Sea," Marines, Feb. 4, 2022, https://www.marines.mil/News/News-Display/Article/2924024/exercise-noble-fusion-kicks-off-with-joint-combined-expeditionary-training-in-p/"; Lt. Col. Caleb Eames, "CTF-76/79 Highlights Joint and Allied Naval Expeditionary Force Capabilities during Noble Fusion," DVIDS, Feb. 7, 2022, https://www.dvidshub.net/news/414221/ctf-76-79-highlights-joint-and-allied-naval-expeditionary-force-capabilities-during-noble-fusion .

[27] CCTV-4: Focus Today, Feb. 9, 2022, https://tv.cctv.com/2022/02/09/VIDEtyKDxnX55oj2P2tugqva220209.shtml?spm=C45305.PmBKBQYn4ReN.E2dBMI2VdbgJ.

one PLA officer assessed that Noble Fusion was "clearly focused on Taiwan" and that the U.S. and Japan are training in the concept of EABO "with Taiwan at the center."[28]

Some PRC writings about this exercise also argued that the PRC had the ability to counter these operational concepts—especially through the employment of the PRC's long-range missile capabilities. For example, a retired PLA officer claimed that any U.S. "attempt to create a lonely outpost on the first island chain is basically impossible" due to China's "long range missiles and air control capabilities."[29]

ACE. PRC writings generally describe ACE as a U.S. Air Force response to China's anti-access/area denial (A2/AD) capabilities in the Indo-Pacific. In their writings, ACE is portrayed as providing the dual advantages of improving the stealth, mobility, and survivability of air assets at the same time reducing the planning time and logistical support required for air operations.[30] ACE featured prominently in PRC media reporting on recent iterations of Valiant Shield and Cope North as well as the U.S. Air Force effort to construct a divert airfield on Tinian Island of the Marina Islands.

Recommendations

A common element of many of the areas of concern expressed in PRC media and academic journals is the central role of allies and partners in working in concert with U.S. military forces in any scenario where the PLA may seek to constrain or restrict U.S. military operations in the region. To have confidence that we will retain the access and support of our allies and partners in the region and globally, it is imperative that the U.S. do all within its power to increase confidence in the durability of its commitment to the region, its reliability as a partner, and its intention to promote and preserve the values that guide our foreign policy. In some cases, doing so will require countering disinformation campaigns designed to generate opposition or discontent with U.S. presence in the region, and in other cases it may require taking difficult actions to demonstrate the reliability of the U.S. as a security partner. With this in mind, I make the following recommendations.

- Reauthorize the Global Engagement Center to ensure that the U.S. has the tools required to counter PRC mis-/dis-/ and mal-information activities that seek to degrade and undermine support for the U.S. presence in the Indo-Pacific.
- Support legislation to provide funding and military assistance to Ukraine to demonstrate the staying power of the U.S. commitment to resisting aggression.

[28] CCTV-4: Focus Today, Feb. 9, 2022, https://tv.cctv.com/2022/02/09/VIDEtyKDxnX55oj2P2tugqva220209.shtml?spm=C45305.PmBKBQYn4ReN.E2dBMI2VdbgJ.32; CCTV-7: Defense Review, Feb. ,9 2022, https://tv.cctv.com/2022/02/09/VIDEI81SjZcvdQxpevRoBFq2220209.shtml?spm=C52346.P3qPxW9Ux1lo.EX5KFDTi4RyG.1 .

[29] CCTV-4: Asia Today, Feb. 9, 2022, https://www.youtube.com/watch?v=X3iapiO6AZk.

[30] "US Media: The US Air Force Trains 'Dividing the Whole into Smaller Parts' in the Pacific," Reference News (Cankao Xiaoxi), Apr. 27, 2019, http://www.cankaoxiaoxi.com/mil/20190427/2378600.shtml; Wen Jie, "'Rapid Raptor' the US Military's New Deployment Tactic for F-22," Ordnance Knowledge (Bingqi Zhishi), Aug. 1, 2016.

OPENING STATEMENT OF CHRISTOPHER JOHNSTONE, SENIOR ADVISER AND JAPAN CHAIR, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES (CSIS)

MR. JOHNSTONE: Vice Chair Price, Commissioner Schriver, and distinguished members of the Commission, I'm honored to share my views on this important topic with such a distinguished group of experts. Today, I will address the vital role U.S. alliances play in deterring and responding to potential aggression by the People's Republic of China. I will focus on three issues: the significance of allies for U.S. military objectives, the role of minilateralism like the Quad, AUKUS, and trilateral forums in supporting U.S. objectives, and additional actions our allies can take to strengthen deterrence.

U.S. alliances in the Indo-Pacific represent a foundational strength for the United States and a strategic advantage that China lacks. All five U.S. treaty alliances with Japan, Australia, the Republic of Korea, the Philippines, and Thailand provide access for U.S. forces either through permanent basing or rotational presence. These alliances are critical to our ability to deter PRC aggression and respond to contingencies.

They enable military presence near regional flashpoints. This presence ensures that the United States can respond quickly in a crisis. U.S. alliances in the presence of U.S. forces in multiple locations complicates PRC decision-making by increasing the resources Beijing would have to expend in a conflict and increasing the likelihood that a conflict would involve more than just the United States. Finally, U.S. allies in the region possess growing military capabilities in their own right that serve to reinforce deterrence provided by the United States.

U.S. allies share a common concern about China's strategic ambitions. All are increasing spending on defense and seeking closer security ties with the United States. Australia and the ROK spend more than 2 percent of GDP on defense, and Japan will approach this level by 2027. All three are global partners, including in supporting Ukraine in the war against Russia. Let me say a few words about each.

The alliance with Japan is the foundation of American power projection in the region. It hosts the most important U.S. military capabilities, including the Ronald Reagan Carrier Strike Group. Japan is building an increasingly formidable military on its own. The 2022 national security and defense strategies set out unprecedented policy change, including plans to nearly double its defense budget by 2027 and -- and to invest in new capabilities, including long-range counterstrike.

Australia is increasingly central to U.S. strategy. It hosts rotational Navy, Air Force, and Marine Corp elements for training and exercises. Australia and the United States are collaborating on infrastructure improvements, including upgrades to two bases to support rotations of bomber aircraft. As one of the first AUKUS milestones, Australia will host rotations of Virginia-class submarines as soon as 2027.

The alliance with the Philippines has undergone a transformation since the election of Ferdinand Marcos as president in May 2022. Last year, the United States and the Philippines announced four new locations where U.S. forces will have rotational access on top of five existing sites all near Taiwan and the South China Sea, vital access if the Philippines allows U.S. use of those facilities in a timely way.

The alliance with South Korea remains focused on North Korea, and the vast majority of the U.S. presence consists of ground forces. Nevertheless, the alliance serves to limit China's options in the Taiwan contingency by deterring opportunistic aggression by North Korea that could otherwise be designed to distract the United States. In sum, U.S. bilateral alliances in the

region are a critical element in deterrence against PRC threats, both for the access they provide and the capabilities they bring to the table. And all of these relationships are getting stronger at the same time.

This network of bilateral alliances stands in contrast to NATO in Europe. A mix of factors has impeded development of multilateral security institutions in East Asia. In recent years, however, as concerns about China have intensified, informal minilateral cooperation has strengthened. Once largely symbolic, cooperation among U.S. allies in the region is now featuring a robust agenda. The AUKUS arrangement is the most high-profile example, although it has a narrow purpose, providing Australia with nuclear-powered submarines and promoting the development of advanced capabilities. The symbolism of linking Europe and the Indo-Pacific is powerful, but AUKUS's near term contribution to deterrence is limited. More significant is deepening trilateral cooperation among the U.S., Japan, and the ROK and the U.S., Japan, and Australia.

The former has accelerated since the election of President Yoon in South Korea in March 2022, culminating in a -- in a trilateral leaders meeting at Camp David last August. The three leaders announced a sweeping agenda at that time, from real-time information sharing on missile threats to cooperation on economic security.

Although most of this agenda still is focused on North Korea, the three countries have an increasingly broad foundation for cooperation, including on issues related to -- to China. The U.S.-Japan-Australia trilateral relationship has also strengthened. The defense agenda now features robust exercises and training and emerging cooperation on advanced capabilities.

Finally, the Quad, a grouping of Australia, India, Japan, and the United States, has evolved into a key mechanism for regional cooperation. It has avoided a security agenda, focused mostly on economic issues, but it nevertheless serves to anchor India in the Indo-Pacific as a major player. So this deepening cooperation among allies does not approach a treaty alliance, does not approach NATO, and will not guarantee a collective response to a crisis, but it reflects converging threat perceptions and signals that a regional security architecture is forming in response to PRC behavior.

U.S. alliances and cooperation in the Indo-Pacific are on strong footing, but the challenge of sustaining deterrence is growing rapidly as China's capabilities advance. The challenge is to run faster and expand cooperation into new areas. Some areas to prioritize include further diversifying U.S. access in the region, as my colleague mentioned. Second, modernizing command and control relationships, in particular with Japan and Australia.

In my view, the U.S. Forces in Japan in particular needs a -- a reboot. Promote allied investments in -- in resilience, including hardening and cybersecurity. Build deeper connectivity across alliances, in particular, things like establishing a contingency planning cell that can facilitate trilateral coordination among the U.S., Japan, and the Republic of Korea.

And finally, promote defense-industrial cooperation. Japan's investments in strike -- Australia's interest in long-range strike could serve as a foundation for this. I can address the question of the role of Congress in the Q&A, but thank you for -- for your time.

VICE CHAIR PRICE: Thank you. And Dr. Lee.

PREPARED STATEMENT OF CHRISTOPHER JOHNSTONE, SENIOR ADVISER AND JAPAN CHAIR, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES (CSIS)

CSIS | CENTER FOR STRATEGIC & INTERNATIONAL STUDIES

Statement before the U.S.-China

Economic and Security Review Commission

"China's Evolving Counter Intervention Capabilities and Implications for the United States and Indo-Pacific Allies and Partners."

Countering China's Military Strategy: The Role of U.S. Allies and Partners

A Testimony by:

Christopher B. Johnstone

Senior Adviser and Japan Chair, CSIS

March 21, 2024

Dirksen Senate Office Building 406

Vice Chair Price, Commissioner Schriver, and distinguished Members of the Commission, I am honored to share my views with you on this important topic. It is a privilege to testify on this panel with such a distinguished group of experts. During the course of my career, I have had the good fortune to contribute directly to our enduring effort to build and strengthen U.S. alliances in the Indo-Pacific, including our partnerships with Japan, Australia, the Republic of Korea, and the Philippines. America's treaty alliances remain the backbone of U.S. strategy in the region. My testimony today will focus on the increasingly vital role these allies play, along with other important partners, in deterring and responding to aggression by the People's Republic of China (PRC). The Center for Strategic and International Studies does not take policy positions, so the views in my testimony are my own and not those of my employer.

In my testimony I will focus on three issues in particular: the significance of U.S. allies and partners for U.S. military objectives in the region, and the benefits these relationships provide to the United States; the role of "minilateralism"—to include the Quad, AUKUS and trilateral forums like the U.S-South Korea-Japan grouping—in supporting U.S. objectives, and the military advantages these groups could provide in a region where these is no multilateral alliance structure like NATO; and the additional actions our allies and partners could and should take to strengthen deterrence and response capabilities in the Indo-Pacific region.

The Critical Role of U.S. Allies and Partners in the Indo-Pacific

U.S. alliances in the Indo-Pacific represent a foundational strength for the United States, and a strategic advantage that China lacks. The United States has five bilateral treaty alliances in the region, with Japan, Australia, the Philippines, the Republic of Korea (ROK) and Thailand. All of these relationships involve formal mutual security commitments that provide access for U.S. military forces, either through permanent basing (in the case of Japan and the ROK) or rotational/episodic presence. With the exception of Thailand, where U.S. military access rests on longstanding informal understandings, the terms of U.S. military activities in these countries are codified through legally binding status of forces (or visiting forces) agreements. Singapore is not a treaty ally, but has allowed important rotational naval and air presence for the United States through legal agreements in place since 1990.

These alliances and partnerships are critical to our collective ability to deter PRC aggression and respond to regional contingencies. They enable routine military presence and operations near regional flashpoints, including Taiwan; this presence ensures that the United States can be postured to respond quickly in a crisis, and does not have to fight its way into a conflict zone from afar. U.S. alliances, and the presence of U.S. forces in multiple locations around the region, also complicates PRC targeting and decisionmaking, by increasing the resources Beijing would have to expend in a conflict and the likelihood that any conflict would involve more than just the United States. In deciding whether to strike U.S. bases in the theater, for example, Beijing has to consider how host countries would respond to an attack on their soil. Further expanding the diversity of locations from which U.S. forces can operate would amplify this dilemma for Beijing, and is a high priority for the Department of Defense.

Finally, U.S. allies in the region possess critical, and increasing, military capabilities in their own right—especially Japan, Australia, and the ROK—that serve to reinforce the deterrence provided by forward-deployed U.S. forces. Indeed, strengthening the capabilities of allies is an increasingly central element to U.S. strategy for the region, as China's military modernization has begun to shift the regional military balance in its favor.

U.S. allies share a common and deepening concern about China's strategic ambitions in the region, and partly as a result these partnerships, with the possible exception of Thailand, are getting stronger simultaneously—arguably for the first time since the end of the Cold War. All U.S. allies in the region are increasing spending on defense and seeking closer security ties with the United States. Australia and the ROK spend more than 2 percent of GDP on defense, and Japan will approach this level when the initial phase of its defense buildup concludes in 2027. All three are global partners, including in supporting Ukraine in the war against Russa. South Korea has been one of largest suppliers of ammunition to Ukraine outside of NATO—albeit indirectly, by backfilling U.S. stocks.

The alliance with **Japan** is particularly important in deterring PRC aggression against Taiwan, and represents the foundation of American power projection in the region. It hosts the most important U.S. capabilities in the Indo-Pacific, including the *USS Ronald Reagan* Carrier Strike Group at Yokosuka, the Third Marine Expeditionary Force in Okinawa, and fighter squadrons and other enablers in Okinawa and northern Japan. This presence is vital to the defense of Taiwan, and to responding to a contingency on the Korean Peninsula. The unique nature of the security treaty with Japan gives the United States operational flexibility it lacks in other alliances. Article VI of the treaty gives U.S. forces in Japan a role in the "maintenance of peace and security in the Far East," enabling the United States to deploy forces from Japan across the region and beyond.

In addition to enabling vital U.S. presence, Japan is building an increasingly formidable military. Japan's 2022 national security and defense strategies set out unprecedented policy change, including plans to nearly double its defense budget by 2027 and to invest in new capabilities, including long-range precision strike cruise missiles. The war in Ukraine, and Beijing's strategic alignment with Moscow, have transformed public opinion in Japan on defense spending, and precipitated a comprehensive effort to strengthen the credibility and readiness of the Self Defense Forces. China's military modernization, along with the near daily PRC maritime pressure around the Senkaku Islands in the East China Sea, are key drivers of Japan's new trajectory.

Since the release of these strategies, Japan's defense budget has already increased by 50 percent. Japan will be the largest F-35 customer in the world after the United States, with plans to acquire 146 aircraft (a mix of F-35A and F-35B variants). It already possesses a highly capable Navy, including Aegis ballistic missile defense destroyers, as well as significant undersea and anti-submarine warfare capabilities. It will begin to deploy Tomahawk cruise missiles—the first time Japan has possessed long-range strike capabilities—on ships in 2025. As Japan brings these capabilities on-line, Beijing will confront for the first time the prospect of a Japan that can shoot back, on its own and at long range, in response to an attack—a significant new variable in the deterrence equation.

Australia is increasingly central to U.S. efforts to counter China's military strategy and deter aggression. Through the bilateral Enhanced Force Posture Cooperation initiative, Australia today hosts rotational U.S. Navy, Air Force, and Marine Corps elements for training and exercises—a significant expansion since cooperation on force posture first began in 2011. Australia and the United States are collaborating on infrastructure investments that could support operations in the defense of Taiwan; they are funding upgrades to two bases in northern Australia, for example, to support rotations of B-52 and B-1 aircraft and long-range bomber operations in a contingency. As one of the first milestones in the AUKUS initiative, Australia will host Submarine Rotational Force-West, with U.S. Navy Virginia-class attack submarines beginning to visit as soon as 2027. And Australia itself is investing in significant new power projection capabilities beyond the AUKUS nuclear powered submarines, with plans for more than 70 F-35 aircraft and long-range precision strike systems; a government review recently recommended that the country double the size of its surface fleet, from 11 hulls to 26, although questions remain about the resourcing for these plans.

The alliance with the **Philippines** has undergone a marked transformation since the election of Ferdinand Marcos, Jr. as President in May 2022. Under former President Duterte the alliance nearly collapsed, with Manila threatening to terminate the Visiting Forces Agreement and end military engagement. Largely as a result of increasing Chinese aggression in the South China Sea, Marcos has reversed course, and embraced a revitalization of security ties. In April 2023, the United States and the Philippines held the largest-ever iteration of the annual BALIKATAN exercise, and that same month the governments announced four new locations where U.S. forces will have rotational access for activities under the Enhanced Defense Cooperation Agreement (EDCA)—on top of five existing sites—all of which are in northern Luzon (near Taiwan) and Palawan (on the South China Sea). The primary military benefit to the United States of the alliance with the Philippines is its geography; the ability of U.S. forces to operate out of Luzon and Palawan in a Taiwan or South China Sea crisis would significantly complicate PRC military operations, provided the Philippines grants access early in a crisis—although there are likely limits to the kinds of U.S. operations the Philippines would allow in a crisis. In addition, the United States is supporting Manila's efforts to improve the military capabilities needed to monitor and defend its territorial waters and Exclusive Economic Zone.

The alliance with **South Korea** remains principally focused on North Korea, with more than 28,000 U.S. personnel stationed there. The vast majority of the U.S. presence in the ROK consists of ground forces, which would be of limited utility in a responding to a crisis elsewhere in the region; the possible exception are two U.S. Air Force fighter squadrons, which could support a conflict over Taiwan. Nevertheless, the U.S.-ROK alliance serves to limit China's options in a Taiwan contingency, by deterring opportunistic North Korean aggression that could otherwise be designed to distract the United States. South Korea boasts a formidable military, with sophisticated ground forces, an air force that includes the F-35, an increasingly capable navy, and a growing arsenal of ballistic and cruise missiles that can range targets deep inside China. Public opinion polls in South Korea reflect a sharply negative view of China, in part a result of PRC attempts to use economic levers to punish South Korea for cooperating with the United States on missile defense. The shift in public sentiment may enable deeper alliance cooperation on issues related to Taiwan.

Finally, although not a treaty ally, **Singapore** hosts the rotational presence of U.S. Littoral Combat Ships and surveillance aircraft, and serves as a logistical hub for U.S. operations across the theater. Though the ability of U.S. forces to operate out of Singapore during a regional crisis is open to question, it provides a vital peacetime anchor for consistent U.S. military presence in Southeast Asia.

In sum, U.S. bilateral alliances and partnerships in the region are a critical element in deterrence against PRC threats, both for the access they provide to the United States and the capabilities our allies bring to the table. And all of these relationships are strengthening at the same time, in response to growing concerns about PRC intentions.

The Growing Contribution of Minilateralism to Deterrence

This network of bilateral U.S. alliances and partnerships in the Indo-Pacific stands in contrast to NATO and the multilateral security architecture in Europe. A mix of complex historical factors—including Japan's colonial legacy on the Korean Peninsula—divergent threat perceptions, and vast geography has impeded the development of multilateral security institutions in East Asia. In recent years, however, as threat perceptions related to China's strategic ambitions have intensified, informal "minilateral" cooperation has strengthened at an accelerating pace. Once symbolic gatherings largely devoid substance, cooperation among U.S. allies and partners in the region now features an increasingly robust and concrete agenda. Although these networks fall short of formal treaty arrangements, they make an increasingly important contribution to deterrence, by promoting information sharing, advancing interoperability, and, more broadly, reinforcing for China that the use of force could trigger a regional, if not global, response. Advancing the development of these minilateral partnerships should be a high priority for the United States.

The AUKUS arrangement, first announced in September 2021, is perhaps the most high-profile recent manifestation of this minilateralism, although it has a relatively narrow purpose: providing Australia with nuclear-powered submarines by the mid-2030's, and in the meantime promoting the development of advanced capabilities in several high technology areas. Although the submarine development project has made considerable progress since the announcement, the partners have struggled to identify concrete projects under so-called Pillar II. The symbolism of linking U.S. alliances in Europe and the Indo-Pacific sends a useful message, but AUKUS' immediate contribution to regional deterrence is limited.

Of far greater significance is the rapid deepening of trilateral cooperation in two groupings: U.S.-Japan-ROK and U.S.-Japan-Australia. The former has accelerated dramatically after the election of President Yoon Seok-yul in South Korea in March 2022, culminating in a trilateral leaders meeting at Camp David in August 2023. There the three leaders announced a sweeping agenda, from real-time information sharing on missile threats, to a robust trilateral military exercise program, to cooperation on economic security issues and development assistance programs across the Indo-Pacific. Most significant was a stand-alone statement announcing a trilateral "commitment to consult" and coordinate responses to "regional challenges, provocations, and threats"—a symbolic acknowledgement for the first time that the three countries' security interests are linked. Although the bulk of the trilateral agenda remains centered on confronting the North Korean threat, the three countries have an increasingly broad foundation for cooperation, including

on issues related to China and Taiwan—and President Yoon has departed from past South Korean leaders in his willingness to speak out on these concerns. The trilateral joint statement issued at Camp David notably calls for "peace and stability across the Taiwan Strait as an indispensable element of security and prosperity in the international community."

The U.S.-Japan-Australia trilateral has also strengthened significantly. Once little more than an annual photo op, the defense agenda now features a robust exercise and training program, and emerging cooperation in the development of advanced capabilities including uncrewed aerial systems. The three governments have announced plans to increase Self Defense Force training in Australia; in August 2023, Japanese F-35 aircraft deployed to Australia for training for the first time, and Australian F-35 aircraft visited Japan for the same purpose in September. And the Australia-Japan bilateral relationship has grown alongside trilateral cooperation. In 2023, the two governments concluded a Reciprocal Access Agreement—essentially a status of forces agreement—to facilitate exercises and training. In October 2022 leaders of the two governments issued a joint declaration on security cooperation, in which they pledged to "consult each other on contingencies that may affect our sovereignty and regional security interests, and consider measures in response"—language that deliberately echoes the ANZUS treaty.

Finally, the Quad grouping of Australia, India, Japan, and the United States has evolved into a key mechanism for regional cooperation after the Biden administration elevated the forum to the leader level in 2021. The Quad has deliberately avoided developing a security agenda, beyond a new program on maritime domain awareness, focusing instead on economic and development issues in the region, including infrastructure, health, and connectivity. Nevertheless, this forum serves to anchor a role for India in East Asia, and gives the four countries a platform for competition with China's Belt and Road Initiative.

The importance of these minilateral mechanisms should not be overstated. The deepening cooperation among U.S. allies and partners still does not approach the level of commitment enshrined in a treaty alliance, and will not guarantee a collective response to a crisis involving China. The United States and its partners should do much more to strengthen cross-alliance connectivity at the operational level, a topic I will address more later in my testimony. But the deepening habits of cooperation and growing interoperability among U.S. allies reflect converging threat perceptions—and signal that, at least among a sub-set of actors, a region-wide security architecture is forming in response to PRC behavior.

Perhaps recognizing this reality, China has sharply criticized these new mechanisms, seeking to portray the United States and its allies as pushing the region into a new cold war—without changing the behavior that precipitated their development in the first place. In August 2023, the *Global Times* described the trilateral leaders meeting at Camp David as an effort to create a "mini-NATO." After the May 2022 Quad leaders' meeting in Tokyo, China's Foreign Ministry spokesman accused the Quad members of "building small cliques and stoking bloc confrontation." China has also sought blame the United States for the pushback Beijing receives around the region to its aggressive foreign policy—effectively denying agency to countries around the region it seeks to coerce. In December 2023, Foreign Minister Wang Yi accused Manila of taking provocative actions in the South China Sea, warning that China would respond if Manila "colludes with ill-intentioned external forces."

China's rhetoric gains some traction in Southeast Asia, where concern about the implications of U.S.-China strategic competition run deep. But it has not impacted support for the Quad or the interest of allies in deepening minilateral engagement. Absent changes in China's external behavior, the trend of deepening minilateral cooperation among close U.S. allies and partners is certain to continue.

Sustaining Deterrence in the Indo-Pacific: Next Steps for Allies and Partners

U.S. alliances and minilateral cooperation in the Indo-Pacific are on increasingly strong footing—but the challenge of sustaining deterrence in the region is growing rapidly as China's capabilities advance. The challenge is to both run faster and expand cooperation into new areas. Some areas to prioritize include:

- *Further diversify U.S. military access in the region*. Expanding the range of locations from from which U.S. forces can operate is key to complicating China's operational planning. This is a politically sensitive area for our allies; particular priorities should be to establish periodic presence for exercises and training in Japan's islands southwest of Okinawa, and regularly exercising at the new EDCA locations in the Philippines.
- *Modernize command and control relationships with Japan and Australia*. Washington should take steps to transform U.S. Forces – Japan into a true joint operational command, subordinate to INDOPACOM, to interface with Japan's new Joint Operations Command. A particular focus should be to build a credible Japanese counterstrike capability, integrated with the U.S. intelligence and targeting architecture. Washington and Canberra should also consider establishing a new alliance coordination mechanism to support the growing number of American personnel operating out of Australian bases.
- *Promote allied investments in resilience*. A particular priority should be to encourage Japanese efforts to strengthen information security and cybersecurity, as well as investments in space capabilities to support redundancy. Japan is considering new legislation to strengthen cyber defenses and create a new security clearance system for issues related to economic security; the United States should encourage expeditious action in these areas.
- *Build deeper connectivity across alliances*. Following the Camp David Summit, the framework for engagement at the strategic level among the United States, Japan, and the ROK is in place. The next step is to build deeper operational connectivity, by establishing a trilateral contingency planning cell, exchanging liaison officers at commands in Japan and South Korea, and allowing observers at each other's exercises.
- *Promote defense industrial cooperation.* Japan's investments in strike capabilities, and Australia's Guided Weapons and Explosive Ordnance program, could serve as a foundation for trilateral cooperation in manufacturing critical munitions and materiel. Counterhypersonics are another capability area of common interest.

The Role of Congress

Congress has an important role to play in supporting the U.S. strategy of defeating China's A2AD capabilities. In particular, Congress should:

- *Consistently resource the Pacific Deterrence Initiative*. Capabilities and infrastructure investment for the Indo-Pacific theater should be a high priority in the budget for the Department of Defense.
- *Increase security cooperation resources for Indo-Pacific partners*. The capability needs of U.S. allies and partners in South and Southeast Asia are vast; support for these partners, through both Foreign Military Finance and Section 333 authorities under the National Defense Authorization Act (building partner capacity), should be a particular priority.
- *Consider streamlining technology release policies Japan*. After passing exemptions under the International Traffic in Arms Regulation for AUKUS partners, Congress should consider exemptions for Japan, as it takes additional steps to strengthen information security protections.

OPENING STATEMENT OF CAITLIN LEE, DIRECTOR, ACQUISITION AND TECHNOLOGY POLICY PROGRAM; SENIOR POLITICAL SCIENTIST, RAND CORPORATION

DR. LEE: Co-Chair Price, Co-Chair Schriver, and distinguished members of the Commission, thank you for inviting me to appear before you today to discuss the state of U.S. preparedness to confront China's military strategy in the Indo-Pacific region. Current U.S. defense strategy calls on U.S. Forces to deter a worse-case scenario, a Chinese invasion of Taiwan through deterrence by denial.

This approach requires building a force with the capability, capacity and readiness to credibly convince Beijing that an invasion attempt is likely to fail. With one qualification, which I will discuss in a moment, I believe denial is a credible and prudent approach because it holds at risk the thing -- at risk China's immediate aim, the annexation of Taiwan. And it avoids the escalatory risk associated with immediately pursuing indirect approaches such as blockades, nuclear use, or other forms of cost imposition.

The DoD has taken some steps to counter China's military strategy in the Indo-Pacific, but it needs to do a lot more. Indo-Pacific geography and Chinese counter-intervention capabilities conspire to make this a difficult fight. Much of the capability needed to -- to blunt a Chinese invasion is based in the continental United States and would have to traverse thousands of miles with little warning time and potentially under the threat of Chinese missile attacks to get into the theater.

In contrast, China is situated less than 100 miles from Taiwan and has interior lines that would allow it to employ its forces and resupply them much more quickly than the United States can. U.S. Forces operating in the vast ocean expanses of the Indo-Pacific would have limited real estate, and they would be vulnerable to Chinese counter-intervention capabilities specifically designed to keep U.S. power projection forces at arm's length.

These capabilities include ballistic and cruise missiles that can target U.S. bases in the Indo-Pacific as well as long-range missiles with anti-ship capabilities, land and sea-based counter care -- counter-air capabilities, as well as fourth and fifth gen fighters with long-range missiles and radar that can target American air power; quieter subs that can target U.S. and allied surface ships with torpedoes and anti-ship cruise missiles and underwater sensor networks that can increasingly detect U.S. submarines; and finally, anti-satellite weapons and cyber capabilities that can disrupt U.S. command control and communications.

For roughly a decade, war games centered on attempts to counter Chinese A2/AD capabilities in the Taiwan invasion scenario have typically ended poorly for the United States. In addition to the annexation of Taiwan, other risks highlighted in past research include nuclear escalation, levels of attrition not seen since World War II, and protracted conflict.

Indeed, if history is any guide, it is possible that a war with China could drag on for months, and years, careening across a spectrum of ceasefire, stalemate, and high-intensity conflict. Given these challenges, U.S. Forces need to pursue a new way of war that bolsters the credibility of a denial strategy while hedging against the possibility of protraction.

First, DoD should adjust its posture, that -- by both increasing forward presence in the Indo-Pacific and enhancing the survivability of those forces. This means emphasizing assets that can be deployed without relying on large fixed-base infrastructure which is vulnerable to Chinese air and missile attacks.

Priority should therefore be placed on unmanned air, undersea, and surface vehicles. The U.S. should also posture highly survivable and long range systems such as bombers and nuclear submarines that can respond within hours of a Chinese invasion. Second, DoD needs resilient sensing capabilities to distinguish between high-value targets and decoys in the strait. One approach might be to deploy large numbers of low-cost drones to relay targeting information back to strike platforms.

Third, the U.S. needs to employ a lot of strike platforms, bombers, subs, manned and unmanned fighters to deny the invasion of Taiwan by targeting Chinese ships, aircraft, and ground forces. Fourth, after blunting this initial invasion force, the U.S. needs to be able to systematically dismantle and attrit the invasion, the remaining forces, to bring Beijing to a negotiated settlement. These attacks would focus on air defenses, PLA ships, subs, and military infrastructure in the South China Sea.

And finally, I would add an additional step to the denial campaign, preparing for protraction. It involves developing options to bring China to the negotiating table while still avoiding escalation. Critically, it also involves building up the U.S. defense industrial base, which serves as a deterrent in its own right. Measured against these operational tasks, how far has the United States come? The answer is not nearly far enough.

There have been many causes of this strategic atrophy, but perhaps the biggest one is that DoD has struggled to build consensus around an operating concept and build a coherent narrative that explains how U.S. Forces can deter and defeat China. The lack of consensus is evident in the disjointed nature of service efforts to build more resilient forward-basing postures and their efforts to develop multi-domain command and control strategies.

DoD and Congress have also struggled to fund force development efforts within legacy planning, budgeting, and acquisition systems, that fail to strike the appropriate balance between predictability and agility. And finally, in the absence of a consensus-based operating concept and a flexible budgeting and acquisition system, DoD continues to heavily rely on exquisite legacy systems.

To be sure, U.S. Forces need these systems, especially stealth bombers, bomb subs, and long-range precision munitions to rapidly bring firepower to bear in a high-end fight. But DoD's over-reliance on the exquisite can crowd out the small, many, and low-cost solutions needed to increase the resilience and therefore the lethality and survivability of U.S. combat capabilities. Taiwan suffers from the same tendency to rely on the exquisite. It too needs to consider asymmetric capabilities like land-based anti-ship missiles to defend itself from the initial invasion force.

In closing, I make the following recommendations. First, DoD needs to build consensus around a new operating concept. What operational problems will U.S. Forces face? What missions will Forces be called on to execute? And how will the conflict end? Of course, plans never survive first contact, but a new concept, ideally one that is codified in doctrine, would provide a clear path forward, sow more doubt in the minds of Chinese leaders about their ability to prevail over the United States in conflict and provide a foundational basis for a counter A2/AD strategy that could be adapted in wartime by the U.S. as well as Taiwan and other partners and allies.

Second, Congress needs to make structural changes that allow a new DoD strategy to align with defense budgeting processes. While continuing resolutions themselves stem from deep political issues, there are still constructive process improvements that can and should be made.

One important recommendation recently offered by a congressionally mandated panel on defense planning and resourcing is for Congress to pass legislation authorizing new starts and increased development or production rates during CRs under certain conditions. This would help to instill some level of predictability into production of defense capabilities, which is an absolute prerequisite for building up the defense industrial base and surging in wartime. With that, I conclude my opening remarks, and I look forward to your questions.

PREPARED STATEMENT OF CAITLIN LEE, DIRECTOR, ACQUISITION AND TECHNOLOGY POLICY PROGRAM; SENIOR POLITICAL SCIENTIST, RAND CORPORATION

Testimony

CAITLIN LEE

Countering China's Military Strategy in the Indo-Pacific Region

CT-A3273-1
Testimony presented before the U.S.-China Economic and Security Review Commission on March 21, 2024

For more information on this publication, visit **www.rand.org/t/CTA3273-1**.

Testimonies

RAND testimonies record testimony presented or submitted by RAND associates to federal, state, or local legislative committees; government-appointed commissions and panels; and private review and oversight bodies.

Published by the RAND Corporation, Santa Monica, Calif.

Limited Print and Electronic Distribution Rights

Countering China's Military Strategy in the Indo-Pacific Region

Testimony of Caitlin Lee[1]
RAND[2]

Before the U.S.-China Economic and Security Review Commission

March 21, 2024

Co-chair Price, co-chair Schriver, and distinguished members of the commission, thank you for inviting me to appear before you today to discuss the state of U.S., ally, and partner preparedness to confront China's military strategy in the Indo-Pacific region. The opinions and conclusions in this testimony build on my own research, a review of U.S. force planning literature, and a rich body of research conducted at RAND over more than a decade on the subject of a U.S.-China war over Taiwan.

To this end, my testimony proceeds as follows. First, I explain why it is important to field combat-credible forces in the Indo-Pacific and why current U.S. posture, forces, and capabilities are ill-suited to the task. I then describe the implications of China's military strategy and anti-access/area denial (A2/AD) capabilities for U.S. forces in a conflict over Taiwan. Finally, I close with some thoughts on steps the United States can take to bolster deterrence in the Indo-Pacific, an assessment of U.S. progress toward taking those steps, and some final recommendations for Department of Defense (DoD) and congressional consideration.

The Importance of Fielding a Combat-Credible Force for the Indo-Pacific

The military balance in the Indo-Pacific is of central and utmost importance to U.S. foreign policy. After the cataclysm of World War II, U.S. leaders recognized that the security,

---

[1] The opinions and conclusions expressed in this testimony are the author's alone and should not be interpreted as representing those of RAND or any of the sponsors of its research.

[2] RAND is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's mission is enabled through its core values of quality and objectivity and its commitment to integrity and ethical behavior. RAND subjects its research publications to a robust and exacting quality-assurance process; avoids financial and other conflicts of interest through staff training, project screening, and a policy of mandatory disclosure; and pursues transparency through the open publication of research findings and recommendations, disclosure of the source of funding of published research, and policies to ensure intellectual independence. This testimony is not a research publication, but witnesses affiliated with RAND routinely draw on relevant research conducted in the organization.

prosperity, and freedom of Americans depended on active engagement in Eurasia based on shared values of freedom, democracy, and the dignity of the individual.[3] Since then, U.S. military power has underwritten the post–World War II liberal international order; it plays a central role in preventing any one power from seeking to dominate critical regions in Eurasia or undermine those shared values. Over the past decade or more, however, U.S. and like-minded nations have witnessed the rise of a formidable challenger in China, which increasingly appears to possess both the intentions and the military capabilities needed to challenge the extant international order and U.S. interests both at home and abroad. At the same time, U.S. military power in the Indo-Pacific has eroded dramatically relative to China's, opening the possibility of reduced U.S. influence, growing instability, and conflict in the region.[4]

Given these trends, the central question for the U.S. military is how to present combat-credible concepts, capabilities, forces, and posture that sow doubt in the minds of China's leaders about their ability to prevail in a conflict with the United States. The 2018 and 2022 national defense strategies call on U.S. forces to deter large-scale aggression through a strategy of *deterrence by denial*, which involves building a force to credibly convince adversaries that aggression is infeasible or unlikely to succeed.[5] In a U.S.-China conflict, the goal of denial would be to blunt a Chinese invasion of Taiwan *before* Beijing can achieve a *fait accompli, confronting the United States and its allies with the choice between accepting* Beijing's domination of Taiwan or undertaking a painful, bloody war of attrition to take it back.[6] Denial deters by directly confronting China with the prospect of failing to forcibly absorb Taiwan.[7] This is an attractive approach because it credibly holds at risk the thing Beijing would presumably want the most—for its invasion to succeed—and it avoids the escalatory risk associated with more indirect approaches, such as blockades, nuclear use, or other forms of cost imposition.[8]

But what would a denial campaign practically look like? This is still a subject of debate within the U.S. defense establishment, yet it has huge implications for how the services organize, train, and equip their forces to deter and defeat aggression by the nation's most capable

---

[3] See NSC-68, *United States Objectives and Programs for National Security*, the document that in 1950 set out the main elements of the Cold War strategy of containment (Executive Secretary of the National Security Council, *A Report to the National Security Council on United States Objectives and Programs for National Security*, NSC-68, April 14, 1950, pp. 3–4, https://www.trumanlibrary.gov/library/research-files/report-national-security-council-nsc-68).

[4] DoD, *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge*, 2018, https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf.

[5] DoD, 2018; DoD, *2022 National Defense Strategy of the United States of America*, 2022.

[6] Hal Brands and Michael Beckley, "Washington Is Preparing for the Wrong War with China," *Foreign Affairs*, December 16, 2021.

[7] David A. Ochmanek, *Determining the Military Capabilities Most Needed to Counter China and Russia: A Strategy-Driven Approach*, RAND Corporation, PE-A1984-1, June 2022, p. 4, https://www.rand.org/pubs/perspectives/PEA1984-1.html.

[8] For more on the viability of a denial campaign, see Jacob L. Heim, Zachary Burdette, and Nathan Beauchamp-Mustafaga, *U.S. Military Theories of Victory for a War with the People's Republic of China*, RAND Corporation, PE-A1743-1, 2024, https://www.rand.org/pubs/perspectives/PEA1743-1.html.

adversaries.[9] The 2018 National Defense Strategy called for new operational concepts and capabilities to counter China, and the 2022 National Defense Strategy continued that theme.[10] But today the U.S. defense establishment still lacks a consensus regarding a concrete approach to defeating large-scale aggression by nuclear-armed peer adversaries. There is a vigorous, if quiet, debate around these issues—a sign that real changes in U.S. strategy and force development may be coming. The problem is that the changes are not coming fast enough. Despite a few bright spots of reform, DoD is still stuck in old ways of doing business.

Today, DoD continues to rely largely on a post–Cold War blueprint for confronting large-scale state aggression—cemented by the success of the 1991 Gulf War—that calls for overwhelming force, power projection across vast distances, and decisive victory.[11] But the core assumptions that underly this approach, which RAND analysis refers to as *decisive expeditionary force*, no longer hold.[12] After watching U.S. forces systematically dismantle Iraq's air defenses and pummel its armored divisions during the first Gulf War, China began modernizing and expanding its force to blunt and defeat U.S. power projection operations on its periphery. Beijing has poured billions into a network of A2/AD capabilities designed to keep U.S. forces at arm's reach, as well as a variety of systems that allow it to project power further afield. At the same time, the U.S. ability to resource its old way of fighting has steadily declined due to growing strategic demands—including 20 years of war in the Middle East, among other challenges—and painful cuts to defense budgets.[13]

As a result of these developments, DoD can no longer adhere to the same theory of victory that defeated regional adversaries, such as Iraq and Serbia, during the 1990s. More specifically, the posture and operational concepts that U.S. forces employed in these conflicts are not appropriate for a war with China. In terms of posture, the United States took five months to build up the "iron mountain" of fighters, warships, armor, supplies, and personnel before expelling Iraqi forces from Kuwait. U.S. leaders planned for and expected this buildup. It was a result of the expeditionary approach to force posture the United States adopted after the Cold War, which

---

[9] Caitlin Lee, "Winning the Air Battle for Taiwan: Lessons Learned from Ukraine's Drone Operations," *War on the Rocks*, February 28, 2023, https://warontherocks.com/2023/02/winning-the-air-battle-for-taiwan-lessons-from-ukraines-drone-operations/.

[10] DoD, 2018; DoD, 2022.

[11] David A. Ochmanek, Anna Dowd, Stephen J. Flanagan, Andrew R. Hoehn, Jefferey W. Hornung, Michael J. Lostumbo, and Michael J. Mazarr, *Inflection Point: How to Reverse the Erosion of U.S. and Allied Military Power and Influence*, RAND Corporation, RR-A2555-1, 2023, p. 3, https://www.rand.org/pubs/research_reports/RRA2555-1.html.

[12] Michael J. Mazarr, *Defending Without Dominance: Accelerating the Transition to a New Defense Strategy*, RAND Corporation, PE-A2555-1, September 2023, p. 7, https://www.rand.org/pubs/perspectives/PEA2555-1.html.

[13] DoD now faces a serious strategy-resource mismatch. Strategic challenges include 20 years of war in the Middle East, North Korea's growing nuclear threat, China's conventional and nuclear build-out, and Russia's revanchist activity and possible resurgence following Ukraine, among other challenges, such as growing instability in the Middle East. At the same time, resources have declined. After the Cold War, the Clinton administration cut defense spending dramatically to focus on domestic priorities. In 2013, the Budget Control Act imposed ten-year caps on defense spending. The caps were subsequently amended but still reduced defense spending over that period by hundreds of billions of dollars. See Public Law 112-25, Budget Control Act of 2011, August 2, 2011.

involved closing overseas bases and bringing forces home to reduce costs.[14] Because the U.S. military possessed overmatch relative to Iraqi forces, U.S. leadership could be confident that the United States could regain the initiative, even on short warning.

Once in the theater, the U.S. military exploited superior operational concepts and technology to conduct a counteroffensive and achieve dominance across domains. New technology, such as stealth and precision-guided munitions, allowed the application of a concept of operations designed to achieve control over an enemy's essential systems: command and control, air defenses, and electricity production and distribution, among others. During the first day of the 43-day war, the coalition attacked more targets than the entire Eighth Air Force hit in Europe over the course of two years in World War II.[15]

U.S. forces no longer have that kind of leverage. If the United States were compelled to respond to a Chinese invasion of Taiwan, it may only have days or weeks of warning due to Chinese forces operating on their home turf and possible attempts to mask preparations under the guise of exercises.[16] Relying on the legacy expeditionary approach, the U.S. response would be sluggish and disjointed relative to the Chinese invasion force.[17] Once arriving in theater, U.S. forces would not be able to quickly achieve dominance in any domain. The conventional military balance increasingly favors China, and Beijing possesses nuclear weapons and a growing ability to threaten the U.S. homeland.[18] The United States would have to walk a careful line between escalation risk and operational decisiveness, which would likely put certain targets—such as command and control or over-the-horizon radars—off limits because of concerns about escalation to nuclear use.[19]

Given these realities, it should be a top priority for DoD to identify a viable alternative to *expeditionary decisive force*. The convergence of joint and combined forces around a new set of shared beliefs about the future of warfare, embodied in these new concepts, capabilities, technologies and force posture, could serve as a powerful deterrent, much the same way that the AirLand Battle doctrine of the 1980s was feared by Soviet generals and considered even more

---

[14] Stacie L. Pettyjohn, *U.S. Global Defense Posture, 1783–2011*, RAND Corporation, MG-1244-AF, 2012, https://www.rand.org/pubs/monographs/MG1244.html. See also Caitlin Lee, Anthony D. Rosello, Elizabeth M. Bartels, Nathaniel Edenfield, Thomas Goode, Katherine L. Kidder, Karishma R. Mehta, Tucker Reese, and Andrew Stravers, *Infinite Game: Strategies for Managing the Supply of Indo-Pacific Air Assets in an Era of Strategic Competition*, RAND Corporation, 2023, Not available to the general public.

[15] David Deptula, "Desert Storm at 30: Aerospace Power and the U.S. Military," *War on the Rocks*, March 1, 2021, https://warontherocks.com/2021/03/desert-storm-at-30-aerospace-power-and-the-u-s-military/.

[16] Mark F. Cancian, Matthew Cancian, and Eric Heginbotham, *The First Battle of the Next War: Wargaming a Chinese Invasion of Taiwan*, Center for Strategic and International Studies, January 2023, p. 69.

[17] Ochmanek et al., 2023.

[18] The People's Liberation Army (PLA) also has fielded power projection capabilities and concepts to conduct offensive operations within the second island chain, the Pacific and Indian oceans, and, increasingly, globally. Its survivable (and growing) nuclear arsenal, cyber capabilities, and long-range conventional strike capabilities—including a 2021 test of a potential fractional orbital bombardment system—give it an increasing ability to attack the U.S. homeland (Caitlin Lee and Aidan Poling, "Bolstering Arctic Domain Awareness to Deter Air & Missile Threats to the Homeland," *Mitchell Institute Policy Papers*, Vol. 41, June 2023, https://mitchellaerospacepower.org/wp-content/uploads/2023/06/Bolstering-Arctic-Domain-Awareness-FINAL.pdf).

[19] Heim, Burdette, and Beauchamp-Mustafaga, 2024, p. 6; Ochmanek et al., 2023, p. 23.

ominous than the strategic change wrought by nuclear weapons.[20] A new set of shared beliefs about the future of warfare, codified in doctrine, would reflect real *innovation*: a significant set of operational changes that could be fielded at scale to generate war-winning effects.

Planning for a Taiwan Strait Scenario

U.S. defense planners have had the most success developing new approaches to warfare when they have focused on scenarios that represent dynamics of future conflicts.[21] Scenarios are helpful because, if judiciously chosen, they can become a means to identify the central operational tasks and challenges that forces must confront to prevail in a future conflict.[22] The scenario need not accurately predict the future; it must only present the most credible, stressing, and strategically important case. In practice, this means the scenario should be centered on an adversary with the capability and intent to put important U.S. strategic interests at risk.[23]

Today, an obvious scenario for U.S. defense planning is a conflict between two nuclear-armed peers—the United States and China—over the future of Taiwan. The Chinese Communist Party is on an accelerated timeline for the reunification of democratic Taiwan, and China has engaged in a massive buildup of conventional and nuclear forces.[24] Pentagon leaders have repeatedly affirmed that preparing for conflict with China over Taiwan is a top priority.[25] The Pentagon has now spent more than a decade conducting wargames and analysis to examine the challenges it might face if China were to conduct an air and maritime invasion of Taiwan. In recent years, analysts outside DoD have also conducted research to further inform U.S. understanding of challenges U.S. forces would face and the tasks they must be able to perform to defeat a Chinese invasion.[26] Across these analyses, there is a healthy variation in key assumptions, such as the duration of the conflict, Taiwan's capability and will to fight, and the

---

[20] An early assessment of Soviet reactions to the U.S. AirLand Battle concept and the deep attack capabilities that it called for judged that Soviet military planners had decided that these approaches would "have major implications for the conduct of war" and that, in developing these capabilities, the United States was attempting "to shift the correlation of forces in favor of NATO" (Michael J. Sterling, *Soviet Reactions to NATO's Emerging Technologies for Deep Attack*, RAND Corporation, N-2294-AF, 1985, p. v, https://www.rand.org/pubs/notes/N2294.html).

[21] William W. Kaufman, *Planning Conventional Forces, 1950–80*, Brookings Institution, 1982.

[22] For more on military innovation resulting from a focus on strategically important operational problems, see Adam R. Grissom, Caitlin Lee, and Karl P. Mueller, *Innovation in the United States Air Force: Evidence from Six Cases*, RAND Corporation, RR-1207-AF, 2016, https://www.rand.org/pubs/research_reports/RR1207.html.

[23] Ochmanek et al., 2023, p. 10. For example, the canonical U.S. scenario during the Cold War was a conventional conflict with the Soviets in the Fulda Gap. That conflict never occurred, but because U.S. forces were built around this highly credible and stressing case, they were able to handily defeat a regional challenger in the form of Iraq in 1991.

[24] Julia Mueller, "Blinken: China's Plans to Annex Taiwan Moving on a 'Much Faster Timeline,'" *The Hill*, October 18, 2022, https://thehill.com/policy/international/3694561-blinken-chinas-plans-to-annex-taiwan-moving-on-a-much-faster-timeline/.

[25] A Taiwan contingency is the pacing scenario for DoD. See Ely Ratner, "The Future of U.S. Policy on Taiwan," testimony presented before the Senate Foreign Relations Committee, December 8, 2021, https://www.foreign.senate.gov/hearings/the-future-of-us-policy-on-taiwan120821.

[26] For a summary of this research, see Cancian, Cancian, and Heginbotham, 2023, pp. 16–18.

degree of ally and partner participation, among other variables. Yet there are also some common themes that emerge, which start to paint a picture of what a Chinese invasion of Taiwan might entail.

In most U.S. analyses, the conflict starts with a bang. A Chinese invasion starts with large-scale missile attacks on Taiwan's military infrastructure and on naval and air forces at large bases with U.S. air and naval forces in the Western Pacific.[27] Chinese cyberattacks and antisatellite operations aim to isolate Taiwan and blind the U.S. military; Beijing might also blockade Taiwan to interdict any ships and aircraft seeking to resupply the besieged island.[28]

Beijing's rapid, paralyzing attacks create the conditions for China to launch an amphibious invasion. China's amphibious vessels and civilian transports race across the 90-mile-wide Taiwan Strait, carrying thousands of troops, equipment, and supplies. They move under the protection of coastal air defenses, surface combatants, and airborne fighters. Several hundred ships, constituting the core of the invasion force, might "hide in plain sight," surrounded by vessels conscripted from civilian service to clutter the strait and confuse U.S. and Taiwan targeting.[29]

Once PLA-operated ships reach Taiwan's beaches, military transport aircraft and air assault helicopters would airdrop assault forces to secure beachheads and ports.[30] Massive Chinese bombardment from missiles, rotary wing aircraft, and long-range rockets fired from the mainland would attrit Taiwan's ground forces in the field, sapping morale and combat power so that those forces cannot degrade the PLA as it breaks out of its lodgments.[31] In this fait accompli scenario, PLA forces would seek to subjugate Taiwan quickly—in a matter of weeks or less.

Scenario Assessment: An Opening for Chinese Victory

For roughly a decade, games centered on U.S. attempts to counter a Chinese invasion of Taiwan typically ended poorly for the United States.[32] As a result, U.S. defense planners have become acutely aware of China's increasingly formidable military modernization and expansion efforts relative to the United States, and they consider those realities in their analysis.[33]

---

[27] See, for example, Brands and Beckley, 2021; and Stacie Pettyjohn, Becca Wasser, and Chris Dougherty, *Dangerous Straits: Wargaming a Future Conflict over Taiwan*, Center for a New American Security, June 2022, p. 4.

[28] For examples of an invasion plus blockade, see Ochmanek et al., 2023, p. 13; and Cancian, Cancian, and Heginbotham, 2023, p. 3.

[29] Ochmanek et al., 2023, p. 14.

[30] Ochmanek et al., 2023, p, 14; Cancian, Cancian, and Heginbotham, 2023, p. 3.

[31] Ochmanek, et al., 2023, p. 14.

[32] Sydney J. Freedberg, Jr., "US 'Gets Its Ass Handed to It' in Wargames: Here's a $24 Billion Fix," *Breaking Defense*, March 7, 2019, https://breakingdefense.com/2019/03/us-gets-its-ass-handed-to-it-in-wargames-heres-a-24-billion-fix/.

[33] Eric Heginbotham, 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, 1996–2017*, RAND Corporation, RR-392-AF, 2015, https://www.rand.org/pubs/research_reports/RR392.html.

Today, China has fielded a variety of A2/AD capabilities designed to blunt and defeat U.S. power projection operations on its periphery. These capabilities include a variety of ballistic and cruise missiles that can target U.S. bases in the Indo-Pacific, as well as surface ships, land- and sea-based counter-air capabilities, fourth and fifth generation fighters with long-range air-to-air missiles and radar, quieter submarines that can target U.S. and ally surface ships with torpedoes and antiship cruise missiles, underwater sensor networks that can detect U.S. submarine presence, and antisatellite weapons and cyber capabilities to disrupt U.S. command, control, and communications. From 2000 to 2016, China's military budget increased annually by 10 percent,[34] then slowed to 5–7 percent per year to level out at about $236 billion in 2024.[35]

China's military modernization efforts combine with geographic advantages to pose a daunting challenge to U.S. forces. Much of the U.S. military capability needed for a Taiwan contingency is stationed in the continental United States and must traverse more than 4,000 miles from the West Coast to get to the fight. China, in contrast, is situated less than 100 miles from Taiwan and has "interior lines" that allow it to employ its forces and resupply them much more quickly than the United States can.[36] The Pacific Ocean itself provides an additional defense, acting as a moat around China and Taiwan by limiting the real estate available to support forward-deployed U.S. operations.

Taken together, China's A2/AD capabilities and Indo-Pacific geography would impose a heavy tax on U.S. forces, which would have to devote more resources to self-defense missions, freedom of maneuver operations, and standoff capabilities required to operate outside the first island chain. As a result, U.S. forces might not be able to generate combat power fast enough to stop the invasion force. Carriers would need to operate well outside the range of China's ship-killing missiles. Bases hosting land-based fighters in the first and second island chains would be subject to heavy and sustained missile attacks. Long-range bombers—particularly, nonstealthy ones—would need to employ expensive standoff weapons from a distance. Submarines might be diverted away from Chinese ship-killing missions to trail Chinese subs. And surface combatants with ballistic missile defense capabilities might find themselves defending air and sea bases instead of employing their cruise missiles against Chinese ships. These are just a few examples of how China's A2/AD capabilities and Indo-Pacific geography might slow down and reduce the American firepower available to blunt and halt the Chinese invasion force.

It might still be possible, under some optimistic assumptions—such as Taiwan being better equipped and willing to fight, the United States being able to use Japanese air bases, and Chinese forces underperforming—for the United States to enjoy some success employing the legacy *expeditionary decisive force* approach against Chinese aggression.[37] But that outcome cuts

---

[34] Defense Intelligence Agency, *China Military Power: Modernizing a Force to Fight and Win*, 2019, p. 3, https://www.dia.mil/Portals/110/Images/News/Military_Powers_Publications/China_Military_Power_FINAL_5MB_20190103.pdf.

[35] Gordon Arthur, "China Unveils New Defense Budget, with a 7.2% Increase," *Defense News*, March 6, 2024.

[36] David Vergun, "General Highlights China's Military Advantages, Disadvantages," U.S. Department of Defense, October 11, 2023, https://www.defense.gov/News/News-Stories/Article/Article/3553901/general-highlights-chinas-military-advantages-disadvantages/.

[37] Cancian, Cancian, and Heginbotham, 2023.

against the grain of most other games and analysis, which point toward the possibility of a Chinese victory. Prior research highlights other risks as well, including nuclear escalation, high attrition of conventional forces, stalemate, and protraction.

On this last point, if history is any guide, it is possible that a U.S.-China conflict could drag on for months or years, careening across a spectrum of ceasefire, stalemate, and high-intensity conflict.[38] In one game, U.S. forces halted China's initial invasion but then struggled to generate offensive combat power after emptying their munitions quiver. Neither side felt as if it had lost, and both sides buckled down for a long fight that eventually escalated to nuclear use.[39] In such a protracted scenario, a war that starts as an air and naval battle could eventually take on an additional land component, with hand-to-hand fighting in Taiwan's mountains and urban areas for control of the island.[40]

Given these risks, it is clear the United States needs new operational concepts and capabilities to bolster deterrence in the Indo-Pacific region. It is unlikely that a new way of war could eliminate all these risks, but it could mitigate them while increasing both ally and adversary confidence in the U.S. ability to defeat China's aggression in a conflict.

A New Way of War

To bolster deterrence in the Indo-Pacific, force planners clearly need to replace aspects of the *expeditionary decisive force* approach with new concepts and capabilities. These new elements would fall under the umbrella of a denial strategy. Focused squarely on attriting China's invasion forces, a denial strategy appears feasible for at least three reasons: (1) halting an amphibious invasion is hard but probably easier than mounting one, (2) U.S. forces maintain a capability and capacity edge over China in some areas and are developing the edge in others, and (3) Taiwan is bolstering its own defensive capabilities.[41]

An important qualification is that a "pure" denial strategy is predicated on the critical assumption that the United States would be able to quickly halt the invasion in weeks, if not days. Even as the United States postures for rapid denial, it must also prepare for a messier, longer conflict that ebbs and flows below the threshold of nuclear conflict. Denial would help to hedge against this outcome, but other cost-imposing capabilities are needed to effectively deter and, in the case of war, convince the other side that it has lost.

---

[38] Most great-power wars have lasted longer than expected due to a variety of factors, including the strategic depth of both sides and perceived high stakes.

[39] Pettyjohn, Wasser, and Dougherty, 2022, pp. 5–6. See also Edward Geist, "Defeat is Possible," *War on the Rocks*, June 17, 2021. https://warontherocks.com/2021/06/defeat-is-possible/

[40] Jacqueline Schneider, "The Uncomfortable Reality of the U.S. Army's Role in A War Over Taiwan," *War on the Rocks*, June 17, 2021, https://warontherocks.com/2021/11/the-uncomfortable-reality-of-the-u-s-armys-role-in-a-war-over-taiwan/.

[41] Heim, Burdette, and Beauchamp-Mustafaga, 2024, pp. 22–24.

New Concepts and Operations

In consideration of the Taiwan scenario outlined above, U.S. forces need to pursue a new approach to warfare that can replace *decisive expeditionary force*. The new approach—based largely on prior RAND analysis—entails the operational tasks outlined below.

Adjust Posture

The United States should increase permanent and rotational forward presence in the Indo-Pacific and ensure the survivability of those forces so they can bring combat power to bear quickly. Priority should be placed on assets that can be deployed forward in large numbers without reliance on large and complex base infrastructure and logistics, such as unmanned undersea vehicles and runway-independent unmanned air vehicles.[42]

In addition to the "small, many, and low-cost" solutions, the United States needs to posture highly survivable systems that can strike adversary forces at long ranges or penetrate contested environments. Bombers—including both the stealth B-21 and B-2, as well as the B-1 and B-52—and submarines are central to the force mix because they can put bombs on target within hours if they are postured to do so.[43] Fighters and other manned aircraft tied to fixed infrastructure in the theater also warrant posture considerations. RAND research suggests that passive defenses—such as dispersal of forces and equipment around the base, deception techniques, expeditionary aircraft shelters, and runway repair kits—improve the survivability of aircraft against a variety of threats.[44] And all these weapon systems need standoff, precision missiles that can target ships in the Chinese invasion force from the outset of hostilities.

Find, Track, Target

Moving ships are difficult to hit, especially when an adversary is taking steps through space, cyber, and electronic warfare to blind U.S. sensing capabilities, employing air defenses to protect the amphibious invasion force, and flooding the strait with civilian ships and obscurants to confuse U.S. targeting.

In this highly contested and crowded environment, it will be essential to develop a more survivable sensing capability that can distinguish key platforms, such as destroyers, from civilian ships and to help guide standoff weapons to their intended targets. One possible solution could be the deployment of a sensing and targeting grid, consisting of hundreds of low-cost, attritable, autonomous unmanned aerial vehicles (UAVs) that could relay targeting information back to

---

[42] Ochmanek et al., 2023, p. 25

[43] On the importance of bombers in the Indo-Pacific, see Christopher J. Bowie, *Airpower Metamorphosis: Rethinking Air Force Combat Force Modernization*, Center for Strategic and Budgetary Assessments, 2023. See also Caitlin Lee and Mark Gunzinger, *The Next Frontier: UAVs for Great Power Conflict*: Part 1, *Penetrating Strike*, Mitchell Institute for Aerospace Studies, December 2022, https://mitchellaerospacepower.org/the-next-frontier-uavs-for-great-power-conflict-part-1-penetrating-strike/.

[44] Alan J. Vick and Mark Ashby, *Winning the Battle of the Airfields: Seventy Years of RAND Analysis on Air Base Defense and Attack*, RAND Corporation, RR-A793-1, 2021, https://www.rand.org/pubs/research_reports/RRA793-1.html. See also Christopher Lynch, Rachel Costello, Jacob L. Heim, Andrew Karode, Patrick Mills, Robert S. Tripp, and Alan J. Vick, *Operational Imperative: Investing Wisely to Bolster U.S. Air Bases Against Chinese and Russian Attacks*, RAND Corporation, January 2023, https://www.rand.org/pubs/perspectives/PEA1996-1.html.

strike platforms.[45] The benefit of this approach is that the UAVs would operate as a jam-resistant, resilient swarm in a contested communications environment, providing a resilient sensing capability. It might only take something on the order of 1,000 antiship weapons to annihilate the invasion force if those missiles were pointed at the right targets most of the time.[46] The cost, however, might be that the unarmed UAVs might waste opportunities to strike ships and must be weighed against the cost of buying more munitions.

Strike

The key to denying the invasion of Taiwan is to kill as many ships and aircraft as possible to prevent PLA forces from establishing beachheads or capturing ports. There are many different forces and approaches that could be employed to meet these objectives. Operating as a standoff force, long-range bombers would play a critical role in killing ships. The bomber force would begin the attacks with long-range munitions; once those ran out, stealthy B-21 and B-2 bombers would continue to attack with guided bombs dropped at closer range. Submarines could also launch cruise missiles and torpedoes at the invasion force, and manned and unmanned fighters would play a critical role in attriting Chinese fighters, air transports, and airborne warning and control assets.

Taiwan also would play a critical role in blunting the invasion. Taiwan's forces could employ large numbers of short-range anti-air and antiship defenses, loitering munitions, and autonomous drones to kill Chinese ships.[47] Dispersed and deployed in large numbers, these assets might survive initial Chinese missile strikes and engage amphibious forces. Taiwan could also employ High Mobility Artillery Rocket Systems (HIMARS) to attack Chinese ground and naval forces, Javelin anti-armor systems to attack Chinese ground forces, and Stinger missiles to shoot down Chinese helicopters.[48]

Close

Terminating hostilities in a conflict with China is a difficult problem that deserves more attention. RAND analysis suggests that a final operational task for U.S. forces is to "dismantle and attrit" the additional Chinese military assets to convince China that it has lost.[49] This is known as a "denial-plus" strategy because it involves broadening conventional attacks beyond the invasion force after the initial invasion has been blunted—but still avoiding major mainland attacks to minimize escalation risks. For this task, U.S. and ally forces would capitalize on their

---

[45] Ochmanek et al., 2023, pp. 27–29. In addition to the sensing grid, other possible solutions include the deployment of inexpensive and replaceable satellites in low earth orbit (along the lines of Starlink in Ukraine); the employment of small numbers of stealth aircraft to conduct select intelligence, surveillance, and reconnaissance missions; or the use of open-source intelligence.

[46] Ochmanek et al., 2023, p. 30.

[47] Steve Trimble, "Invade Taiwan? Encounter a 'Hellscape,'" *Aviation Week*, September 26, 2023, https://aviationweek.com/defense-space/missile-defense-weapons/invade-taiwan-encounter-hellscape.

[48] Alexander Velez-Green, "Managing Trade-Offs Between Military Aid for Taiwan and Ukraine," Heritage Foundation, August 31, 2023, https://www.heritage.org/sites/default/files/2023-08/IB5328.pdf.

[49] Ochmanek et al., 2023, p. 31.

newly found freedom of maneuver, resulting from the success of the counteroffensive, to attack air defenses on China's coast, sink PLA ships and submarines that were not involved in the invasion, and strike Chinese military infrastructure in the South China Sea. The theory of the case is that this strategy—in conjunction with diplomatic and economic efforts—might provide the coercive leverage to bring Beijing to the negotiating table.

Prevail in Protraction

The advantage of a denial-plus strategy is that it calls for the United States to field capabilities to confront the most stressing case—an invasion scenario—and therefore would put U.S. and ally forces in a relatively strong position to manage a range of lesser contingencies. However, denial strategies emphasize speed and offensive action rather than long wars of attrition that might move between high and low intensity and offensive and defensive maneuver for years at a time. If a swift denial defense does not lead China to sue for peace, both sides may dig in—they certainly have the strategic depth and, potentially, the resolve to do so—leading to a protracted conflict.

In a long war, the United States will need more options and may call on U.S., ally, and partner forces to accomplish more operational tasks. Specifically, Washington may need to inflict punishment to bring Beijing to a negotiated settlement; this will require walking a fine line between effectively coercing Beijing versus risking escalation, up to and including nuclear use. One cost-imposing option that might strike this balance involves expanding the "dismantle/attrit" approach of the denial strategy to threaten a wider range of Chinese combat capability. U.S., ally, and partner forces would expand attacks to include Chinese ships and infrastructure outside the theater of operations, in the South China Sea, Indian Ocean, Africa, and elsewhere. The same kinds of systems that are most critical for denial operations—survivable sensors and shooters—would be required, so the defense industrial base would need to have the capacity to meet the demand.

Another cost-imposing option would be for U.S., ally, and partner forces to mount a distant blockade of Chinese commercial shipping at chokepoints in the Indian Ocean to coerce Beijing. The military requirements for such an operation are substantial, requiring significant U.S. Navy and Coast Guard presence in the Indian Ocean for a sustained period.[50] To meet the demands of this contingency (as well as the Chinese invasion and blockade scenarios), the United States might need to seriously consider ways to more quickly ramp up ship and submarine production. One example might be establishing partnerships between the United States and shipbuilding giants Japan and South Korea.[51]

In addition to ensuring the U.S. military can complete these operational tasks, the U.S. government also needs to take steps now to build up U.S., ally, and partner defense industrial bases, which are an instrument of power and source of deterrence in their own right. Taiwan also

[50] Fiona S. Cunningham, "The Maritime Rung on the Escalation Ladder: Naval Blockades in a US-China Conflict," *Security Studies*, Vol. 29, No. 4, 2020.

[51] Seth Cropsy, "The Sorry State of America's Submarine Fleet," *Wall Street Journal*, September 29, 2023.

should take steps now, in relative peacetime, to stockpile food, fuel, and medical supplies and secure its information networks from Chinese attacks.[52]

Assessing U.S. Progress toward Countering China's A2/AD Strategy

Measured against the operational tasks outlined above, how far has the United States come? U.S. defense leaders know that A2/AD strategies threaten a core mission of U.S. forces: deterring and defeating aggression via global power projection. But the United States has only attended to the A2/AD problem in fits and starts since 2012, when it was first formally identified in U.S. strategic guidance.[53]

There have been many causes of this strategic atrophy, but three stand out.[54] First, DoD has failed to coalesce around a new *theory of victory*: a coherent causal narrative that explains how U.S. forces can deter and defeat China. The lack of consensus is evident in the disjointed nature of service efforts to build more-resilient forward basing postures and develop multidomain command and control strategies. It is also evident in DoD's continued overreliance on exquisite military technologies, even when other low-cost and readily available technologies, from unmanned aircraft to conventional attack submarines, could be manufactured relatively quickly, at scale, by the United States and its allies and partners. This lack of a consensus around a new way of war makes it difficult for the defense community to agree on a set of strategically important operational problems. History suggests that such specificity is a critical ingredient of successful innovation, bringing stakeholders together around a common cause that drives cultural and doctrinal change, as well as technology investment, and deters adversaries with a compelling case that U.S. forces can solve strategically relevant operational problems.[55]

Second, DoD and Congress have struggled to fund force development efforts within legacy planning, budgeting, and acquisition systems that do not strike an appropriate balance between agility and predictability. DoD's acquisition system is notoriously ponderous and risk-averse, a problem compounded when service cultures agitate against technologies that do not fit with their vision for the future of warfare. As a result, it can be difficult to field weapons systems quickly, even if the funding and technology are available and the operational need is apparent.[56] Additionally, DoD's planning and budgeting system is too linear and inflexible to support the dynamic measure-countermeasure dynamics of intense wars, a point that has become painfully

---

[52] For more on securing Taiwan's information networks, see Timothy M. Bonds, *Keeping the World Close: How Taiwan Can Maintain Contact with Allies, Supporters, and Its Own People If Attacked*, RAND Corporation, PE-A2557-1, July 2023, https://www.rand.org/pubs/perspectives/PEA2557-1.html.

[53] DoD, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, January 2012.

[54] For a systematic discussion of these causes, see Mazarr, 2023.

[55] Grissom, Lee and Mueller, 2016. Also see Ochmanek, 2022.

[56] The U.S. Air Force's MQ-1 Predator program is a classic example (Caitlin Lee, The Culture of US Air Force Innovation: A Historical Study of the Predator Program, thesis, King's College London, February 5, 2016, https://kclpure.kcl.ac.uk/portal/en/studentTheses/the-culture-of-us-air-force-innovation).

obvious in Ukraine over the past two years.[57] These drawbacks make it very difficult to adopt the kind of "small, many, low cost" approach that will be required to fight a great-power war with high levels of attrition. Congressional budgeting dysfunction compounds these problems. Contractors need the predictability of multiyear contracts to field weapon systems at scale, but lawmaker risk aversion and budget instability—in the form of continuing resolutions—make it difficult to provide defense contractors with the predictability of multiyear procurement contracts, which are essential for fielding the large numbers of weapon systems that would be required in a conflict with China.

These first two factors—the lack of a commonly shared theory of victory and a reliance on outdated bureaucratic and legislative processes—contribute to the third driver of strategic atrophy: an overreliance on exquisite weapon systems. To be sure, U.S. forces need some exquisite systems—especially, stealth bombers, submarines, and long-range precision munitions—to rapidly bring to bear the firepower required for a high-end fight. But DoD's overreliance on the exquisite can crowd out "small, many, low-cost" solutions produced in large numbers to increase the resilience, and therefore the lethality and survivability, of U.S. combat capabilities. Furthermore, these exquisite systems can take so long to field that, by the time they hit the inventory, they may be ill-suited for the threat.

Take, for example, the U.S. Air Force's F-22 stealth fighter, which costs about $350 million per copy.[58] The jet's software reached obsolescence several times before it was even produced, and the DoD acquisition system has struggled to keep up with constant software upgrades.[59] After experiencing high costs and production delays, the F-22 buy was truncated to less than 200 aircraft, meaning that only about 100 combat-coded jets in total would be available for an Indo-Pacific fight. Assuming basic air combat rotation math, this force could sustain only 30 fighters on station in the battlespace at any given time under ideal conditions.[60] And because of their relatively short range and infrastructure needs, these fighters would have to fly from main operating bases well within the range of Chinese missile attacks.[61]

---

[57] Michael Marrow, "'A Crime': Air Force's Kendall Blasts Congressional Budget Dysfunction," *Breaking Defense*, February 9, 2024, https://breakingdefense.com/2024/02/a-crime-air-forces-kendall-blasts-congressional-budget-dysfunction/.

[58] Peter Suciu, "Why the F-22 Fighter Is so Expensive," *National Interest*, December 22, 2023, https://nationalinterest.org/blog/buzz/why-f-22-raptor-stealth-fighter-so-expensive-208120.

[59] J.R. Wilson, "F-22 Avionics Designers Rely on Obsolescent Electronics, but Plan for Future Upgrades," *Military and Aerospace Electronics*, April 30, 2001, https://www.militaryaerospace.com/computers/article/16710716/f-22-avionics-designers-rely-on-obsolescent-electronics-but-plan-for-future-upgrades.

[60] Mark A. Gunzinger, Lawrence A. Stutzriem, and Bill Sweetman, *The Need for Collaborative Combat Aircraft for Disruptive Air Warfare*, Mitchell Institute for Aerospace Studies, February 2024, p. 12.

[61] Joseph Trevithick, "Today's F-35As Not Worth Including in High-End Wargames According to Air Force General," *The Warzone*, April 12, 2021, https://www.twz.com/40142/air-force-general-says-current-generation-f-35as-not-worth-including-in-high-end-wargames.

Conclusion and Recommendations

Maintaining a favorable military balance in the Indo-Pacific is critical to U.S. national security. Yet U.S. and ally military advantages in the Indo-Pacific have eroded because the Pentagon is stuck in old ways of operating and doing business, while China's military modernization races ahead. The United States has taken some steps to counter China's military strategy in the Indo-Pacific region, but it has not adopted the kind of comprehensive change to strategy and operations that is required to deter a great-power conflict that could lead to attrition levels not seen since World War II. To prevent such a war, the United States needs a new theory of victory that emphasizes a survivable and resilient forward-based posture, large numbers of smaller, lower-cost platforms that can be replaced relatively quickly and easily, and a robust and resilient defense industrial base, integrated with allies and partners, that is poised to surge in wartime. With this in mind, my testimony closes with recommendations for DoD and Congress.

For DOD

Build consensus on a new operating concept. DOD needs a new theory of victory that should be as explicit as the AirLand Battle doctrine in terms of outlining exactly what a conflict might look like. What operational problems will U.S. forces face? What missions will U.S. forces be called on to execute? And how will the conflict end? Of course, plans never "survive first contact," but a new concept—ideally, one that is codified in doctrine—would provide a clear path forward, sow more doubt in the minds of China's leaders about their ability to prevail over the United States in a conflict, and provide a foundational basis for a counter-A2/AD strategy that could be adapted in wartime. To develop this theory of victory, DoD might want to look to the historical analogue of AirLand Battle, which grew out of a tight working relationship between senior leaders in the U.S. Air Force and U.S. Army who identified problems, experimented with solutions, and developed a shared vision of new concepts and capabilities to solve those problems.[62]

For Congress

Consider structural changes that allow a new strategy to align with the defense budgeting process. A central issue is the lack of a timely budget process. Continuing resolutions, which fund the federal government at the previous fiscal year's appropriations levels, allow DoD to continue operating but make funding streams and execution for weapon procurement unpredictable. In many cases, a continuing resolution prevents DoD from starting new activities or programs and from increasing production quantities until full-year appropriations and

[62] The institutional processes and Army–Air Force coordination that led to AirLand Battle are covered in detail in Michael Spirtas, Michael Nixon, Sherrill Lingel, Jeff Hagen, Quentin E. Hodgson, Caitlin Lee, Christopher Lynch, Alan J. Vick, and James Dimarogonas, *E Pluribus Victoria? Assessing Multi-Domain Operations*, RAND Corporation, 2022, Not available to the general public.

authorizations have been enacted.[63] Continuing resolutions also distort spending rates, crowding obligation and execution at the end of the year, which shortens timelines for contract actions and jeopardizes new starts. DoD and industry are then forced to hedge against this uncertainty by planning for lower procurement quantities.

While continuing resolutions themselves stem from deep political issues, there are still constructive process improvements that can be made. For example, one important recommendation recently offered by a congressionally mandated panel on defense planning and resourcing is for Congress to pass legislation authorizing new starts and increased development or production rates during continuing resolutions under certain conditions. This would help to instill some level of predictability into production of defense capabilities, which is a prerequisite for building up defense industrial capacity and surging it in wartime.[64]

For DOD and Congress

Balance "fight tonight" capabilities versus longer-term modernization plans. Once a consensus is established around a new strategy and a streamlined resourcing process is available, DoD and Congress can work together to find the appropriate balance between legacy expeditionary concepts and capabilities versus new ones. This approach will make it easier to make trades across U.S. force structure and adjust those trades based on changing intelligence estimates regarding possible time horizons for conflict. When assessments lean toward "fight tonight," the joint force can draw on concepts and capabilities geared for the short term, such as passive defenses for air bases and other fixed infrastructure and the procurement and modification of large numbers of drones that are already flying today. When assessments suggest a medium- to long-term time horizon, investment can be made in new technologies that still aim to break the old cost curves but offer more capability, such as autonomous unmanned air, surface, and subsurface vehicles; a constellation of proliferated low Earth orbit satellites optimized for U.S. wartime use; and other capabilities.

[63] Commission on Planning, Programming, Budgeting, and Execution Reform, *Defense Resourcing for the Future*, March 2024, p. 81, https://ppbereform.senate.gov/wp-content/uploads/2024/03/Commission-on-PPBE-Reform_Full-Report_6-March-2024_FINAL.pdf.

[64] Commission on Planning, Programming, Budgeting, and Execution Reform, 2024, p. 82.

PANEL II QUESTION AND ANSWER

VICE CHAIR PRICE: Thank you all, very, very much. We're going to now move on to questions from our Commissioners. And to my colleagues, we're going to go in reverse alphabetical order except for when we're not. So we're going to start with Chairwoman Cleveland, who has a time issue.

CHAIRMAN CLEVELAND: Yeah. Thank you very much. I will be quick.

COMMISSIONER FRIEDBERG: I see -- I cede to you.

CHAIRMAN CLEVELAND: You could ask my question on your time. I'm happy to do that, too. I very much appreciate your testimony today. I have two questions. I think the first probably is best addressed by Ms. Lee, but I'm interested in all of your responses. The Department of Defense deputy secretary has recently been talking about a new concept of -- called the Replicator initiative and where we're going to field thousands of autonomous systems across multiple domains.

And it sounds somewhat aligned with what you were describing, Ms. Lee, in terms of -- of more emphasis on -- on autonomous or -- or drone capability. I'm curious how that's being introduced and incorporated into the thinking that our allies and partners in the region may have. So that's question one. If this indeed is the new direction of -- of our force posture, how is that being socialized?

And then the second question, which probably is a little more challenging -- we often avoid the conversation of strikes on the homeland -- homeland -- mainland. And -- and I think, again, Ms. Lee, you mentioned in your written testimony that -- in the closing stages, some kind of conversation in a Taiwan scenario, there is some sense of -- of that -- the necessity of that perception - I may be getting this wrong - in order to persuade the Chinese that they've lost.

We don't talk about this very much. I think it's sort of an off -- a topic that's taken off the table, but I think it's relevant to how the Chinese think about how serious we are. So I'm curious, again, in the context of allies and partners, but -- but -- your construct of -- of the relevance of the threat, of -- of some kind of targeting, whether it's cyber or actual missile silos threat on the mainland. Thank you. And thanks to my colleagues for --

DR. LEE: Thank you for the question about Replicator. Yes, it does fall in line with some of the concepts I was discussing in my testimony. I think Replicator, which is an idea to build thousands of small UAVs in 12 to 18 months, is a very good signal to the defense industry and the DoD community that DoD needs to get serious about mass. So I very much appreciate that signaling from the DepSecDef.

However, I have serious concerns about the use cases for Replicator, and I would like to see DoD do more work quickly to identify exactly what those use cases are. And what operational problems is Replicator going to solve? Who's actually going to be using these UAVs? Are these for forces on Taiwan? That could be a very strong use case where you're only 100 nautical miles from your adversary.

If it's for the U.S., those are very different-looking platforms. They're going to be needed to hard it -- they're going to need to be hardened against EW. They're going to need much longer range, much more payload. And so I think we need to have a serious conversation about the use cases for Replicator before this goes much more forward.

Turning to your question about mainland strikes and sort of -- I think -- I think sort of the implied question there is -- we plan for denial because we think it has the best chance of actually

preventing China from -- from -- from invading Taiwan. That's an appropriate approach. Once we blunt and halt this invasion force, does China just stop?

And there's now this question about -- I think at RAND there's been some really powerful research saying there is this step where you need to continue to dismantle and attrit any remaining forces in the region. And then there's a real question about, if this goes into protraction, how do you walk that balance between operational effectiveness, effective coercion to bring China to the -- the negotiating table versus escalatory risk?

You've seen a number of potential cost imposition moves that could be used to kind of bring China to the negotiating table in protraction. This might include something like the blockade that was discussed in the first panel, a blockade of Malacca. Some people have talked about other more escalatory measures. I think that this is not discussed enough.

We need to have a -- more of a conversation about, once we get into protraction, what are the cost imposition measures we use to effectively coerce China, recognizing that we've never had a great power war under the shadow of nuclear weapons. And we don't know what a protracted great power conflict would look like, post-nuclear revolution.

MR. JOHNSTONE: Thank you for the question. I would just make two points on this. First on the question of Replicator, from a -- the perspective of allies and partners, a number of our allies and partners are also investing heavily in uncrewed systems. The Japanese are putting significant resources against this. The Australians have a program, Ghost Bat, underway in Australia.

And so I think -- one question I think surrounding Replicator is can we make better use of the -- of the efforts of our -- of our allies? My sense is that this is an incomplete effort at best. It's new terrain, particularly with Japan, but it should be a higher priority than it is, leveraging the technologies and investments that our allies have to develop common systems because they're thinking about the same operational problems that we are.

On the question of mainland strikes, I guess what I would say is I think our allies are wrestling with this issue too, right? The Japanese decision to request from us Tomahawk cruise missiles is all about them having a credible ability to strike deep inside China in response to an attack on Japan.

Now, I think their strategic thinking about this is -- lags ours. This is the first time that they will have capabilities along these lines. And so one of the urgent pieces of business for the United States and Japan is to develop the C2 around this, to develop a deeper -- a deeper conversation about escalation management, the conditions of use, the circumstances of use, the targets of use. So this is not just a U.S. question. And we have to begin to have a dialogue with allies as well.

CHAIRMAN CLEVELAND: Thank you very much.

MS. KIVLEHAN-WISE: Thank you. I don't have much to add that has not already been said going across the table. I especially want to associate with Caitlin's discussion about what DoD priorities ought to be in preparing to address the China threat.

With regard to the question about Replicator, I would simply mention that in addition to partners and allies that are investing heavily in unmanned systems, this is also something that is a point of emphasis for the PRC. I'm sure you discussed that this morning. And they see unmanned systems as a key element of future warfare. That was the case even prior to Russia's invasion of Ukraine.

But as they -- as everyone has observed, operations in -- unfolding there, the -- the trend has, if anything, intensified. With regard to mainland strikes, I would say that although we might

not be discussing mainland strikes or some of our cost imposition strategies publicly, I would imagine that the PRC would assume that that didn't mean that these -- these kinds of activities were not being considered.

And although I think it is important to think carefully about cost imposition strategies, having those discussions in the public could be escalatory and might have some -- lead to some unforeseen consequences or unexpected reactions. Over.

VICE CHAIR PRICE: Thank you. Commissioner Wessel.

COMMISSIONER WESSEL: Thank you all for being here. I heard -- as we went down the panel, I -- the glass was somewhat half full from the first two panelists. And the glass was half empty, if not empty, as you turned it upside down and saw that it was made in China. So I wanted to cross-check that among you, because what I heard was we have strengthened our alliances, our capabilities in the Pacific in terms of prepositioning and -- and basing.

And, Dr. Lee, you talked more about systems that need dramatic enhancements. Do you agree, though, with the previous -- your other two panelists in terms of the -- the strengthening of those relationships and how that has been a critical part of the strategy? And I understand you say that's not enough, but how do you rate that vs. the -- the systems approach?

DR. LEE: Thanks for the question. I -- I -- I think it's absolutely critical that we get our allies and partners on board. And I think the steps that my colleagues here have outlined are really positive steps. I don't think we can do this alone. We -- we have very little -- literally very little real estate over there. There's a lot of ocean, not a lot of land.

We need our friends and partners. We share the same values as them. We have opportunities to work with them. We need to figure out how to do that because I think this -- kind of the scale of this conflict, mass is a thing again. And the level of attrition we could see here could be quite high. And so to -- to credibly prepare for this conflict, we absolutely need co-production with our allies and partners.

For example, I -- I love Chris's point about, you know, are -- is there a room to look at Replicator? How do we start building drones with Japan? These are absolutely things we need to be doing. So I think optimism -- a lot of positive developments -- we just had the renewing of the agreement with Micronesia, Palau, and the Marshall Islands. You know, these are important -- Philippines, EDCA. All these things are hugely important positive signs there. But when I just look at U.S. posture in the region, I -- I think we have a way to go. And I'm welcome to get more into that, but I hope that's helpful.

COMMISSIONER WESSEL: When you -- but when you -- when I hear you say posture, I hear capabilities, not -- is it -- am I misreading that?

DR. LEE: Well, sir, I think for me, posture is both capabilities and -- and physical presence. So -- so my contention would be that -- one of the really keys to deterring China is to have a significant forward presence. I kind of take the view, 99 percent of life is showing up. So I think we need to be there in the region. Now, the question is -- and we've kind of talked about this a little bit before, we don't want to be massed on these large main operating bases where we're very vulnerable to Chinese missile attacks.

And so the question is how well has the U.S. Forces done in terms of dispersing away from those large fixed areas of infrastructure, like long runways? And I would say we haven't done as well as -- as we need to do or moved as quickly on that as we could. I think you start to see some real innovation and -- and forward-looking thinking, particularly in the Marine Corps, about how to operate within the first island chain. But I think that these efforts across the

services are not well coordinated. And the actual attempts to disperse in that region have been temporary as opposed to more sustained, and so much more work needs to be done there.

COMMISSIONER SCHRIVER: Okay. Thank you. Other panelists?

MR. JOHNSTONE: Sir, I would just offer that, you know, I'm sort of a glass-half-full guy. When I think about the -- the -- the progress that we've made in all of these alliances over the last few years, it's remarkable. Japan was a country that had a -- a defense budget of 1 percent of GDP for 50 years.

And in one day, in December 2022, they threw it out the window, announced that they're going to double in the next five years. And investing in capabilities that we care about and -- and help -- will help in the -- in the event of a fight. I do think we have a daunting challenge. As Caitlin said, we've got to run faster.

And I think -- as I tried to say in my remarks, I think some particular priorities are, again, diversifying our access. It's true that we're not moving as quickly in the southwest islands of Japan as we should. I think for all the progress with the Philippines, there are questions about how -- how timely that access would be in a crisis.

And in Australia, too, I think -- I do think for all the progress that's been made in the relationship, there remain some gaps in how we view the China challenge. And so I think solidifying our ability to work together with Australia, operate out -- out of Australia, are critical -- are critical things.

COMMISSIONER SCHRIVER: Okay. Please.

MS. KIVLEHAN-WISE: And I would just add -- I'm not half -- a glass is -- half empty or half full, I'm just trying to look at half a glass. I'm -- when I look at what the PRC thinks about U.S. capabilities in the region, if one believes what their subject matter experts write in -- put in the public domain, then they see significant changes in U.S. capabilities in the region since we've started to lean into strategic competition.

And specifically, they see an improved ability on the U.S.'s -- for the U.S. to track PLA submarines, surface combatants, and aircraft. They see an improved ability to deny PLA access to key straits needed to enter the Pacific. And they see an improvement in U.S. and our partner and allies' ability to destroy infrastructure on the PRC mainland and offshore islands as well as PLA platforms operating in the vicinity of Japan. Over.

COMMISSIONER WESSEL: Thank you.

VICE CHAIR PRICE: Thank you. And Commissioner Stivers.

COMMISSIONER STIVERS: Thank you all for your testimony and for being here today and your expertise. I'd like to dive into the Philippines for a moment. The -- and I guess this is a question for Ms. Kivlehan-Wise and Mr. Johnstone. The 2014 EDCA agreement was held as quite a breakthrough. We had some difficult years, to say the least, with -- within the Duterte Administration, but we -- it seems like everything's back on track now with the 2023 agreement to expand the scope of EDCA to -- to four new locations in key parts of the country.

The big question, as I think, you know, Mr. Johnstone alluded to just now is -- is whether the Philippines government would allow us active use of these strategic locations in the event of a Taiwan contingency. So my question -- I -- to -- to either of you or -- or Dr. Lee, is how important are these locations and these bases to U.S. Forces in the region? And are there things that we should be doing to -- to make the Philippine government more comfortable with U.S. presence there?

MR. JOHNSTONE: Thank you for the great question. So again, I would -- I would start by noting the progress that has been made, right? We've had, as you said, the five EDCA sites

originally in place since 2014. All those -- all of those sites were in the central part of the country or in the south, quite far from where the fight would be. So the fact that we have locations agreed to in Northern Luzon and on Palawan, on the South China Sea is significant progress, right? And I think it -- it acknowledges -- it points to Philippine recognition of the reality of what a Taiwan conflict would mean for Taiwan -- would mean for the Philippines.

I do think there are questions about our ability to get access in a timely way. Without getting into too much detail in this forum, I think our success depends on early access. That's going to place a premium on decision-making in Manila. And I think there are reasons to -- to at least raise questions about that. In terms of how we incentivize, I think it is essential to continue U.S. support for the -- the armed forces of the Philippines.

This announcement of a ten-year security assistance plan for the Philippines, I think was a really important step forward. I think the affirmation of the -- of the treaty as it applies to the South China Sea is critical. So continuing to demonstrate U.S. commitment in areas that are vital to Philippines security is I think the first step to getting more of what we think we need at the EDCA sites and other forms of U.S. access. But it's an ongoing -- an ongoing process, to be sure.

COMMISSIONER STIVERS: Thank you. Ms. Kivlehan-Wise.

MS. KIVLEHAN-WISE: I would just add that the PRC seems to think that these new EDCA sites are very important. And in particular the sites in Luzon, they describe that as something that strengthens the U.S. ability to control the Bashi Channel, which is -- which connects Philippines to Taiwan, or a critical waterway in such a conflict. And they have voiced concern about this. I think our goal should be -- if we're thinking through the deterrence question, would be to convince the PRC that we would have this access.

And one of the best ways to do that would be to carefully track some of our bilateral and multilateral exercises that we hold with the Philippines, such as Balikatan, which will be happening next month. And the -- wherever we can, using the EDCA sites during these kinds of operations sends a really important signal. And we've had some progress in that way, but there's still ways to go. Over.

COMMISSIONER STIVERS: Thanks. Dr. Lee, anything to add to that?

DR. LEE: Nothing to add.

COMMISSIONER STIVERS: Okay. That's all.

VICE CHAIR PRICE: Okay. Commissioner Sims, who is participating remotely, are you here? Yes.

COMMISSIONER SIMS: I am. Thanks. Thank you all for your testimony. Ms. Kivlehan-Wise, I had a specific question for you. One of your central recommendations as a part of your prepared testimony is the U.S. continuing to provide support for Ukraine. And what I'm curious about is how do you view the tension between sending more support to Ukraine, sending a message to China, and the possibility of that support stretching the U.S.'s limited capacity and therefore actually making us more vulnerable?

In other words, is there not a very real chance that demonstrating resolve in Ukraine today could undermine our physical capacity to respond to a Taiwan crisis tomorrow because they might assess that we would respond, we have the resolve to respond, but actually physically couldn't respond?

MS. KIVLEHAN-WISE: Thank you for the question. I think you do highlight an important balancing act that the U.S. is called upon to perform. I would emphasize that the PRC is right now observing U.S. actions and discussions with regard to support the -- to Ukraine and using that to make a judgment about whether or not the U.S. is capable of sustaining forces in a

protracted conflict. And this -- this judgment that they're making does affect their decisions on whether or not they believe that they would succeed in a conflict with Taiwan.

I think that since the invasion of Ukraine, the very real possibility of protracted conflict has been brought to the forefront in China. And they've been discussing this quite often and are also discussing how they would mitigate some of the economic warfare that they might see themselves on the receiving end of.

But the questions that I see again and again raised in their writings are: is the U.S. -- are the U.S. and the NATO Alliance going to be able to continue to support Ukraine? And if they cannot, then we have a reason to believe that we would have more staying power in a conflict over Taiwan.

COMMISSIONER SIMS: And what are you seeing the Chinese saying in -- in open source forums about, you know, the fact that the weapons that the Taiwanese would use to counter Chinese forces on the island itself include, you know, a variety of missile systems, ATACMS, Javelins, Patriots, Stingers, et cetera that are, you know, part of the supplies that we are, you know, providing to Ukraine and therefore kind of diminishing our stockpiles of those? Are they talking about -- are -- are you seeing them assessing that as well?

MS. KIVLEHAN-WISE: What I see them doing is assess -- is asking the question of whether or not we are going to be able to sustain that support. But our ability to sustain that support, when I see them describing this at least in open source, is seen as a critical measure as to whether or not the U.S. would have a staying -- the staying power in the event of a Taiwan conflict.

COMMISSIONER SIMS: So I guess in the balance of these two things where they're assessing, on one hand, our resolve, and on the other hand, our -- our capacity, it's your view that they are putting more weight on the importance of our resolve compared to our capacity?

MS. KIVLEHAN-WISE: I would say that they're making judgments about both our resolve and our capacity based on observing the U.S. and its allies' ability to provide support to Ukraine.

COMMISSIONER SIMS: And -- and how do they assess our capacity to do that?

MS. KIVLEHAN-WISE: I think that they are watching events that are unfolding in Washington very closely right now, and that's informing their decisions.

COMMISSIONER SIMS: So you -- you would say then that they do assess that we have diminished capacity to meet those fulfillments, even if it is in showing resolve to Ukraine. And you know, that may be a -- a worthy thing to do, but you would say that they assess that our capacity to help Taiwan is diminished because of our intervention in -- in Ukraine?

MS. KIVLEHAN-WISE: No, I wouldn't say that. I would say that they are looking at our ability to sustain Ukraine, not just by ourselves but while working with partners and allies, and they're using that to determine whether or not we have both the resolve and the capacity to support a protracted conflict.

COMMISSIONER SIMS: It -- just that -- I -- I'm trying to follow the logic that they would assess that our capacity is not diminished by helping Ukraine when the exact things that Taiwan needs are the exact things that we're providing to Ukraine, and therefore our capacity to provide those to Taiwan is diminished.

MS. KIVLEHAN-WISE: Presumably, they are assessing that the U.S. defense industrial base is responding to the need to provide arms to Ukraine and that supporting that need may leave us better positioned to produce more of these critical equipment in the future.

COMMISSIONER SIMS: Okay. I guess my -- my view on this - and I'll -- I'll wrap up with this - it -- it was simply that -- you know, if I was to take this back to an old kind of high school locker room analogy, that the loudest person in the room is usually the weakest person in the room. And, you know, symbolic shows of -- of support and resolve compared to capacity to actually deliver on assurances that we have given Taiwan -- I -- I think one is more important than the other.

And so I have a hard time, I guess, believing that -- that the Chinese are -- are that heavily weighting resolve over capacity when they're making that assessment. But thank you for your -- your testimony.

VICE CHAIR PRICE: Thank you. And Co-Chair Schriver.

COMMISSIONER SCHRIVER: Thank you, and thanks to all our witnesses for your excellent statements and all the work you put in prior to coming here today. Dr. Lee, I'm in violent agreement with just about everything you said, particularly when it comes to procurement and whether that's in alignment with combat and -- and warfighter needs.

And so for that reason, I'll direct my questions to Mr. Johnstone and Ms. Kivlehan-Wise. Mr. Johnstone, you alluded to having some recommendations that you were willing to flesh out a little more, but I want to see if I can direct that a little bit. You know, we have a -- we're in a political season here. And there's renewed discussion in -- in our political season about the value of allies and the -- and the meaning of alliances and the weight of alliances.

And to use a sophisticated diplomatic term, some people in Asia are freaking out a bit. One possible response is that Congress steps in and -- and locks some things in as quickly and urgently as possible. We saw in 2020 and 2021 a provision related to U.S. Forces in Korea put a -- put a floor under that. We see the Koreans now wanting to renegotiate burden sharing before our election season finishes.

So I'm wondering if among your recommendations, are there things we should be trying to lock in with some urgency in U.S.-Japan Alliance and some of these minilateral cooperation mechanisms? So, appreciate your thoughts on that.

MR. JOHNSTONE: Thank you, Commissioner Schriver. I do think that there are steps that we should be taking to -- to -- to lock some of these changes in. Number one on my list is moving forward rapidly with revisiting command and control in Japan. The Japanese are standing up a -- a Joint Operations Command. We should have a very capable joint operational command as its counterpart in Japan. I think we could reach some agreements this year that at least point in the direction of what we intend to do.

The resourcing will need to follow, of course, but I think signaling that -- that -- that commitment I -- is -- is very important. I think, as you said, perhaps accelerating the timeline for revising host nation support agreements with Japan. We're doing that with Korea. We could do the same with Japan so that we don't have to take this up in the -- in the near term.

And then I think more broadly, a few steps that I think that -- that we could take -- security cooperation resources for the Indo-Pacific. The need is vast among our allies and partners, particularly in Southeast Asia. In the maritime domain, there's a vast need for capability to monitor and defend sovereign waters. Ensuring that programs like FMF to the 333 authorities for the Department of Defense are adequately resourced is key -- is key to this.

And then I think there's a whole set of issues associated with technology release. We need to think more strategically about cooperation with allies. The Congress is taking steps to create AUKUS carveouts for Australia and the UK. We should consider expanding those, at least in some capability areas to include the Japanese, perhaps the South Koreans. We have an interest

in supporting industrial -- defense industrial capacity and defense technology capacity in our allies. And there's very much a strong role for Congress in that regard.

COMMISSIONER SCHRIVER: Excellent. Thank you. Ms. Kivlehan-Wise -- a little bit further to the issue area that Commissioner Sims was asking about. I -- I think he was asking a -- a very important question about potential tradeoffs and how the Chinese view that. I appreciate your answer. I appreciate him asking that question, but I would argue before February 2022, we had a problem when it came to logistics, maintenance, munitions availability.

So I just wanted to ask a little bit further in terms of Chinese views, what you see in the open source materials, when they see initiatives like EDCA and they don't see quick follow-up in terms of building out the warehouse, the airstrip, the security around a facility, et cetera, when -- when they see -- I think the renewal of the Compacts was mentioned with the Marshalls, FSM, and Palau, but lagging work on radars and -- the like. Is their assessment that we are determined and committed and will fulfill all these agreements, or do they see this as one of our vulnerabilities that we -- we sign the agreement, and then in many cases it's years, in some cases, it's decades before there is implementation? Do they see that as a -- a vulnerability and weakness?

MS. KIVLEHAN-WISE: I would say that these are -- these are developments that are observed. And they're observed very closely. And for any major agreement or change in force posture that is announced, you will certainly find voices in the PRC public domain that point to the implementation challenges. And they will flag moments where the U.S. has failed to live up to its promise in the past.

Post-Ukraine, I think what I was seeing most -- most frequently was just expressions of shock at the speed with which U.S. and NATO were able to respond. And I've seen discussion about what that means for proxy wars in the future, particularly among major powers under a nuclear shadow. But what you're talking about, about implementation challenges, those are certainly observed. They're certainly discussed. And there are certainly many voices in the Chinese open source that will quickly point to all of the reasons why such agreements might fail.

VICE CHAIR PRICE: Thank you. And I just want to return to some of the questioning that Co-Chair Schriver had. Mr. Johnstone, when you talked about under-explored partnerships, did you mean those that we've already started but just needed to be beefed up, as you've begun to discuss in -- this afternoon, or are there particular places, countries, that we haven't looked into yet?

MR. JOHNSTONE: We, of course, have a history of -- of defense industry cooperation with -- with really all of our allies. But I think there is a particular opportunity when it comes to Japan. The -- the volume of resources that Japan is putting against defense-related R&D, the steps they're taking to develop a defense technology ecosystem, standing up a new DIU-like entity inside their -- their -- their acquisition agency -- they are focused on the same operational challenges that we are, thinking about the same technology challenges that we are.

And I think focusing in particular on cultivating new partnerships with Japan should be -- can and should be a priority. There are others, of course, as well. India is an emerging defense partner as -- as well. But I think really the -- the focus should be on Japan, Australia, and then our traditional partners in Europe.

VICE CHAIR PRICE: Thank you. And you did mention something about Congress. Do you want to expand on that?

MR. JOHNSTONE: Yes. So I -- I think -- I think it would be fair to say that we don't make it easy for our allies and partners to -- to cooperate with the U.S. defense industry complex,

right? I think when it comes to either FMS, co-production, basic defense technology research, these are areas where we make it pretty hard to work with our allies and partners. I think in particular, thinking about how we can facilitate technology release to our partners, particularly Japan, should be a high priority.

As I said, we've -- we're taking significant steps with the AUKUS partnership. I think Japan warrants a similar look. Now, the flipside of that is that our partners have to demonstrate a similar capacity to protect technology, a similar capacity to control exports to potential adversaries, countries of concern. But I think as -- as our partners demonstrate that capacity -- I think you can make the case that Japan has made progress -- our system should respond. And I would argue that -- that we're not great at -- at responding to the -- to the progress our friends are making.

VICE CHAIR PRICE: Thank you. And, Ms. Kivlehan-Wise, you -- in your second recommendation you talked about the Global Engagement Center. Could you expand a little bit about what your concern is and -- and what you would like to see there?

MS. KIVLEHAN-WISE: Thank you. My recommendation with the Global Engagement Center was to renew its mandate to keep operating. And the reason for that is because the PRC is heavily engaged in a battle for the narrative in the Indo-Pacific. And they are engaged in a -- in a comprehensive effort to challenge -- to encourage discontent in host nation populations about U.S. presence in the region and are not shy about using mis-, dis-, and malinformation in support of that end.

The Global Engagement Center has done some important work in building resiliency among host country populations in order to identify and mitigate the effects of PRC disinformation campaigns, and I think that their efforts are important and should be continued.

VICE CHAIR PRICE: Anyone else have anything to add on those areas? Okay. Thank you very much. Next, we will go to Commissioner Miller.

COMMISSIONER MILLER: Thank you all for coming. I -- I thought this is a very useful panel. And I'd like to -- to ask you a bit more about the -- the element of surprise in -- in a Taiwan scenario. One of the subtle themes of -- of Panel I and -- and indeed in some of your testimonies, was the possibility, which is reinforced in speeches and doctrine and force posture, that -- that a surprise attack is the optimal and maybe even the most likely option for a Taiwan scenario.

Obviously, surprise would mean something very different than it did in Ukraine. You don't have tens of thousands of troops massing on a border ready to go in. You also have a dynamic where the PLA is trying to normalize flyovers and other training exercises so that it would be harder and harder to distinguish between what is a training -- what is an exercise and what is the real thing.

But on the other hand, you do have signals out there. You have troop movements. You have canceled leaves. You have frenzied shipyards. And -- and these are potential signals. In your estimation, perhaps we could start with Dr. Lee, how likely are we able -- going to be able to see preparations, weeks, maybe months ahead of time, that would give us a reasonably high level of conviction that something big, an invasion or a major blockade is going to happen?

DR. LEE: Thanks. My opinion is that we will not have more than weeks of warning time. And that's because -- first of all, I -- I -- I think you're right -- this is a major invasion. And amphibious invasions are notoriously hard to do. We're -- and it takes a lot of forces to do this. So you are going to see forces massing on the coast. You're going to see them at the ports. And

we'll get some indications and warning of that. But you alluded to one of the problems, which is that, of course, there can be exercises that kind of normalize that behavior.

And then the second issue is political. A lot of times, in past wars, I'm thinking of Desert Storm, well, we will have the indications and warning. Intel will see the forces massing, and politicians because they don't want to go to war, which is an understandable instinct, are trying to do everything they can with diplomacy to pull other levers to avoid a conflict. And that, from a purely operational perspective, causes delays, and it's -- it's not helpful.

And so I think there's some possibility that even if we had some indications and warning, there would still be some delayed time in terms of responding to it from a political angle. And then I think the other issue is that right now we just don't have enough forces that can get to the -- get -- respond quickly. So the follow-on issue is that if -- if we have this kind of surprise attack, it's going -- you know, it's going to take two weeks to steam west of the date line. And so it's just -- takes us some time to get stuff in theater, which is, again, why I think forward positioning of as many forces as possible is -- is quite important.

MS. KIVLEHAN-WISE: I agree with Ms. Lee that it -- we'll -- I -- we'll be lucky if we have a few weeks of warning. An amphibious invasion is a very complicated activity, so we will observe a lot of actions. And there will be heated debate within Washington -- is -- and -- and at Honolulu about what that activity actually means. But I don't think that we will have confidence until just a couple of weeks ahead of time, if we're lucky.

But when we're thinking about surprise, I think it's also important to think beyond an amphibious invasion. There are many other types of operations the PRC might take in order to coerce Taiwan. And for those, we would probably have even fewer observables. So I am concerned about surprise.

MR. JOHNSTONE: I was going to defer to my colleagues on this, but their -- their comments made me think of -- of a couple of things. I do think this question of ambiguous warning is likely to introduce tensions in our relationships with allies as well, right? It's easy to foresee a situation in which we assess that something is building and our allies do not. I saw this very much on display when I was still in the White House in the run-up to the invasion of Ukraine, where when the U.S. had reached definitive assessments of what was about to happen and on -- most of our allies and partners were very reluctant to accept that assessment.

So this underscores for me the importance of -- of deepening intelligence relationships and a systematic effort to build sort of a common understanding of what the indications and warning picture would be. So this is not just a U.S. problem. It's also going to be important that our allies are sharing our sense of what we would be looking for in the event of a -- of a developing crisis.

COMMISSIONER MILLER: I guess, can I have -- have a minute?

VICE CHAIR PRICE: Yes.

COMMISSIONER MILLER: Yeah. Quickly. Just -- just to -- to continue on the preemptive -- preemption line, what are the likelihood -- what is the likelihood that we would see a Chinese attack in tandem with some sort of move from Pyongyang? And how would that affect the broader alliance and the response?

MS. KIVLEHAN-WISE: I would be surprised if anyone on the panel had a good idea -- could give you a reasonable answer about the likelihood. The effect, it would be very challenging, but I think it would -- I think something to keep in mind is that right now China's relations with Pyongyang are not as strong as some people might think them to be. And I -- actually, as I'm looking at Russia's relations with North Korea and North Korea's willingness to

provide Russia support that Beijing apparently has not been able to provide, suggests there may be some tension within that trilateral relationship.

MR. JOHNSTONE: Yeah, I -- I certainly can't comment on -- on likelihood either. I -- although it's easy to foresee either Pyongyang seeking to take advantage of a situation in the Taiwan Strait or perhaps Beijing encouraging something. And this is why I think, from my perspective, the U.S.-ROK Alliance remains focused on the North Korean threat, and I think that's fine, because I think sustaining deterrence on the peninsula and the presence of a large volume of U.S. ground forces is a critical -- is a critical part of that. I -- I mean, I think the good news is that ROK capabilities are significant. They're getting stronger. The gap between ROK capabilities and North Korean sort of conventional forces is getting larger.

So I think the deterrence picture in general on the peninsula is still strong, concerns about, of course, North Korea's WMD efforts. But I think sustaining U.S. presence and U.S. focus on the peninsula, on the North Korean threat is part of ensuring that we don't get opportunistic aggression in the context of a Taiwan contingency.

COMMISSIONER MILLER: Thank you.

DR. LEE: And of course, something that I don't think has gotten enough attention is this idea of opportunistic aggression in regards to Russia and what the relationship between China and Russia starts to look like as we go forward. So that's another thing to keep an eye on.

VICE CHAIR PRICE: Okay. Thank you all very much. Commissioner Helberg.

COMMISSIONER HELBERG: Thank you. Recent reports have floated the idea of Japan joining AUKUS. Can you help me understand the pros and cons of Japan joining AUKUS, and how would this idea be received in Japan as well as our other allies in the region?

MR. JOHNSTONE: Thank you for the question. Yeah, this is a -- this is a common topic that you hear both in DC and in Tokyo. Look, I think from my perspective and in -- in my dialogue with Japanese counterparts, they are not interested in, quote, joining AUKUS. Obviously, they have no role to play in the nuclear submarine effort with Australia. They're most interested in the Pillar 2 focus on -- on conventional high-end technologies.

My view on this is, rather than think about Japanese membership, identify a project where Japan would bring technology to the table. And I can imagine undersea capabilities, other UAS capabilities, perhaps some space capabilities where the Japanese bring capability to bear. My sense is that that is the focus of discussion in the policy space as we approach the Kishida visit.

So again, I don't think it's a macro question of Japan joining AUKUS because I don't think the demand signal is actually there for that, but I do think it would be wise to think about bringing in Japan and perhaps other partners on specific Pillar 2 efforts.

COMMISSIONER HELBERG: Thank you. I have no further questions.

VICE CHAIR PRICE: Okay. And Commissioner Friedberg.

COMMISSIONER FRIEDBERG: Thank you very much. It seems to me that, as a country, we've been, I want to say, staring at this problem for a couple of decades, dealing with China's developing anti-access/area denial and -- or counter-intervention capabilities. And we've now started to do a number of things that are directly intended to -- to address that problem, increasing cooperation with allies has been mentioned, starting to develop new concepts of operations that deal with this increasing mass of -- of Chinese firepower, and then beginning to field some new capabilities. The -- the Replicator initiative has been mentioned.

So I have a question for each of you about this, if I have time, but perhaps I could start with Ms. Kivlehan-Wise. As you look at Chinese analysis of the -- these various activities, where

do you think they see the most opportunities for them? Where do they see as the seams or vulnerabilities in the things that we're doing that they might be able to exploit? And in addition, do you get any sense of increased urgency on -- on their part, the -- the feeling that things are going to begin to tip against them as we go forward in these different ways?

MS. KIVLEHAN-WISE: Thank you. Of course, you ask the hard question. For where -- what they see as U.S. vulnerabilities or seams -- I'll tell you some things that I hear them talk about a lot, but I don't know if I could give them a -- if it's in a priority order. They talk about domestic politics in the United States. They see that as -- they see some U.S. policies towards the Indo-Pacific as being politically motivated and that sometimes we are making -- we are unable to make the moves that would best -- that would support us best. And they question our ability to implement some of the reforms that we are announcing because of domestic political considerations.

Also, domestic political -- political considerations come into play when they are asking -- when they're -- whenever we announce a policy they don't like, it's a China threat theory, and it's, again, playing up to domestic political -- political concerns, or trying to support our defense industrial base. I think I'm using a lot of time, so I will pass it --

COMMISSIONER FRIEDBERG: Okay.

MS. KIVLEHAN-WISE: I'll allow you to talk to the next one.

COMMISSIONER FRIEDBERG: Thank you very much. Dr. Lee, you mentioned in your testimony various concepts. You -- you sort of listed them. The Marine Corps concept, if I understand correctly, is the one that's sort of furthest developed. The others seem sort of on paper, and they sound like good ideas, but I don't know how much has been done to implement that. I -- first, is that an accurate assessment? And second, is -- is it the case that there is no overall concept that integrates the activities of each of the services? It sounds like they're each working on their piece of the problem; is that correct?

DR. LEE: Yeah. Thanks for the -- asking about the overall operating concept, because that is I think the most important kind of recommendation I wanted to make today is that we need to have this unclassified concept that everyone understands, all the services are on the same page with, and that China understands exists.

And the -- the example I go back to is the AirLand Battle doctrine. You know, we all understood how that was going to work. You know, the Air Force was going to provide deep fires to hit the rear echelons of the Soviet forces and the Army was going to be in the front. And we need something that specific, and that coherent, that consensus based for the modern day. And I do not think, at the unclassified level, that we have that.

There is something called the Joint Warfighting Concept. That's something that's being developed in the Pentagon. But without getting into the specifics of that, I think there's a lot of room to develop this coherent doctrine that is unclassified, that has a level of specificity that we can all understand and to intuitively kind of bring -- bring home to our equities so that, you know, the Air Force knows what it needs to go buy, the -- the Army and the Marines understand what they're -- where they need to go posture. Everyone just needs to get on the same page.

So there's a bunch of fledgling efforts here. And in the early days of something like this, you have to let a thousand flowers bloom, but I think we need to come to consensus on this pretty quickly.

COMMISSIONER FRIEDBERG: And who or what agency or office or person in the U.S. government is going be responsible for driving that integration effort?

DR. LEE: I think if we look to the AirLand Battle example, it actually really needs to be the military services. Innovation - and this is what we're talking about here, is developing a fundamentally new way of war - is the birthright of the military services. So what I would like to see is -- is -- is I think, you know, something like the -- the Air Force and the Navy getting together and kind of developing a real -- a serious operating concept here.

And I think that would go a long way. And I think it needs to happen -- it needs be senior leaders getting in a room and hashing this out and then putting some real ideas on paper. That's how AirLand Battle worked. And I -- I think it's a pretty good analogy.

COMMISSIONER FRIEDBERG: I do too. Thank you. Do I have another minute?

VICE CHAIR PRICE: Yes, you can go ahead.

COMMISSIONER FRIEDBERG: Mr. Johnstone, you mentioned improvements that have been made in the relationship that we have with Japan, Australia, the Philippines, South Korea. Do you have a sense of the extent to which each of those partners would in fact be willing to go along with the United States in the event of a war over Taiwan, to put it bluntly?

MR. JOHNSTONE: This is the fundamental question, Commissioner Friedberg. I -- I think I would -- I would answer that by saying, each of our partners, I think is at a -- is at slightly different places on that ladder. I think Japan has moved the most. When I first started as a junior officer of the Pentagon in 2010, we didn't talk about Taiwan contingencies with our Japanese friends. It was a taboo subject. Now it is the driving subject for the alliance. And there's an open discussion in the -- in the public debate as well about the implications of a Taiwan contingency for Japan's security.

So some of the things I used to worry about in those early days, like the U.S. ability to use our bases in Japan, for example, I no longer worry about those first-order questions. I think the second-order question of how much active military support would we have, what role would Japan play in actually defeating an invasion, those are still uncertainties, I think, and would very much depend on political will at the time. But we've moved the needle significantly with Japan.

On Australia, I think there's been significant movement as well. The experience they had with economic coercion in the -- around the -- the 2020 timeframe, there's been a movement. But I think nothing comes close to the -- the -- the sense of geographic proximity that the Japanese have. And that has driven the -- the most pronounced change there and perhaps somewhat less in the other locations.

COMMISSIONER FRIEDBERG: Thank you. Thanks.

VICE CHAIR PRICE: Okay. We have a few extra minutes. And Co-Chair Schriver indicated he had some other questions. So why don't you go ahead? And for other Commissioners, there's an opportunity if you have another question.

COMMISSIONER SCHRIVER: Well, at least one. Thank you. I wanted to follow up, Dr. Lee, your exchange with Commissioner Friedberg. We don't have the -- the joint warfare concept and associated doctrine, but we have op plans and we have -- INDOPACOM Commander has presented an -- unfunded priorities list to the tune of $11 billion. So it's well known that there's a -- I -- I would argue, there -- it's well known that there's a gap between what the warfighter says he needs and what's being provided.

So I just want to press you a little more: would this really be the thing that drives the service into alignment on a procurement strategy for the future force, or is something a little more radical needed? I mean, your recommendations, which I agree with, in terms of the unmanned systems, airborne, undersea, are precisely the systems that our services are not embracing and -- and, you know, you -- you might even argue are threatened by, in -- in some

instances. So in terms of what the Congress can do, I'm just wondering: would even coming together on a joint warfare concept solve this problem in terms of procurement priorities?

DR. LEE: Yeah. I think you all referred to me as a pessimist at the beginning, but I will say that on this, I was an optimist in the sense that what I was saying is ideally this would come from the services from -- from strong service leaders who would want to move the ball forward. Since services own all the procurement decisions, you really want their buy-in.

So like what we saw with AirLand Battle was TAC and TRADOC, the two sort of combat arms -- nerve centers of the Air Force and the Army got together, the leaders of those organizations and said here's 31 initiatives, here's 31 things we're going to buy and do to beat the Soviets. And they went and did them. And that's how we got things like AWACS.

And so that's -- that's sort of the ideal situation, is if you can get the services to do that. Now, failing that and -- you know, sir, I do think you're right that we do see the services falling short in this area. What do you do? And I think another powerful source of innovation can be the Department of Defense itself. And Congress can help too. You need that external push to get the services moving in the right direction.

And so one of the things I'd love to see is OSD get its act together a little bit more in terms of driving -- driving the -- sort of the operating concept that the services could then use to go make the case for their -- their funding needs. I think OSD could play a more active hand there. And I haven't thought this through, but there might be a role for Congress. Clearly, some external pressure is required.

VICE CHAIR PRICE: Anyone else have an -- go -- go right ahead.

COMMISSIONER FRIEDBERG: Dr. Lee, this idea of denial seems -- it's very appealing. Sort of logically, this is what you would prefer to be able to do, but it's kind of nice work if you can get it. It's -- it seems like it's going to be very difficult, actually to achieve that. And certainly, as you acknowledge, even if we were successful in helping Taiwan fight off an invasion, that doesn't mean that a war would end. It's difficult for me to see how then we would continue to prosecute a war without engaging in strikes on the Chinese mainland.

And I wondered if you could say some more about exactly how you think it would be possible to win a war or bring a war to a conclusion without doing that. We also had an earlier discussion of blockade as another indirect way of applying pressure, and I wondered if you had thoughts on that as well.

DR. LEE: Thank you. So I think that the concept of denial -- the concept of denial is -- is most appealing because it deals directly with the threat at hand. And so it's all about keeping that invasion force from getting a lodgment on Taiwan. And so if -- and -- and it gives the U.S. a very specific set of operational problems it needs to address. It needs to see the ships and it needs to kill all of them, then -- and Taiwan needs to play a role in this, too, in terms of surviving those initial missile barrages and then also fighting those forces and keeping them from gaining a lodgment.

And so I think if we can prevent China from getting that lodgment, we've gone a long way towards -- and we can credibly build the force structure required to do that, we've gone a long way towards deterrence.

I think the other thing that we need to keep in mind here is that -- you know, why denial? One, amphibious -- I mean, denial is hard, but amphibious invasions are probably harder. This is a very risky and difficult complex mission for China to undertake. And so if we directly challenge them and make that even more complicated and sow chaos into their planning, that's going to make them even more uncertain about whether the amphibious invasion will work.

I think another reason for optimism about denial is that I think Taiwan can get this right. I think that if they do adopt a porcupine strategy -- and they're starting to move in that direction; they start buying anti-ship missiles; and they start buying little drones -- they can do some damage and they can keep those ships from getting -- gaining a lodgment. So those are some reasons for some optimism about denial. And then I want to move on to talk about your concern about, well, what if -- what if denial is not enough?

And I think that's where you do need to have some other levers at your disposal. And I think the first and sort of safest is to kind of start hitting other forces adjacent to the invasion force, stuff in the South China Sea. And you do -- you start -- start to get into this cost imposition conversation. One of the options would be mainland strikes.

But I'd like to turn it over to my colleagues who've been studying China. And I think the concerns there about escalation are extremely grave. And I go back to conducting this conflict under the nuclear shadow. And so I think the thing that gives me great pause there is the -- the nuclear dynamics of -- of hitting those mainland targets.

COMMISSIONER FRIEDBERG: And would your view on that be different if China had begun the war by striking U.S. and allied facilities in Japan, for example, or --

(Simultaneous speaking.)

DR. LEE: Yes. My view would be very different. I think as a first move, the -- you know, we'd want to think very hard about being escalatory with mainland strikes. But in response, absolutely, I think we would have to respond in kind.

COMMISSIONER FRIEDBERG: So -- and it seems in order to deter that kind of action, we would have to have and demonstrate a willingness to use our capabilities to strike targets on the Chinese mainland.

DR. LEE: You'd certainly need -- want to be postured to -- for those kinds of strikes. I mean, that's why we have things like the B-21 stealth bomber.

VICE CHAIR PRICE: If there are no other questions from Commissioners, I want to thank all of our panelists for your time today. You've given us a lot to think about. We might be submitting some questions to you for follow-up. We will be in touch. So thank you all. We're going to adjourn for about an hour. We come back at 2:20. Why don't we all try and be back here around 2:15. Our third panel is all remote from the far corners of the world, and we want to make sure the technology is working. Thank you all.

(Whereupon, the above-entitled matter went off the record at 1:13 p.m. and resumed at 2:21 p.m.)

PANEL III INTRODUCTION BY COMMISSIONER RANDALL SCHRIVER

COMMISSIONER SCHRIVER: Back in session here, our third panel will explore the views of key U.S. allies in the Indo-Pacific region on China's military activities as well as their efforts to cooperate on security matters with the United States. And we are fortunate to hear from experts from Japan, the Philippines, and Australia, who are all joining us virtually and, I suspect, at terribly inconvenient hours overseas. So thank you for making time for us at what -- what may not be the most convenient time for you.

Our first witness will be Mr. Tetsuo Kotani. He's a professor at Meikai University and a senior fellow at the Japan Institute of International Affairs. Mr. Kotani will assess Japan's security environment, the challenges China poses to the U.S.-Japan Alliance, and areas for further U.S.-Japan defense cooperation.

Next, we'll hear from Mr. Edcel Ibarra. He's an assistant professor in the Department of Political Science at the University of the Philippines Diliman. Mr. Ibarra will assess the security challenges that China poses to the Philippines and current developments in the Philippines' security policy.

And then finally, we'll hear from Ms. Bec Shrimpton, director for Defense Strategy and National Security at the Australian Strategic Policy Institute, who will discuss Australia's defense priorities and future areas for U.S.-Australia defense cooperation. We thank you all for your testimony. And I would ask our witnesses to keep their opening remarks to seven minutes so that we have ample time for questions. Mr. Kotani, welcome, and we'll begin with you.

OPENING STATEMENT OF TETSUO KOTANI, PROFESSOR, MEIKAI UNIVERSITY AND SENIOR FELLOW, JAPAN INSTITUTE OF INTERNATIONAL AFFAIRS (JIIA), JAPAN

MR. KOTANI: Thank you very much. Vice Chair Reva Price and Commissioner Randall Shriver, all the members and staff of the Commission, thank you for the invitation to testify before the Commission. In my testimony today, I -- I would like to provide a Japanese perspective on China's growing counter-intervention capabilities.

Over the past 25 years, the PLA has developed modern and indigenous military capabilities, including aircraft carriers, new surface combatant ships, large amphibious assault ships, quieter submarines, combat support ships, strategic bombers, fifth-generation fighters, and massive missile forces. Those capabilities now extend beyond the second island chain covering the entire western Pacific. China's growing counter-intervention capabilities pose a great threat to Japan.

Over the last decade, the PLA's operational areas expanded from the East China Sea to the Philippine Sea, the Sea of Japan, and Sea of -- Sea of Okhotsk as part of their counter-intervention strategy. In addition, as China rapidly increases its strategic nuclear arsenal, a stability-instability paradox scenario, in which China initiates a conventional war against its neighbors without fearing a nuclear war with the United States might arise.

In response to then-U.S. Speaker of the House Nancy Pelosi's visit to Taipei in August 2022, the PLA conducted a series of intensive blockade exercises around Taiwan. The PLA launched at least nine ballistic missiles, five of which fell into Japanese exclusive economic zones. The PLA also mobilized more than 100 fighters and bombers and more than 10 destroyers and frigates to exercise a blockade of Taiwan. The PLA exercises showed a real possibility that Japan would be directly involved in a Taiwan contingency due to Chinese counter-intervention strategy.

The Japan Institute of -- of International Affairs conducted a war game to understand how a Taiwan contingency could affect Japan's security. The war game demonstrated that Japan could be attacked by PLA's cyber, missile, naval, air, and amphibious forces. The lessons from the war game can be summarized as follows.

First, it is urgent for the allied forces, I mean the -- Japan, the United States, to fill the missile gap with China while enhancing combined integrated air and missile defense capabilities. The Pentagon estimates the PLA possesses 500 medium-range ballistic missiles with 300 launchers, which could target anywhere in Japan. Those PLA counter-intervention capabilities could restrict Japanese and American air, naval, and amphibious operations in the western Pacific. On the other hand, ground troops and ground-based missiles are not necessarily vulnerable against the PLA.

Second, it is important to maintain underwater superiority. While the PLA has been enhancing its anti-submarine warfare capabilities, the Pentagon estimates the PLA's ASW capabilities in deep water is not sufficient.

Third, reinforcements from other allies and friends make a difference. Australia, UK, France, Germany could assist the allied operations in Taiwan contingency, so closer cooperation with them is very important for deterrence and defense.

And fourth, we have to prepare for a Chinese tactical nuclear threat. The PLA may develop low-yield nuclear warhead capabilities to reduce the cost of war while rapidly increasing the strategic nuclear weapons from hundreds to 1,500 by 2035.

To -- to deal with the growing threats from the PLA, in December 2022, the Japanese government adopted a new National Security Strategy. The key to the realization of the new strategy is an increase in defense spending. Japan's defense spending, which has been effectively kept at around 1 percent of the GDP since the 1970s is to be raised to 2 percent. And the cabinet has approved a total defense budget for 43 trillion yen for the five years through fiscal year 2027.

This enables Japan to upgrade its indigenous standoff missiles, integrated air and defense missile defense, unmanned asset defense, and sustainability and resilience in preparation for the new battles of missile attacks, hybrid warfare, asymmetric attacks, and nuclear threats.

While Japan and United States are working together to address China's growing counter-intervention capabilities, I'd like to make six recommendations for the U.S. Congress.

First, enhance alliance command and control coordination. The introduction of Japanese counterstrike capability, coupled with U.S. long-range missiles, is critical to fill the missile gap with China. However, it is now urgent for Tokyo and Washington to enhance command and control relationship for targeting and strike coordination. It -- it is desirable to give operational command to the commander, U.S. Forces Japan, or establish a standing U.S.-Japan joint task force for the mission.

Second, bring U.S. Army to Japan. As there is a need for more ground-based missile systems in Japan to deal with China's rapidly increasing medium-range missiles, it is time to prepare for the permanent deployment of U.S. Army's Multi-Domain Task Force with long-range hypersonic missiles in Japan.

Third, invest in directed-energy weapons. Japan and the United States should make further efforts and cooperation to deal with multiple airborne threats, including unmanned systems. As Japan continues to invest in the development of railgun, Washington and Tokyo should seek joint development of directed-energy weapons to intercept Chinese hypersonic threats.

Fourth, continue to fund submarine-launched nuclear cruise missiles. As China grows its counter-intervention and nonstrategic nuclear forces, it is important for the United States to maintain credible nonstrategic nuclear options in the Pacific. Submarine-launched cruise missiles -- submarine-launched nuclear cruise missiles could provide the United States an important low-yield option when China considers tactical nuclear weapons are useful to control the nuclear war.

Fifth, allow Japan to invest in U.S. shipbuilding industry. As the United States Navy faces serious ship repair and shipbuilding delays, Japanese investment for modernizing the -- the U.S. shipbuilding industry is a good way to enhance the alliance.

Sixth and the last, pass the supplemental foreign aid package. It is urgent for the House of Representatives to pass the bill. The package not only includes aid for Ukraine and Israel but also includes aid for Taiwan. In addition, it includes funds for modernizing submarine industry, which is critical for AUKUS agreement. The foreign aid package is critical to address the challenges coming from China. Thank you for your attention.

COMMISSIONER SCHRIVER: Thank you, Mr. Kotani. Mr. Ibarra?

PREPARED STATEMENT OF TETSUO KOTANI, PROFESSOR, MEIKAI UNIVERSITY AND SENIOR FELLOW, JAPAN INSTITUTE OF INTERNATIONAL AFFAIRS (JIIA), JAPAN

March 21, 2024

Testimony before the U.S.-China Economic and Security Review Commission

Hearing on "China's Evolving Counter Intervention Capabilities and Implications for the United States and Indo-Pacific Allies and Partners"

Japanese Perspective on and Responses to China’s Growing Counter-Intervention Capabilities

By Tetsuo Kotani

Professor, Meikai University

Senior Fellow, The Japan Institute of International Affairs (JIIA)

Vice Chair Reva Price and Commissioner Randall Schriver, all the members and staff of the Commission, thank you for the invitation to testify before the Commission. In my testimony today, I would like to provide a Japanese perspective on China's growing counter-intervention capabilities.

Overview

In March 1996, Chinese People's Liberation Army (PLA) conducted a missile exercise near Taiwan in attempt to disrupt the island's first-ever democratic presidential election. In response, the United States dispatched two carrier strike groups in the vicinity of Taiwan forcing China to suspend the missile exercise. Humiliated by Washington's show of force, Beijing started to improve the PLA's counter-intervention capabilities by purchasing Soviet-era fighters, destroyers, submarines, and an aircraft carrier. Over the past twenty-five years, the PLA has developed modern and indigenous aircraft carriers, new surface combatant ships, large amphibious assault ships, quieter submarines, combat support ships, strategic bombers, fifth-generation fighters, and massive missile forces—capabilities which extends beyond the second island chain covering the entire western Pacific.

China's growing counter-intervention capabilities pose a great threat to Japan. Over the last decade, the PLA's operational areas expanded from the East China Sea to the Philippine Sea, the Sea of Japan, and the Sea of Okhotsk as part of the counter-intervention strategy. The PLA now regularly circumnavigates the Japanese archipelago with the Russian Navy, while the PLA strategic bombers conduct patrol in the Sea of Japan and the East China Sea with Russian bombers. The PLA has rapidly increased its operations near Taiwan as well. In addition, as China rapidly increases its strategic nuclear arsenal, a "stability-instability paradox" scenario, in which China initiates a conventional war against Taiwan and Japan without fearing a nuclear war with the United States, might arise.

In response to then-US Speaker of the House Nancy Pelosi's visit to Taipei in August 2022, the PLA conducted a series of intensive blockade exercises around Taiwan. The PLA designated several exercise zones around Taiwan and launched at least nine ballistic missiles, five of which fell into Japan's exclusive economic zones. The PLA also mobilized more than 100 fighters and bombers and more than 10 destroyers and frigates to exercise a blockade of Taiwan. China's first aircraft carrier, Liaoning, joined the exercise.[1] The PLA exercises showed a real possibility that Japan would be directly involved in a Taiwan contingency due to China's counter-intervention strategy.

A War Game

[1] China Power Team. "Tracking the Fourth Taiwan Strait Crisis" China Power. August 5, 2022. Updated November 8, 2023. Accessed November 23, 2023. https://chinapower.csis.org/tracking-the-fourth-taiwan-strait-crisis/

The Japan Institute of International Affairs (JIIA) conducted a war game to understand how a Taiwan contingency could affect Japan' security. The war game demonstrated that Japan could be attacked by the PLA's cyber, missile, naval, air, and amphibious forces.[2]

The JIIA war game assumed a naval blockade by the PLA against Taiwan. In response, Japan and the United States decided to deploy naval assets near Taiwan. Then, the PLA launched cyber-attacks against Japanese infrastructures, followed by ballistic missile attacks against US and Japanese military bases in Japan. China made a nuclear threat to Japan after a series of failed ballistic missile attacks on a base in Okinawa. The PLA then deployed naval and air assets in the East China Sea to take air and maritime superiorities and occupy some of the key Japanese southwestern islands. The allied forces continued to maintain their naval forces in the East China Sea to prevent PLA's amphibious operation against Japan and in the east of Taiwan to maintain communication lines with the island. Meanwhile, the PLA dominated the Taiwan Strait and started amphibious invasion of Taiwan. The United States also deployed ground forces to Taiwan to support Taiwanese military's resistance. Then the war became deadlocked.

PLA's ballistic missile attacks neutralized Japanese and US bases initially, while the allied forces rapidly recovered the damaged airfields and obtained access to the bases in the Philippines. Australian, British, and French navies also joined the allied forces at a later phase, changing the military balance more favorable to the allied forces. Both the PLA and the allied forces lost most of their surface combatant ships and fourth-generation aircraft, while maintaining fifth-generation fighters almost intact. The PLA lost most of its submarines, while the allied forces lost only a few submarines and continued land attack and sea denial by remaining submarine forces.

The lessons from the war game can be summarized as follows:

1. It is urgent for the allied forces to fill the missile gap with China, while enhancing combined integrated air and missile defense capabilities.
2. The diversification and resiliency of air and naval assets are critical, especially in the initial phase.
3. It is important to maintain underwater superiority.
4. Reinforcements from other allies and friends make a difference.
5. Be prepare for a Chinese nuclear threat.

PLA's Growing Counter-Intervention Capabilities

In reality, what PLA capabilities could threaten Japan's security? Let's look at the missile capabilities

[2] A brief summary of the war game is available at https://www.jiia.or.jp/research-report/security-fy2022-04.html (only in Japanese).

first. The Pentagon estimates the PLA possesses 500 MRBMs (DF-21 and DF-17) with 300 launchers, which could target anywhere in Japan. The DF-21D gives the PLA to strike ships underway and the DF-17 is hypersonic glide vehicle capable possibly targeting at both enemy bases and fleets.[3] The PLA is estimated to enhance its capability to locate enemy fleets in the Pacific by using OTH radar, satellites, and drones.[4] AI analysis of satellite photos may also enable near real-time location identification.[5] The PLA also possesses the CJ- 20 long-range land-attack cruise missile launched from the H-6 bomber.[6] The PLA may develop low-yield nuclear warhead capabilities to reduce the cost of war, while it rapidly increased the strategic nuclear weapons from hundreds to 1,500 by 2035.[7]

On the other hand, the PLA is believed to enhance missile defense capabilities. Reportedly the PLA has deployed two S-400 systems and at least three early warning satellites in orbit.[8] China's homegrown HQ-9 surface-to-air missile, believed to be modeled after the Soviet-made S-300, is mobile and highly survivable, and is capable of dealing with aircraft and cruise missiles within 300 kilometers.[9]

The PLA has replaced old-generation Soviet-produced ships with new types of indigenous surface combatant ships. The PLA has introduced at least 8 new large stealth destroyers, or cruisers, Renhai-class (Type 055).[10] This new type of ships are believed to be equipped with vertical launch cells twice more than the latest Luyang III-class (Type-052D) destroyer (called China's Aegis destroyer). The Renhai-class will provide improved fleet air-defense and anti-ship attack capabilities to the PLA.[11] The PLA has commissioned its second (and the first indigenous) aircraft carrier Shandong in 2019, and is reportedly constructing a third aircraft carrier, Fujian, with an electromagnetic catapult system.[12] Those carriers are not considered as effective platforms vis-à-vis the US and other advanced navies

---

[3] Office of the Secretary of Defense, Annual Report to Congress; Military and Security Dev elopments Involving the People's Republic and China, October 2023, 66-67.
[4] Kelley Sayler, "Red Alert: The Growing Threat to U.S. Aircraft Carriers," Center for a Ne w American Security, February 2016, https://www.cnas.org/publications/reports/red-alert-the-gro wing-threat-to-u-s-aircraft-carriers.
[5] Brian Wong, "AI and Satellite Imaging Make Aircraft Carriers Vulnerable," *Next Big Futur e*, August 22, 2017, https://www.nextbigfuture.com/2017/08/ai-and-satellite-imaging-make-aircraf t-carriers-vulnerable.html.
[6] Ministry of Defense of Japan, Defense of Japan 2023, 61.
[7] Annual Report to Congress; Military and Security Developments Involving the People's Re public and China, 111-112.
[8] Defense of Japan, 62.
[9] Charlie Gao," China's HQ-9 vs. Russia's S-300 Air Defense System: What's the Differenc e?," *The National Interest*, November 10, 2018, https://nationalinterest.org/blog/buzz/chinas-hq-9-vs-russias-s-300-air-defense-system-whats-difference-35777.
[10] Defense of Japan, 64.
[11] Ibid.
[12] Ibid.

due to their vulnerability, but they pose a grave threat to smaller states.[13] China is also expected to introduce unmanned surface vehicles (USVs) and unmanned underwater vehicles (UUVs), which will further enhance PLA's asymmetric capabilities.[14]

The PLA is producing more quieter Yuan-class diesel-electric air-independent-powered submarines and Shang-class nuclear-powered attack submarines. Those submarines are armed with anti-ship cruise missiles, wire-guided and wake-homing torpedoes—which is difficult decoy—, and advanced mines. China is expected to introduce a new type of nuclear-powered submarine with land-attack cruise missile.[15] While the PLA has been enhancing its ASW capabilities, but the Pentagon estimates the PLA's ASW capabilities in deep water is not sufficient yet.[16]

The PLA has introduced the Su-27 and Su-30 fighters from Russia as its fourth-generation modern fighters, as well as the Su-35 fighter, which is considered the newest fourth-generation fighter. It is also developing modern domestically produced fighters, including the J-11B fighter, which is said to have been copied from the Su-27 fighter, the J-16 fighter, which is said to have been copied from the Su-30 fighter, and the domestically produced J-10 fighter. The PLA also deploys J-20 fifth-generation fighters.[17] The PLA is increasing the size of H-6 bomber fleet, while introducing H-6U and IL-78M aerial refueling tankers and the KJ-500 and KJ-2000 early warning and control aircraft.[18] The PLA is rapidly developing a variety of domestic unmanned aerial vehicles (UAVs), including high-altitude, long-endurance (HALE) UAVs for reconnaissance as well as those capable of carrying missiles.[19]

In addition, recent PLA reforms, including the establishment of the five Theater Commands and the Strategic Support Force, have huge impact on the capabilities of the PLA. Those reforms are expected to enhance PLA's joint operations in cyber, space, and electro-magnetic spectrum as well as in land, sea, and air.[20]

Those PLA counter-intervention capabilities could restrict Japanese and American air, naval, and amphibious operations in the western Pacific. On the other hand, ground troops and ground-based missiles are not necessarily vulnerable against the PLA.

---

[13] Congressional Research Service, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress," January 27, 2021, 16-17.
[14] Defense of Japan 2023, 64-65.
[15] Congressional Research Service, "China Naval Modernization," 9-10.
[16] Defense of Japan 2023, 65.
[17] Ibid, 66-67.
[18] Ibid., 67
[19] Ibid.
[20] Ibid., 59.

Japan's Response

To deal with the growing threats from the PLA, Tokyo prioritized the defense of the southwestern islands and introduced the concept of a dynamic joint defense force in 2013. The dynamic joint defense force envisioned air and maritime superiority with active and regular intelligence, surveillance, and reconnaissance (ISR), stand-off missiles, multi-mission frigates (FFMs), reinforced submarine fleet as well as the rapid deployment of amphibious troops, armored vehicles, air-defense and anti-ship missile launchers with hypersonic missiles for the defense of the southwestern islands. In addition, Tokyo decided to introduce the Aegis Ashore ground-based missile defense system to intercept North Korean ballistic missiles 24/7, while enabling Aegis-destroyers to provide fleet air-defense vis-à-vis the PLA.

Given the advancement in PLA's missile forces and capabilities in the new domain of cyber, space, and electromagnetic spectrum, Tokyo adopted the concept of multi-domain defense force in 2018, which no longer assumes superiority in air and sea, and instead seeks synergy of cross-domain operations. It also called for "comprehensive" air-defense to intercept various airborne threats and the conversion of the Izumo-class helicopter carrier into a light aircraft carrier for air-defense in the Pacific. Tokyo also decided to extend the range of stand-off missiles to be launched from ground-based launchers as well as ships and aircraft.[21]

On December 16, 2022, the Japanese government adopted three national security documents: "National Security Strategy (NSS)," "National Defense Strategy (NDS)," and "Defense Buildup Program (DBP)."[22] In the strategic documents, China is regarded as the "greatest challenge" to Japan's security and the international order.

The key to the realization of the new strategy is an increase in defense spending. Japan's defense spending, which has been effectively kept at around 1 percent of GDP since the 1970s, is to be raised to 2 percent, and the Cabinet has approved a total defense budget of 43 trillion yen for the five years through FY2027, which is 1.6 times the size of the previous medium-term defense force development plan. This enables Japan to realize the existing multi-domain defense concepts and upgrade its indigenous stand-off missiles as a denial, not punishment, capability, integrated air and defense missile defense, unmanned asset defense, and sustainability and resilience in preparation for the "new battles" of missile attacks, hybrid warfare, asymmetric attacks, and nuclear threats, as indicated in the NDS.

---

[21] Tetsuo Kotani, "The Multi-Domain Defense Force: Assessment and Challenges," *JIIA Strategic Comments*, No. 6, December 28, 2018, http://www2.jiia.or.jp/en/article_page.php?id=15.

[22] The provisional translations of Japan's new National Security Strategy and National Defense Strategy are available at https://japan.kantei.go.jp/content/000120031.pdf; and https://japan.kantei.go.jp/content/000120033.pdf.

New Developments for the Alliance

The US-Japan alliance has been strengthened by several developments. First, the US Marine Corps established the Marine Littoral Regiment in Okinawa in 2022 to undertake expeditionary advanced base operations with ISR and missiles capabilities to gain sea-control from the shore.[23] The MLR can work with the Ground Self-Defense Force's anti-ship and air-defense unites in the southwestern islands.

Second, Tokyo and Washington have agreed to jointly develop hypersonic missile interceptor.[24] This will further enhance bilateral missiles defense capabilities when China is increasing and upgrading the hypersonic missile capabilities. Japan is going to join the US satellite constellation project to monitor and track hypersonic warheads.

Third, Washington and Tokyo are agreeing to allowing Japanese private companies to repair US naval ships.[25] This will help the US Navy maintain its readiness to counter China's growing naval capacity, while relaxing the shipbuilding and maintenance capacity in the United States.

Forth, Both the United States and Japan have been expanding their security cooperation with third countries. Washington has expanded the enhanced defense cooperation agreement with the Philippines, while Tokyo is going to negotiate a reciprocal access agreement. These developments could provide access to the Philippine facilities in crisis. The US has established the AUKUS to provide Australia with nuclear-powered submarines, while Japan has agreed a reciprocal access agreement with Australia so that the two countries can expand bilateral and multilateral training and exercises. Japan and the United Stated also expanded cooperation with UK, France, and Germany in the Pacific.

Recommendations for the Congress

1. Enhance alliance command and control coordination.

   The introduction of Japanese counterstrike capability, coupled with US long-range missiles, is

---

[23] Drew F. Lawrence," Okinawa-Based Marine Regiment Set to Rebrand as Littoral Unit Next Month After Deal with Japan," *Military.com*, October 17, 2023, https://www.military.com/daily-news/2023/10/17/okinawa-based-marine-regiment-set-rebrand-littoral-unit-next-month-after-deal-japan.html.

[24] Jen Judson, "US, Japan exploring partnership on hypersonic missile interceptor," *Defense News*, March 21, 2023, https://www.defensenews.com/pentagon/2023/03/20/us-japan-exploring-partnership-on-hypersonic-missile-interceptor/.

[25] Sadayasu Senju and Takumi Kobayashi, "U.S. Navy prepares to conduct extensive repairs at Japan shipyards," *Nikkei Asia*, January 20, 2024, https://asia.nikkei.com/Politics/Defense/U.S.-Navy-prepares-to-conduct-extensive-repairs-at-Japan-shipyards.

critical to fill the missile gap with China maintain air and maritime superiority. However, it is now urgent for Tokyo and Washington to enhance command and control relationship for targeting and strike coordination. It is desirable to give operational command to the Commander, US Forces Japan, or establish a standing US-Japan joint task force for the mission.

2. Bring US Army to Japan.
   As there is a need for more ground-based missiles systems in Japan to deal with China's rapidly increasing medium-range missile forces, it is time to prepare for the permanent deployment of US Army's Multi-Domain Task Force with long-range hypersonic missiles in Japan despite political sensitivity.

3. Invest in directed-energy weapons.
   Japan and the United States should make further efforts and cooperation to deal with multiple airborne threats, including unmanned systems. As Japan continues to invest in the development of railgun, Washington and Tokyo should seek joint development of directed-energy weapons to intercept Chinese hypersonic threats to increase point defense options.

4. Continue to fund submarine-launched nuclear cruise missiles.
   As China grows its counter-intervention and non-strategic nuclear forces, it is important for the United States to maintain credible non-strategic nuclear options in the Pacific. SLCM-N could provide the United States an important low-yield option when China considers tactical nuclear weapons are useful to control a nuclear war.

5. Allow Japan to invest in US shipbuilding industry.
   As the United States Navy faces serious ship repair and shipbuilding delays, Japanese investment for modernizing the US shipbuilding industry is a good way to enhance the alliance. Congress could facilitate such an investment.

6. Pass the supplemental foreign aid package.
   With full understanding of the situation surrounding the supplemental foreign aid package, it is urgent for the House of Representatives to pass the bill. The package not only includes aid for Ukraine and Israel, but also includes aid for Taiwan. In addition, it includes funds for modernizing submarine industry which is critical for AUKUS agreement. Do not take aid to Asia hostage to US domestic politics.

OPENING STATEMENT OF EDCEL JOHN A. IBARRA, ASSISTANT PROFESSOR, DEPARTMENT OF POLITICAL SCIENCE, UNIVERSITY OF PHILLIPINES DILIMAN, PHILLIPINES

MR. IBARRA: Good afternoon, Co-chairs Price and Schriver, distinguished members of the Commission. Thank you very much for the opportunity to testify and offer a Filipino perspective on China's military capabilities and its implications for Indo-Pacific peace and security.

China poses a potent military security threat to the Philippines as well as to other countries in the South China Sea and countries whose ships and aircraft transit here. China has transformed the reefs it occupies in the Spratly Islands into de facto military bases. This gives China an early advantage against the Philippines in the event of war. On the largest reefs they occupy, China has built runways long enough for combat aircraft, hangars, docks deep enough for large warships, anti-ship and anti-aircraft missile systems, and coastal defense fortifications.

These de facto bases are very close to the Philippines. China's second-largest outpost, Subi Reef, lies less than 20 miles from the Philippines' largest, Thitu Island. Thitu Island has only 1 -- has only a 1-kilometer runway and no hangars. Subi Reef, which is almost ten times the size of Thitu Island, has a 3-kilometer runway and hangars that could keep more than 20 combat aircraft.

China's largest outpost, Mischief Reef, is about one and a half times larger than Subi Reef, and it also has a 3-kilometer runway long enough for bombers and hangars that could also keep several combat aircraft. It lies less than 30 miles from Second Thomas Shoal, the site of recent tensions in the South China Sea. Mischief Reef is also only around 140 miles to Palawan, the Philippines' fifth largest island. This is about the distance from Washington to Philadelphia.

These de facto bases have made it possible for Chinese airpower to cover nearly the entire South China Sea, limiting maneuverability by foreign aircraft and warships. That being said, I would like to emphasize that China's growing military capabilities and its implications in the event of war are less of a concern for the Philippines than the fact that China is already achieving its goals in the South China Sea without needing to use its military and without reaching the threshold for formal war.

Chinese military doctrine takes a broad view of war as involving not only military operations, but also political -- politico-diplomatic, economic, information, and cultural activities. U.S. military doctrine calls this broad view of war as irregular warfare, or more commonly known as gray-zone warfare. The Philippines has faced and continues to face gray-zone warfare by China in the South China Sea.

Indeed, more important than their potential in the event of war, China's de facto bases in the South China Sea are already being used to support gray-zone warfare. China Coast Guard and Chinese maritime militia vessels patrolling the South China Sea are often deployed from or refuel on these bases, allowing China to maintain its presence in disputed waters more regularly and for longer periods. I have detailed China's other gray-zone operations in my written testimony.

The broadness of China's challenge requires an equally broad response from the Philippines and like-minded countries. The Philippines understands that its military will never catch up to the Chinese military in time. This is also not a desirable goal for a country that needs to prioritize socioeconomic development. Instead, rather than modernizing the military to match,

much less counter China's military capabilities, the Philippines is focused on improving its maritime domain and achieving a minimum credible defense posture.

Alongside military modernization, the Philippines has strength and security cooperation with like-minded countries. Toward this end, the Philippines has deepened its alliance with the United States and has made new strategic partners, namely Japan, Vietnam, and Australia.

I must emphasize that none of the Philippines' actions so far has been provocative. They are merely reactive to China, the prime mover of gray-zone warfare, and defensive in purpose, aiming to preserve the Philippines' court-affirmed rights in the South China Sea.

I must also emphasize that the Philippines is not free-riding in the alliance. The Philippines' massive investment in maritime and air capabilities in the last decade is unprecedented in our history. Moreover, the Philippines is helping strengthen the United States' hub-and-spokes alliance system into a networked security system through spoke-to-spoke cooperation with Japan and Australia. For the part of the Philippines, military assistance is, of course, valuable for us, but I must stress that a narrow concern for military security could harm the alliance.

There are two main reasons. First, as already mentioned, China's challenge goes beyond military security. Thus, previous U.S. policies emphasizing only freedom of navigation in the South China Sea have appeared tone-deaf to Philippine policymakers. The Philippines, of course, wants to preserve freedom of navigation, but its immediate concerns are its inability to fish and to explore offshore oil and gas in its exclusive economic zone.

Second, precisely because the United States has not offered similar alternatives to China's promises of immense trade investment to recent developmental assistance and financial support for infrastructure, the Philippines has been previously tempted to align with China. For this reason, providing economic benefits can help make the alliance more durable, providing strong incentives for the Philippines, as a developing country, to keep its alliance with the United States.

The Indo-Pacific Economic Framework and recent promises of substantial U.S. investment in the Philippines are, therefore, steps in the right direction. Having said all these, I would recommend that the UN -- that the U.S. Congress, among other things, approve continued funding to help the Philippines' effort at military modernization, coast guard modernization, enhancing interoperability, and enhancing maritime domain awareness.

Congress must also support efforts by the executive branch in mounting a broad response - military, diplomatic, as well as economic - to China's gray-zone warfare in the South China Sea. I have other recommendations which I have detailed in my written testimony. Thank you very much for your time. I look forward to your questions.

COMMISSIONER SCHRIVER: Thank you very much. Ms. Shrimpton?

PREPARED STATEMENT OF EDCEL JOHN A. IBARRA, ASSISTANT PROFESSOR, DEPARTMENT OF POLITICAL SCIENCE, UNIVERSITY OF PHILLIPINES DILIMAN, PHILLIPINES

MARCH 21, 2024

EDCEL JOHN A. IBARRA
Assistant Professor, Department of Political Science,
University of the Philippines Diliman

TESTIMONY BEFORE THE U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

Regional Views on China's Military Capabilities and Implications for Regional Security Architecture

VICE CHAIR PRICE, COMMISSIONER SCHRIVER, AND DISTINGUISHED MEMBERS OF THE COMMISSION: Thank you very much for the opportunity to testify and offer a Filipino perspective on China's military capabilities and its implications for Indo-Pacific peace and security.

This written testimony addresses the questions prepared by the Commission staff.

Q1. What military security challenges does China pose to the Philippines? How threatening are China's A2/AD capabilities for Philippines's security?

Military or traditional security can be defined as freedom from "the threat or use of force against the territorial integrity or political independence" of a state.[1]

China presents an acute military security challenge for the Philippines in the South China Sea. China claims almost the whole South China Sea and all the reefs there, including the entire Pratas, Paracel, and Spratly Islands, as well as Macclesfield Bank and Scarborough Shoal. By contrast, the Philippines claims only (1) about a tenth of the South China Sea, a portion it calls the West Philippine Sea (based on the maximum area of exclusive economic zone and continental shelf allowed by the 1982 United Nations Convention on the Law of the Sea, or UNCLOS); (2) a subset of the Spratly Islands it calls the Kalayaan Island Group; and (3) Scarborough Shoal. China's assertion of its territorial and maritime claims has infringed on the Philippines' own claims, even after an UNCLOS arbitral tribunal affirmed the Philippines' rights to some of those areas in 2016. China occupies some of the Kalayaan islands and patrols inside the Philippines' exclusive economic zone, undermining the Philippines' territorial and maritime integrity. China has also blocked the Philippines from exploring (much less developing) marine resources in that area, undermining the Philippines' political independence to exercise its exclusive jurisdiction there. China has threatened force but has not used it yet (in the conventional sense) against the Philippines.[2]

[1] U.N. Charter art. 2, para. 4.
[2] See, e.g., Antonio T. Carpio, "Five Flashpoints in the Philippines-China Relationship," United States Institute of Peace, 14 August 2023.

Yet focusing only on China's military capabilities would ignore the broadness of its challenge to the Indo-Pacific order. Indeed, China is already achieving its A2/AD goals without needing to use its formal A2/AD capabilities. Instead, China takes a broad view of war as involving not only military operations but also politico-diplomatic, economic, information, and cultural activities.[3] The United States calls this broad view of war "irregular warfare."[4] Irregular warfare is also known as hybrid or gray-zone warfare.[5]

China's assertive actions in the South China Sea have long been recognized by analysts as gray-zone operations. These are efforts to increase one's gains or decrease an adversary's gains in a conflict without using conventional (i.e., kinetic) military force and without reaching the threshold for traditional war. Contextualized in China's military doctrine, these gray-zone operations are not merely a form of coercion but a form of warfare.

The Philippines has faced and continues to face gray-zone warfare by China in the South China Sea. China's gray-zone operations include the following:

- Bullying Philippine ships, including by firing water cannons (sometimes causing injury to crew)[6] and laser weapons,[7] aiming naval gun rangefinders,[8] sailing dangerously close,[9] and ramming[10] (in one case, sinking a boat and leaving the crew in the open sea)[11]
- If bullying is successful, blocking Philippine ships on maritime law enforcement operations and humanitarian missions, including resupplies to Philippine-occupied reefs, especially Second Thomas Shoal[12]

---

[3] Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy* (Beijing: People's Liberation Army, Academy of Military Science Press, 2001). See also Edmund J. Burke et al., *People's Liberation Army Operational Concepts* (Washington, DC: RAND, 2020).

[4] Irregular warfare is "a form of warfare where states and non-state actors campaign to assure or coerce states or other groups through indirect, non-attributable, or asymmetric activities, either as the primary approach or in concert with conventional warfare," according to the U.S. Department of Defense. Catherine A. Theohary, *Defense Primer: What Is Irregular Warfare?* (Washington, DC: Congressional Research Service, 2024).

[5] Theohary, *What Is Irregular Warfare?*; Alexander Noyes and Daniel Egel, "Winning the Irregular World War," *Newsweek*, 2 November 2023.

[6] For the latest incident, see Jim Gomez, "Philippine and Chinese Vessels Collide in Disputed South China Sea and 4 Filipino Crew Are Injured," *AP News*, 6 March 2024.

[7] For the latest incident, see Raymond Carl Dela Cruz, "China Coast Guard Points Laser Light at PCG Ship off Ayungin," Philippine News Agency, 13 February 2023.

[8] Frances Mangosing, "Wescom Says Chinese Warship Readied Guns vs PH Navy Ship in PH Territory," *Philippine Daily Inquirer*, 23 April 2020.

[9] For the latest incident, see Gomez, "Philippine and Chinese Vessels." See also South China Sea Arbitration (Phil. v. China), PCA Case No. 2013-19, Award paras. 1044-109 (Arb. Trib. Const. under Annex VII to the 1982 U.N. Convention on the Law of the Sea, 12 July 2016).

[10] For the latest incidents, see Gomez, "Philippine and Chinese Vessels"; Jason Gutierrez, "Philippines, China Accuse Each Other of Ship Ramming," *Radio Free Asia*, 10 December 2023.

[11] Jason Gutierrez, "Philippines Accuses Chinese Vessel of Sinking Fishing Boat in Disputed Waters," *New York Times*, 12 June 2019. The crew was rescued by Vietnamese fishers.

[12] E.g., Memorial of the Philippines, *South China Sea Arbitration*, para. 3.62 (30 Mar. 2014).

- Swarming (i.e., staking out in large numbers, often hundreds) around Philippine-claimed reefs in the Spratly Islands[13]
- Engaging in illegal, unreported, and unregulated fishing, including in poaching corals, giant claims, sea turtles, sharks, and other endangered species, and, in the process, destroying coral reefs[14] (while also refusing to arrest Chinese nationals engaged in illegal fishing)[15]
- Building artificial islands on Chinese-occupied reefs in the Spratly Islands and, in the process, irreparably destroying the marine environment in those reefs, including Mischief Reef[16]
- Militarizing those artificial islands[17]
- Blocking and deterring Filipinos from fishing in the Philippines' exclusive economic zone as well as in Scarborough Shoal, including through an annual fishing ban[18]
- Blocking the Philippines from exploring oil and gas in the Philippines' exclusive economic zone[19] and deterring foreign firms from investing in offshore energy[20]
- Airing radio challenges to Philippine government aircraft approaching the Spratly Islands[21]
- Undermining the final and binding ruling of an UNCLOS arbitral tribunal in the *South China Sea Arbitration (Philippines v. China)*, such as by
    - stubbornly refusing to acknowledge, much less abide by, the ruling
    - conducting the gray-zone operations mentioned in this list in areas that the tribunal has already declared to be the Philippines', such as a 200–nautical mile exclusive economic zone west of the Philippines excluding certain reefs in the Spratly Islands (and narrow belts of water around them) but including such reefs as Second Thomas Shoal and Mischief Reef
    - supporting legal scholarship aiming to refute the ruling[22]
    - promoting untested legal theories that contradict the tribunal's reasonings[23]
    - discrediting the arbitration process and the tribunal members[24]

---

[13] Asia Maritime Transparency Initiative, "Wherever They May Roam: China's Militia in 2023," 28 February 2024.
[14] *South China Sea Arbitration*, Award, paras. 950-93.
[15] Ibid., paras. 717-57.
[16] Ibid., paras. 976-91.
[17] U.S. Department of Defense, *2023 Report on the Military and Security Developments Involving the People's Republic of China (CMPR)* (Arlington, VA), 124-26;.
[18] *South China Sea Arbitration*, Award, paras. 758-814. Chinese vessels' presence in the Philippines' exclusive economic zone "has had a substantial chilling effect on the activities of Philippine fishermen." *South China Sea Arbitration*, Memorial, para. 6.29.
[19] *South China Sea Arbitration*, Award, paras. 702-8.
[20] Bill Hayton, *The South China Sea: The Struggle for Power in Asia* (New Haven, CT: Yale University Press, 2014), ch. 5.
[21] For the latest incident, see Sundy Mae Locus, "Philippines, China Exchange Radio Challenges in WPS," *GMA News*, 16 February 2024.
[22] Chinese Society of International Law, "The South China Sea Arbitration Awards: A Critical Study," *Chinese Journal of International Law* 17, no. 2 (2018).
[23] U.S. Department of State, *Limits in the Seas No. 150: People's Republic of China: Maritime Claims in the South China Sea* (Washington, DC, 2022).
[24] Pratik Jakhar, "Whatever Happened to the South China Sea Ruling?," *The Interpreter*, 12 July 2021.

  - pressuring foreign governments and international organizations from mentioning or supporting the ruling[25]
  - influencing private companies to adopt China's illegal "nine-dash line" claim, especially in media productions such as Dreamwork's *Abominable*, Netflix Australia's *Pine Gap*, Sony Picture's *Uncharted*, and most recently, Warner Bros.' *Barbie*[26]
- Imposing economic sanctions (such as nontariff barriers and tourism restrictions) against the Philippines[27]
- Investing in strategic industries (such as in national telecommunications and the national power grid)[28] and attempting to invest in strategic locations (such as in or near military bases)[29] in the Philippines
- Sowing and supporting disinformation on the Philippines' actions and claims in the South China Sea, including by supporting Filipino voices that espouse pro-China views[30]
- Potentially carrying out cyberattacks on Philippine government emails and websites[31]
- Potentially failing to meet responsible standards for space rocket debris falling in Philippine waters[32]

Q2. How does the militarization of the South China Sea strengthen China's ability to restrict the operations of foreign military forces?

China's militarization of the South China Sea intensified in late 2013, when China began to reclaim land on its occupied reefs in the Spratly Islands in response to the Philippines' filing for arbitration early that year.

China's reclamation was meant to create a fait accompli. China was wary that the tribunal would award jurisdiction of its occupied reefs to the Philippines. The tribunal eventually did rule for the Philippines for Mischief Reef and, with some caveats, Subi Reef. With the fait accompli on those very reefs, however, China has made it harder for the Philippines to implement the tribunal's ruling and regain them, subverting the rule of international law.

---

[25] Asia Maritime Transparency Initiative, "Arbitration Support Tracker," 18 July 2023; Reuters, "China Blasts US for Forcing It to Accept South China Sea Ruling," 12 July 2023.
[26] Tim Brinkhof, "The Barbie Movie, the Nine-Dash Line, and China's Influence on Hollywood," *Vox*, 13 July 2023.
[27] Erick Nielson C. Javier, "Economic Coercion: Implication to the Philippines and Possible Counters," National Defense College of the Philippines, n.d.
[28] Ralf Rivas, "Breaking Up the Philippines' Telco Duopoly," *Rappler*, 3 June 2023; "Explainer: How China Got Into the Philippines' Power Grid," *Rappler*, 29 May 2023.
[29] E.g., Miguel R. Camus, "Cavite Drops China-Backed Sangley Airport Deal," *Philippine Daily Inquirer*, 28 January 2021; Nyshka Chandran, "Philippines' Subic Bay: Fears Chinese May Take Over Old US Naval Base," *CNBC*, 25 January 2019.
[30] Frances Mangosing, "China Using 'Operators' to Divide PH on WPS—NSC," *Philippine Daily Inquirer*, 18 August 2023
[31] For the latest incident, see Reuters, "Philippines Wards Off Cyber Attacks from China-Based Hackers," 6 February 2024.
[32] See, e.g., Jim Gomez, "Chinese Coast Guard Seizes Rocket Debris from Filipino Navy," *AP News*, 21 November 2022.

Reclamation also allowed China to transform those reefs effectively into naval and air bases. Mischief and Subi Reefs are China's two biggest artificial islands in the South China Sea. On them, China has built runways long enough for combat aircraft, hangars, docks deep enough for large warships, and anti-ship and anti-aircraft missile systems. These de facto bases could give China early advantage against the Philippines in the event of war.

For context, Mischief and Subi Reefs are very near the Philippines. Mischief Reef is around 140 miles to Palawan, the Philippines' fifth largest island. This is about the distance between Washington, DC, and Philadelphia, PA, or the width of the Taiwan Strait from Xiamen, China, to Taichung, Taiwan. Moreover, Mischief Reef is only around 24 miles to Second Thomas Shoal, the site of recent Philippines-China confrontations, where the Philippines has grounded an old, rusting decommissioned warship to serve as an outpost. The shoal is closer to China-controlled Mischief Reef than it is to any other Philippine outpost or to Palawan. Similarly, Subi Reef is only around 16 miles to Thitu Reef, the Philippines' largest outpost in the South China Sea and the only one with a civilian population.

But more important than their potential in the event of war, these de facto bases on Mischief Reef, Subi Reef, and others are already being used to support gray-zone warfare. China Coast Guard and Chinese maritime militia vessels patrolling the South China Sea are often deployed from or refuel on these bases, allowing China to maintain its presence in disputed waters more regularly and for longer periods.

Q3. Describe the views of China's military strategy within the Philippines defense community. How have these views changed over time?

China as an external threat began to pervade Philippine strategic thinking in early 1995, when the Philippines discovered that China had seized Mischief Reef. Mischief Reef was too close for comfort. The Philippines, an archipelago sandwiched between a sea and an ocean, was unused to a neighbor to its west. And China was no ordinary neighbor. Its economy had been expanding year after year at an astonishing rate, and China had begun using that new money to buy itself a navy and air force worthy of a great power.

The incident is a watershed in Philippine strategic policy. First, Philippine leaders began to take external defense seriously for the first time. Previously, national security referred to managing internal threats, namely, the communist insurgency, separatism in Mindanao, and military rebellions. Philippine officials saw external threats as a problem for the United States as the Philippines' ally. This was especially true when the United States still maintained bases in the country. When the Philippine Senate rejected renewing the lease for U.S. bases in 1991, external defense played little to no role in the calculation. Instead, discussions centered on anti-U.S. nationalism. There were also no serious talks on how the Philippines would fill the security void in to be created by the removal of U.S. bases. President Corazon Aquino's administration did consider in 1989 a long-term program to modernize the Philippine military, but internal security concerns as well as economic problems continued to plague the country, forcing the government to leave the plan on the

back burner. Only after the Mischief Reef incident did President Aquino's successor, Fidel Ramos, reconsider the military modernization plan, and Congress moved quickly to pass it within a month.

Second, due to the removal of U.S. bases, it became important for Philippine leaders to obtain a clear security guarantee from the Americans. They wanted an unequivocal statement that the United States will render military assistance to the Philippines in case of an armed attack, including in the South China Sea, pursuant to its commitment under the mutual defense treaty. The United States, however, refrained from meddling in the disputes and would not throw unequivocal support to the Philippines for the next three decades until under President Donald Trump.

Finally, the mood had changed among Filipinos. The Mischief Reef incident marks the beginning of the transformation of Filipino nationalism from being anti-U.S. to, increasingly thereafter, anti-China. This was most apparent in a major policy U-turn in 1998 when the Philippines agreed to allow U.S. troops, ships, and aircraft to enter the country again under a visiting forces deal. The shift in national mood cannot be overstated. President Ramos's successor, Joseph Estrada, and the new defense secretary, Orlando Mercado, were former senators who had voted for the removal of U.S. bases in 1991. By 1998, the Estrada administration was urging the Senate to concur in the visiting forces deal, and 18 senators—well-above the two-thirds threshold—gave their blessing, paving the way for the Philippines' return to the United States' military orbit.

Unfortunately, the 1995 Philippine military modernization program ended in 2010 without reaching its goal. From the late 1990s to the early to mid 2000s, the government was distracted by internal security threats. Presidents Ramos and Estrada, confronted a growing communist movement and, with it, increased insurgent guerilla attacks. In addition, President Estrada faced a swelling militant Islamist separatist group in Mindanao that had begun occupying a few towns in the region. President Estrada's successor, Gloria Macapagal Arroyo, encountered resurgent militant Islamist organizations emboldened by the September 11 attacks. Military modernization was also beset by funding problems, worsened by the financial crises of 1997 and 2007–2008.[33]

Meanwhile, Chinese assertiveness in the South China Sea toned down after the Mischief Reef incident. To be sure, there were still other incidents with China after 1995, but tensions substantially increased again only after 2007, when China had significantly expanded its maritime surveillance fleet and increased its patrols in the South China Sea.[34] Indeed, between 1995 and 2007, China reassured the region that it was adhering to international norms, especially when it agreed to a Declaration on the Conduct of Parties in the South China Sea with ASEAN in 2002 and acceded to the 1976 Treaty on Amity and Cooperation in Southeast Asia in 2003. Thus, the Philippines had little incentive to build up external security capabilities at that time.

---

[33] Renato Cruz De Castro, "Philippine Defense Policy in the 21st Century: Autonomous Defense or Back to the Alliance," *Pacific Affairs* 78, no. 3 (2005).
[34] Andrew Chubb, "PRC Assertiveness in the South China Sea: Measuring Continuity and Change, 1970–2015," *International Security* 45, no. 3 (2021).

President Aquino III's government revived and revised the modernization plan in late 2012, a few months after China seized Scarborough Shoal. The revised program divided appropriations into three five-year "horizons" between 2013 and 2028. Under Horizon 1 (2013 to 2017), the Aquino III administration divided funds almost evenly among the army, navy, air force, and joint staff. Assets acquired included helicopters and trainer, transporter, and fighter planes. Under Horizon 2 (2018 to 2023), President Rodrigo Duterte's administration increased funds for the air force sixfold and the navy nearly threefold. Assets acquired included amphibious armored vehicles, antisubmarine helicopters, warships, and cruise missiles.[35] In the South China Sea, President Duterte also allowed the defense and transportation departments to build a beaching ramp and a sheltered port and repair the runway on Thitu Island. For Horizon 3 (2023 to 2028), President Ferdinand Marcos Jr.'s administration is eyeing more fighter planes, warships, missiles, and submarines.

Under President Arroyo and early under President Duterte, there seemed to be hope that China was becoming a legitimate alternative partner for cooperation, especially on economic development. China promised substantial increases to trade and investment. But in President Arroyo's case, China-funded projects got embroiled in corruption scandals. In President Duterte's case, improved economic cooperation did not spill over into improvements on the situation in the South China Sea. China still waged gray-zone operations at sea against the Philippines, especially during the pandemic, when China seized the opportunity to renew its assertiveness while the rest of world wrestled with COVID-19. Indeed, this led the Duterte administration to eventually harden its initial soft stance on China after 2020.

At present, it seems clear to many Filipino analysts that China is intent on either securing or "breaking" the so-called Pacific island chains, of which the Philippines is part. This means that Chinese gray-zone operations are likely to continue in the South China Sea. Thus, there is a need for the Philippines to push back if it is to enjoy its court-affirmed rights in the South China Sea.

Q4. Explain the significance of the U.S.-Philippines alliance for the Philippines' security objectives vis-à-vis China in the Indo-Pacific region. What military benefits does the alliance provide to the Philippines and to the United States?

For the Philippines, the main benefits of the alliance with the United States include the following:

- Assistance in military capacity-building and interoperability
- Assistance in military operations, especially through intelligence-sharing, in humanitarian missions, and recently, in joint maritime and air patrols
- Assistance in military modernization, especially through arms donations and sales

[35] Julio S. Amador, Deryk Matthew Baladjay, and Sheena Valenzuela, "Modernizing or Equalizing? Defence Budget and Military Modernization in the Philippines, 2010-2020," *Defence Studies* 22, no. 3 (2022).

- Assistance in maritime domain awareness, including providing equipment and training
- Deterrence against China through the above assistance
- Linkage to other like-minded countries within the U.S.'s diplomatic orbit (e.g., connecting the Philippines with other U.S. allies and partners)
- Socio-economic cooperation, including for vaccines during the COVID-19 pandemic

For the United States, the main benefits of the alliance with the Philippines include the following:

- Strategic location for forward deployment of forces
- Strategic location for military logistics (e.g., resupplies in Philippine bases and access to Philippine waters and airspace) in expeditionary missions in the Indo-Pacific if allowed by the Philippine government or if mutual defense obligations are triggered
- Assistance in U.S.-led military operations if allowed by the Philippine government or if mutual defense obligations are triggered (as the Philippines did during the Korean and Vietnam Wars and the Global War on Terrorism)
- Assistance in U.S. global counterterrorism campaigns
- Strengthening the United States' hub-and-spokes alliance system into a networked security system by participating in spoke-to-spoke cooperation
- Diplomatic support for U.S. initiatives, including toward a free and open Indo-Pacific and arrangements such as the Quad and AUKUS
- Holding the line in defending a rules-based order in the South China Sea by asserting the rights of coastal states and the freedom of navigation for all states under international law
- Holding the line for promoting good order at sea by preventing, to the best of the Philippines' ability, piracy, armed robbery at sea, maritime terrorism, trafficking at sea, illegal fishing, marine pollution, and maritime accidents in Philippine waters—and in so doing, helping secure international trade flows and undersea communications infrastructure, including those going to and from the United States

Filipino analysts are aware of the concern among some Americans that the Philippines can seem to be an unreliable partner, such as when President Duterte nearly sank the alliance after a high point under President Aquino III. On the one hand, this is inevitable in highly presidentialized systems that give more autonomy to the chief executive on foreign and security policy than on domestic policy. Thus, a similar concern could be said about the United States, as when President Trump reversed several of his predecessor's foreign policies. On the other hand, there are ways to keep the Philippines' alignment with the United States. The most important is probably to make the United States an indispensable partner in economic development. President Arroyo's and President Duterte's forays into China were motivated largely by the Chinese government's promises of substantial developmental assistance and increased trade, investment, and people-to-people exchanges to the Philippines. The United States must provide a viable alternative to these. This is a lesson from Japan's playbook. Indeed, no Philippine president has ever realigned the

country away from Japan. Philippines-Japan relations endured even as Philippines-U.S. ties fluctuated. Fortunately, the Indo-Pacific Economic Framework and recent promises of U.S. investments to the Philippines worth over billions are steps in the right direction. The challenge for the United States now is to ensure that it follows through on these commitments.

Q5. What are the most important military capabilities that the Philippines currently has or is developing that could be used to defeat or complicate China's A2/AD?

Please see my response to Q3.

Q6. How do multilateral initiatives, such as the U.S.-Philippines-Japan trilateral cooperation, support Philippine security objectives in the Indo-Pacific?

U.S.-Philippines-Japan trilateral cooperation complements the Philippines' alliance with the United States and strategic partnership with Japan. While the United States is the Philippines' most valuable security partner, Japan is its most valuable economic development partner. The Philippines has long pushed to extend alliance cooperation with the United States into the economic domain. Similarly, the Philippines has also supported expanding ties with Japan to include security cooperation as well. Thus, Japan became the Philippines' first strategic partner in 2011—the first time that the Philippines sought substantial security cooperation with a country other than the United States.

The 2014 Philippines-U.S. Enhanced Defense Cooperation Agreement must be understood against this backdrop of Philippine partnership diplomacy with like-minded countries under President Aquino III. Despite EDCA, the Scarborough Shoal incident showed the United States' unbending ambivalence at that time toward its commitment to defend the Philippines, its oldest military ally in Asia, against China. Due to this uncertainty, the Philippines looked for other security partners besides the United States. In 2015, the Philippines reaffirmed its strategic partnership with Japan, formed a new strategic partnership with Vietnam, and entered a comprehensive partnership with Australia.

From 2016 to 2022, however, President Duterte changed the trajectory of Philippine partnership diplomacy. He set aside nurturing the Philippines' network of security cooperation pacts with the United States, Japan, Vietnam, and Australia and instead sought to expand the network to include so-called non-traditional partners, such as China, Russia, and India.

President Marcos Jr. turned the country's focus back on enhancing security cooperation within the network originally built by President Aquino III. In 2023, the Philippines gave the United States access to more military bases under EDCA. The Philippines also upgraded its relations with Australia to a strategic partnership. Moreover, the Philippines reset its strategic partnership with Vietnam, a fellow claimant in the South China Sea. It resumed high-level bilateral meetings after a four-year pause due to the pandemic. It also reassured Vietnam that the Philippines could be relied on to uphold international law in the South China Sea—something that was missing under President Duterte. Meanwhile, the

Philippines continued to strengthen its strategic partnership with Japan. It began to negotiate a reciprocal access agreement, which would make it easier for the Japanese self-defense forces to enter the Philippines and the Philippine military to enter Japan.

President Marcos Jr. is also seeking to expand the network to include more like-minded countries. South Korea is likely next in this expansion. The Philippines and South Korea have been preparing to upgrade their relations to a strategic partnership since 2022. Philippines-South Korea relations will approach its 75th anniversary this March, and the Philippines hopes to enter a strategic partnership with South Korea during this anniversary year. If successful, this would make South Korea the Philippines' fourth bilateral strategic partner, after Japan, Vietnam, and Australia.

Q7. How does China perceive Philippines security cooperation with the United States and other partners in the Indo-Pacific?

When the Philippines' interests align with the United States', China refuses to acknowledge the Philippines' agency. China paints the Philippines simply as a "pawn" of the United States and Filipino officials as "puppets" of the Americans. This framing is useful for China. If the South China Sea conflict is framed as between great powers, China would appear to be standing up to the United States as a hegemonic power. If, instead, the conflict is framed as between a great power and a small state, China would appear to be the bully.

China, too, paints as provocation any action in the South China Sea short of acquiescing to its demands. There is no real room for maneuver by the Philippines to defend its maritime rights without "provoking" China other than inaction or appeasement. In any case, none of the Philippines' actions so far have matched China's seizure of Scarborough Shoal, construction of militarized artificial islands, undermining of the rule of international law, and other gray-zone activities. The Philippines has too few and too small ships at the moment to convincingly bully the much larger fleets and vessels of the People's Liberation Army–Navy and even the China Coast Guard. The Philippines also has too underdeveloped installations in the South China Sea to support advanced military operations. The outpost on Second Thomas—the epicenter of recent tensions—is the poorest in condition, so besieged by leaks and rust and so exposed to the elements that no soldier would survive there for long without regular resupplies.

Q8. How can the United States and the Philippines strengthen peace and stability and improve their ability to maintain freedom of operations in the Indo-Pacific?

Please see my response to Q9.

Q9. What recommendations for legislative action would you make?

- Approve continued funding for Philippine military modernization and training.
- Approve continued funding for Philippine coast guard modernization and enhancing Philippine maritime domain awareness.

- Urge the executive branch to forward-deploy more forces, including the U.S. Coast Guard, and increase freedom of navigation operations and joint patrols with other countries in the South China Sea.
- Support continued economic sanctions against Chinese entities involved in gray-zone operations, illegal fishing, and marine environmental destruction in the South China Sea.
- Support cooperation on cyber security and combatting disinformation.
- Support cooperation on marine scientific research, marine environmental protection, and fisheries management.
- Support the executive branch's efforts to strengthen economic cooperation and follow through on existing trade and investment commitments.
- Encourage more aid and investment in the Philippines, especially in maritime infrastructure and the blue economy (e.g., fisheries and offshore energy).
- Increase interparliamentary linkages, especially between the foreign affairs and defense committees of each other's Senate and House of Representatives.
- Pass a resolution adopting the executive branch's interpretation that the Mutual Defense Treaty with the Philippines applies to an armed attack in the South China Sea.[36]
- Consent to the ratification of 1982 UNCLOS.

---

[36] E.g., H. Res. 843, 118th Cong.

OPENING STATEMENT OF BEC SHRIMPTON, DIRECTOR, DEFENSE STRATEGY AND NATIONAL SECURITY, AUSTRALIAN STRATEGIC POLICY INSTITUTE (ASPI), AUSTRALIA

MS. SHRIMPTON: Good morning, Co-chairs, Commissioners, and staff, and thank you so much for the opportunity to share some thoughts from an Australian perspective today. China represents a comprehensive, complex, and a growing military threat to Australia, to the Indo-Pacific region, and beyond. A deep understanding of China's strategic culture, what today's CCP leadership values, and how it is concentrating and consolidating power is key to understanding both the PLA's strengths and -- for deterrence and for warfighting.

From a -- from a military intent and a planning perspective, again for the U.S. and its allies, for deterrence and for warfighting, understanding how the CCP and the PLA themselves see the world and perceive threats is fundamental to our own efforts to deter and, if necessary, to fight and win. China's military development and its operational concepts cannot be assessed in isolation from its expansive national security concepts, which are designed to coerce, compel, and control its own population and institutions as well as external actors.

Its massive military modernization efforts, its phases of development, and how it both communicates or obfuscates those is of great importance. Cognitive warfare, intelligentized warfare, and the use of the information domain are central concepts that don't have either neat parallels or strong evident responses in Western-style strategy and planning. They're not as well understood or analyzed as they need to be to inform effective response planning or capabilities to defeat them.

Neither the ends, the ways, or the means of Chinese strategy neatly align with the military domain-dominant and values-based frameworks and structures that are often taken for granted in liberal democracies. As an illustration of the vast differences in the use of concepts and language between Chinese and Western strategic thinking, for example, PLA military strategy references to active defense can be illuminating. This idea of defense includes preemptive offensive operations at the tactical and military -- and operational levels -- pardon me.

For example, in regard to Taiwan, they could potentially see PLA military attacks by air, sea, and missile forces, as well as cyber and space, against U.S. and allied forces prior to or at the outset of any Chinese attempted invasion of Taiwan. This extends to the competition or the gray-zone phase in which the idea of anti-access/area denial involves pushing the U.S. out in terms of influence, presence, capability, and geography, pushing it as far from China as possible and extending China's reach as far as possible.

Chinese capabilities are specifically designed to make it more difficult for the Australian Defense Force, alongside the U.S. and other partners, to project military power and presence inside the first island chain in any crisis over the Taiwan seas or in the South China Sea, and it holds at risk Australia's ability to defend sea lanes of communication. It is important to note, I think, however, that the further the PLA operates forward, the more vulnerable its assets become to U.S. and other targeting, the more difficult the task of supply, maintenance, and replenishment, for example.

The growth of Chinese bases on illegally occupied rocks and reefs and artificial islands in the South China Sea extend China's ability to undertake counter-intervention operations. Control of the South China Sea is vital for China, including to deny any other actor the ability to operate freely there, particularly in terms of operations potentially in support of Taiwan.

These locations should be closely watched in peacetime or the competition phase as part of more regularized gray zone and deterrence cooperation activities between U.S. and its allies in the region, and they offer important signals regarding future Chinese intent. A forward Chinese base in the Southwest Pacific could dramatically enhance China's ability to extend its A2/AD bubble.

China's substantial, fast-developing space and counterspace capabilities offer opportunities for it to match or even beat a key capability superiority that it perceives the U.S. to currently maintain. The full realization of Chinese space ambitions and the weaponization of space could put any point on the planet within -- within range of Chinese military strike, including nuclear strike.

It is imperative, from my perspective, that the U.S. and its allies understand the importance of the space domain to Chinese strategy as well as to their or our own capacity to compete and win in any future, or indeed the present -- of cross-domain and multidimensional warfare. And I agree this is economic, political, informational, social, and military warfare.

The CCP is showing a preference to established capabilities - including political, economic, military, and informational - that are fronted by other legitimate regimes or in and through locations that are not owned or directly operated by China. These may be achieved through bribery, corruption, economic dependency, coercion, through criminal means, and even leveraging Chinese commercial, non-state, or proxy actors, including through domination of black markets. It is important that we recognize both military and accompanying nonmilitary tools that China uses to establish control and influence.

Australians have become more alert to Chinese covert and clandestine activities within Australia, certainly, and beyond, including political interference and economic coercion. These are, however, just the tip of the iceberg. The Australian defense, intelligence, and strategic policy community is starting to take the challenge posed by China and the PLA much more seriously, especially within the intelligence and security organizations. But there still remains no broad consensus of views across the national security and foreign policy community.

The 2023 Australian Defense Strategic Review picked up where the 2020 Defense Strategic Update made clear the challenge posed by China's rapid military expansion and modernization. It recognized that Australia has no strategic warning time any longer for a major power conflict.

It's impossible to overstate the centrality of the U.S. to Australian strategy and military planning. Australia's defense relationship is characterized uniquely, with the U.S., as one of seamless interoperability. And interoperability is a term that until very recently, in its strictest application, has only applied to the U.S. and now applies to the UK under AUKUS. Our alliance is the bedrock of Australian security. And in reciprocal terms, the investments made by both countries into our joint capabilities, the joint facilities, into personnel exchanges, and into our strategy capability and force design collaborations are significant.

This work complements and has actually contributed to Australia's demonstrated and valued commitments, on our own terms and within the context of our own sovereign interests, to support U.S. military efforts in almost every major conflict over more than 100 years. The advantages of the alliance for Washington are not just a close defense and security ally. Australia's importance in geographic terms is also of increasing importance for U.S. military strategy. We offer a forward location that is a little less vulnerable than some of the others that are in the region.

AUKUS is one of the most important defense policy choices Australia has made in decades, as with the other allies, and it does sit at the heart of Australia and U.S. and UK defense cooperation going forward. And this is both in terms of the acquisition of the SSNs as well as Pillar 2 critical technologies.

These pillars are mutually reinforcing, and they enmesh three great countries with common global interests and reach together, providing pathways for crucial new collaborations and capability integration. These increase our strength, individually as well as collectively, and our ability to apply that anywhere in the world, but most importantly in the Indo-Pacific.

China perceives Australian security cooperation with the U.S. and other allies as a key challenge to its ability to achieve a dominant and hegemonic role across the Indo-Pacific. The trilateral with Japan is vital. India is an emerging partner. A new quadrilateral of U.S., Japan, ROK, and Australia from both a signaling and a practical perspective important -- perspective are important. And I support previous comments about the bilateral relationships that are growing, and mililaterals.

I have a couple of specific recommendations that I won't go into now in the interest of time. But I'd emphasize a focus on increasing allied collaboration between allies and with the United States, especially in defense, industrial, and technology cooperation, and I see space as an absolutely key domain. Thank you very much.

PREPARED STATEMENT OF BEC SHRIMPTON, DIRECTOR, DEFENSE STRATEGY AND NATIONAL SECURITY, AUSTRALIAN STRATEGIC POLICY INSTITUTE (ASPI), AUSTRALIA

21 March 2024

Rebecca Shrimpton, Director, Defence Strategy and National Security, Australian Strategic Policy Institute

Testimony before the U.S.-China Economic and Security Review Commission: Hearing on "Regional Views on China's Military Capabilities and Implications for Regional Security Architecture."

China as a military challenge and China's military intent in the Indo-Pacific

China represents a comprehensive, complex and growing military threat to Australia, the Indo-Pacific region, and beyond. China's strategic culture is unique, and even as tenets of it are well known through the writings of famous strategists such as Sun Tzu, there has long been a tendency to view China and its military activities through a Western lens. This should be strongly resisted, and significant effort put in to studying what today's CCP leadership values and how it is concentrating and consolidating power. This is key to understanding both its strengths and its vulnerabilities from a military intent and from a planning perspective for deterrence and for warfighting. Invoking Sun Tzu, it is often noted that China seeks to 'win without fighting', but to take that single dictum out of context and without the benefit of understanding its place within a broader set of concepts that relate to perceptions of timing, advantage and action, can lead to false assumptions that initiating active conflict is an act of last resort for China. That all depends on the situation as it assesses it.

Nor can China's military development and operational concepts be assessed in isolation from its expansive national security concepts designed to coerce and compel its own population and institutions, as well as external other actors, putting itself in positions of strength and others in positions of weakness. The 'win without fighting' acme of skill in Chinese thought is not as we may think through a Western prism about conservation of life or economy of effort; it is more about eroding the psychology in an adversary of any will to resist. At its core it places a premium on manipulation of thought and action to maintain unchallenged supremacy and control.

Neither the 'ends', 'ways' or 'means' of Chinese strategy neatly align with the military domain-dominant and values-based structures that liberal democracies have generally constructed to assess threats, develop military and other strategic or national capabilities, consider strategies for deterrence, and prepare forces for winning wars. But in the realm of warfighting there is increasing evidence to suggest that China has learned from and is now in many ways copying and seeking to improve upon, what it considers the best in the world – the United States (US). See for example: https://www.uscc.gov/sites/default/files/2020-05/China_Space_and_Counterspace_Activities.pdf

As an illustration of the vast differences in the use of concepts and language between Chinese and Western strategic thinking, PLA military strategy references to 'active defence' is illuminating. This idea of 'defence' includes pre-emptive offensive operations at the tactical and operational levels (for example in regard to Taiwan), and potentially could see PLA military attacks by air, sea and missile forces as well as cyber and space, against US and allied forces prior to, or at the outset of a Chinese invasion of Taiwan. It extends to the competition or 'gray zone phase' in which the idea of anti-access area denial (A2AD in Western parlance) involves pushing the US in terms of influence, presence, capability and geography as far from China as possible.

'Active defence' potentially could include attacks on key air and naval bases in northern Australia to deny their use to Australian, US and other allied forces. Defending the north against such a threat is now much more prominent in Australian defence strategy, not primarily because of fear of invasion, but in recognition of the power projection capability and greater understanding of possible Chinese strategic intent. Australia's recent Defence Strategic Review[i] emphasises for Australia new capabilities that focus the Australian Defence Force on a more forward posture and ability for force projection through our northern regional geography. The 'focused force' is designed to facilitate a strategy of deterrence – with an emphasis on denial - primarily in and through Australia's air and maritime approaches. This equates to an urgent requirement for acquisition of stronger integrated air and missile defences, and enhanced resilience of northern base infrastructure in the face of Chinese long-range strike capabilities. There is also a need to focus on protecting critical space and information infrastructure from Chinese conventional military capabilities and its growing space, counterspace and cyber threats.

China's military posture, modernisation and consideration of strategic geography, including threats to Australia

China's concept and posture of 'active defence' in its region translates to a sophisticated and integrated set of military and non-military capabilities and to its occupation of geographic positions designed to deny the US or its partners and allies both access and freedom of military maneuver within the area. The exact geography of China's desired sphere of influence is hotly debated, but its clear ambitions in space as well as and across swathes of land and sea under sweeping initiatives like the Belt and Road or digital silk road concepts would indicate they are vast.

Militarily, China's 'A2AD' military capabilities include extensive short-medium and long-range strike options, including with nuclear warheads, and include ship-based strike, forward operating bases some with existing land-based strike options (potentially pre-positioned and

disguised). They include large numbers of maritime warfighting and support platforms, both surface and undersea offensive and defensive capabilities (including decoys), significant and growing air delivery systems for short and increasingly longer range conventional and nuclear strike. China has demonstrated space and counter-space capabilities which can directly threaten US military and commercial satellites used for Intelligence, Surveillance and Reconnaissance, Early Warning for missile defence, and for command and control of strategic forces.

Australian military forces operating in the vicinity of Chinese waters and in the air space it claims – inconsistent with existing bodies of international law and in direct violation of judicial findings under the UN Convention on the Law of the Sea – are highly vulnerable to Chinese military capabilities unless operating as part of a large, combined multinational group.

China's rapid expansion of the PLA Navy (PLAN) and the modernisation of its naval capabilities have led to it having the world's largest navy in quantitative terms - over 370 ships with more than 140 major surface combatants, growing to 400 ships by 2025 and 440 by 2030. More importantly, the PLAN is rapidly closing qualitative gaps with the US Navy in key areas such as Anti-Submarine Warfare capabilities, amphibious operations, and underway replenishment.

The PLAN's growth poses a threat not just to the US Navy but also to its allies, including Australia, particularly in areas such as the South China Sea. Its increased ability for naval power projection further afield, including potentially into Australia's air and maritime approaches will offer options to hold at risk targets increasingly far from the Chinese mainland and increasingly close to Australia and US territory. The PLAN's ability to employ long-range anti-ship cruise missiles (inc. supersonic ASCMs (anti-ship cruise missiles)); its increasingly sophisticated submarine capability; and the support it gets from the PLA Air Force (PLAAF) and PLA Rocket Force (PLARF) together with space and cyber support from the PLA Strategic Support Force (PLASSF) all contribute to Chinese counter-intervention capability ('A2AD') at the same time as the contribute to an growing ability to project power across greater distances.

Chinese ‘A2AD’ capabilities are specifically designed to make it more difficult for the ADF, alongside the US and other partners to project military power and presence inside the first island chain in any crisis over the Taiwan Straits or in the South China Sea and hold at risk Australia's ability to defend key sea lanes of communication. It is important to note however, that the further forward the PLA operates, the more vulnerable its assets become to US and other targeting, and the more difficult the task of supply, maintenance, and replenishment, for example.

The modernisation of the PLAAF, and the increasing range and sophistication of conventionally armed ballistic missiles (i.e. DF-26) allows China to hold at risk Australia's northern base infrastructure in a war, with the threat of direct missile attacks from air launched, sea launched, and ground launched land-attack cruise missiles and intermediate range ballistic missiles. These may target air and naval bases and logistics facilities, including critical infrastructure as it relates to fuel, telecommunications, and energy networks. Add in counterspace threats and cyber-attacks by PLASSF against space and critical information infrastructure, and the PLA could threaten Australia in the newer and more challenging domains for attribution and quick damage assessment (space and cyber) prior to a war. From a Chinese perspective these kinds of capabilities in what we consider newer warfighting domains may be less immediately evident and deniable as an initiation of 'war' itself, when compared to the traditional terrestrial domains of land, sea and air.

China's strategy – dual purpose, deception and denial

The growth of Chinese bases on illegally occupied rocks and reefs and artificial islands in the South China Sea extend China's ability to undertake counter-intervention operations ('A2AD') to the south towards the Natuna Islands and the Straits of Malacca, enveloping the Philippines to the west and east, and close to key Sea Lines of Communications (SLOCs) running through the South China Sea to Japan, Taiwan and South Korea. Control of the South China Sea is vital for China, including to deny any other actor the ability to operate there, particularly in terms of operations in support of an invasion of Taiwan.

From bases in the South China Sea, China can undertake ASW operations to prevent the penetration of US and allied submarines, employing fixed sonar arrays, Type 056A ASW corvettes and ASW maritime patrol aircraft. This not only makes it more difficult for US and allied submarine operations inside the South China Sea, but in extremis, forces US and allied SSNs to enter inside the first island chain through key maritime straits and narrows which can be more easily defended by Chinese forces operating from South China Sea bases. China could also base PLAAF strike and air defence aircraft on South China Sea bases to support A2AD operations beyond the first island Chain, and to deny the US the ability to operate from forward bases including in the Philippines. As previously noted, however, geographically dispersed and forward capabilities, especially once revealed, themselves become vulnerable to strike and counterstrike. Such locations should be closely watched in 'peacetime,' the competition phase and as part of more regularized 'gray zone' and deterrence activities of the US and its allies in the region as they may offer important signals regarding future Chinese intent.

A forward Chinese base in the Southwest Pacific could enhance China's ability to extend its A2AD 'bubble' further out towards the second island chain. A permanent or significant PLA presence in Solomon Islands, for example, just 2,000 km from Australia's east coast, would fundamentally challenge and change Australia's requirements for ADF force posture, demanding an ability to defend against air and missile threats along the east coast. Any attempt by China to establish significant military capabilities in Solomon Islands or other parts of the Pacific would be nearly impossible to hide or conduct under cover of other auspices. Once in this area any Chinese maritime or other capabilities may also be relatively undefended, certainly as they were initially being established. The caveat on this is a lack of clarity about the full extent of Chinese space capabilities and possible weaponization of space. This could, to some degree, negate terrestrial constraints even while it would represent engaging the highest-risk end of the military operational spectrum (and the placement of weapons in space is currently banned under international law).

China's concept of 'active defence' in A2AD terms can be seen in its attempts to apply political, economic, informational and military coercion to establish positions as far into the US lines of communications and access as possible and extended as far from China as possible. Its preference is to establish capabilities, including political, economic, military and informational that are fronted by other 'legitimate' regimes or in and through locations that are not owned or directly operated in times of competition by China. These may be achieved through bribery, corruption, economic dependency, and coercion, through criminal means and leveraging Chinese commercial, non-state or proxy actors, including through domination of black markets.

This is a deliberate strategy designed to achieve greatest effect for China while limiting the ability of coerced, compelled and threatened actors themselves, or of regional partners seeking to assist them, to recognise what is happening until it is too late. It is activity designed to go under the radar to prevent it also being assessed and responded to by the US and other regional powers: it does not present as overtly military.

China's presence in the Pacific Islands within the so-called second island chain does not yet pose a significant military threat to the US or its allies. But its influence gains are already reaping dividends in Solomon Islands, where US and Australian naval and air access is no longer assured. While PLA operations out of the second island chain would be logistically difficult to sustain in any significant conflict, and any move to develop military bases would be vulnerable to long-range strikes, their existence alone would serve to complicate US and allied planning for a military campaign in the first island chain, tying down Australian forces in particular.

Currently, Beijing is using policing to push security assistance and political influence, potentially with a view to bolstering a military presence in future, while furthering its penetration of Pacific Island security and law enforcement. Solomon Islands, Vanuatu and Kiribati are all vulnerable in this respect. The bigger Pacific Island countries, Fiji and Papua New Guinea, are less susceptible to Chinese influence on this scale. But China can still use its political and economic influence to make it more difficult for the US and its allies to strengthen their own defence presence in the region.

Australian's views of China

Australians have become more alert to Chinese covert and clandestine activities within Australia, including political interference and economic coercion through revelations and investigations that have successfully revealed such operations, and that in some cases have attributed them directly to China or Chinese actors. These are, however, the tip of the iceberg. Militarily, Chinese activities in the South China Sea directly against Australian Defence Force capabilities and personnel have turned public opinion. The Lowy Institute polling data of public sentiment towards specific diplomatic and strategic partners of Australia demonstrates this trend of the last decade: https://poll.lowyinstitute.org/themes/china/

The Australian defence and strategic policy community is starting to take the challenge posed by China and the PLA much more seriously, especially within intelligence and defence organisations, but there is not a broad consensus of views across the national security and foreign policy community. Some voices (i.e. Hugh White) argue that China's rise is unstoppable, and containment of China is not practical. There is yet to be a serious national debate on Australia's potential response to a Chinese invasion of Taiwan, however there is broad consensus about the need to maintain freedom of navigation of the seas through the South China Sea and the Taiwan Straits. The 2023 Australian Defence Strategic Review and the 2020 Defence Strategic Update made clear the challenge posed by China's rapid military expansion and modernisation and recognised that Australia no longer has ten years (or necessarily any) strategic warning time for a major power conflict.

The lack of strong consensus in Australia's strategic commentary circles, about how to respond to China's military buildup is perhaps best shown by the continuing debates around AUKUS. Broadly, there is acceptance within government about the need to retool the ADF for conventional deterrence by improving its long-range strike and littoral maneuver capabilities, as borne out in AUKUS, the DSR (Defense Strategic Review) and naval surface review. But there is a substantial gulf between threat perceptions within government and the government's public

articulation of the threat, and indeed its short-term imperative to 'stabilise' the bilateral relationship with China, especially in the trade domain.

The Australia-US alliance (ANZUS), the Australia-Japan US Trilateral and the QUAD

It is impossible to overstate the centrality of the US to Australian strategy and military planning. Australia's defence relationship is characterised uniquely as one of seamless interoperability (a term that in its strict technical application has only recently extended beyond the US to the UK under AUKUS). It is the bedrock of Australian security. In reciprocal terms, the investments over decades that both nations have made into joint capabilities, joint facilities, into personnel exchanges and into deep strategy, capability and force design cooperation. This is complemented by and has contributed to Australia's demonstrated and valued commitments, on its own terms and within the context of its sovereign interests, to support US military efforts in every major conflict, over more than 100 years.

The alliance relationship is vital to Australia's ability to deter and counter a rising China. Absent any US-Australia military alliance, and all that goes with it, Australia would need to fundamentally realign its strategic relationships and think differently about independent defence capability. Once again it is difficult to overstate the consequences of this, especially in what is widely recognised as an unprecedented time of strategic challenge and urgency. Any decoupling of the alliance and attempt at significant reorientation towards an independent self defence posture would see Australia necessarily turn inward and focus once more – as in the 80s and 90s – on a concentric circles model for the defence of Australia. This would see Australia shrink back from its wider regional contributions to deterrence, stability and security, with negative implications for all regional partners. The US and Australia operating in parallel, in cooperation, and to complement and reinforce on another is a feature of the regional security landscape and every country would suffer if it were to diminish in either quality or quantity.

The ability of Australia and the US, together with other key allies and partners to burden share and boost integrated deterrence today is absolutely crucial to countering the threat posed by China in terms of strengthening the ability of all partners to respond in the event of any Chinese aggression.

The advantages of the alliance for Washington are not just a close defence and security ally. Australia's importance in geographic positional terms is also of increasing importance for US military strategy regarding China. Australia offers a forward location in the Western Pacific with continental depth that is less vulnerable to the PLA's A2AD strategy than other Treaty allies (Japan, ROK) or Guam. Although the US military footprint here is currently light and non-permanent, in a crisis or early stages of a conflict Australia would be seen as sensible location to

disperse/repair/sustain US forward-deployed forces, and as an obvious hub from which to flow in supplies, reinforcements and long-range strike assets from Hawaii and the continental US. Australia served as both a refuge and bridgehead for MacArthur's forces in WWII, and while military technology has obviously changed a great deal since then, the strategic geography of the Pacific has not.

AUKUS is the most important defence policy choice in decades and will be at the heart of US - Australia-UK defence cooperation, both in terms of the acquisition of the SSNs, as well as in terms of Pillar 2 on critical and emerging technologies. Pillar 2 is likely to see outcomes that lead to actual military capability before Pillar 1 - the SSNs - however, the importance of the deployment of USN and RN SSNs under SRF-West adds to regional deterrence from 2027 onwards. Both pillars are mutually reinforcing and enmesh three great countries with common global interests and reach together, providing pathways for bold and crucial new collaborations and capability integration that increase our strength individually and collectively anywhere in the world, but most importantly in the Indo-Pacific.

Japan-Australia-US trilateral cooperation is probably the next most important particularly in terms of closer ties between Canberra and Tokyo, verging on a Strategic Alliance second only in importance to the US-Australia alliance and AUKUS. In particular, the possibility that Japan could join Pillar 2 of AUKUS will enhance Japan's importance, alongside the Reciprocal Access Agreement between Japan and Australia, and the potential for defence technology and capability cooperation in relation to the Surface Fleet Review, and areas such as space.

The quad is important in terms of establishing a dialogue on security matters that might be seen in terms of 'soft security' - climate change, infrastructure, and so on - but may also lay the basis for future dialogue that could see greater cooperation on 'sharper' defence and security cooperation. The quad has seen the delivery of important regional goods throughout COVID, for example, through the vaccine initiative. The earth observation space initiative for maritime domain awareness also promises to deliver for the region, and across the region, capitalising on greater cooperation between quad countries. The quad investor network (QUIN) is a newer but also highly promising initiative that seeks to create easier capital flows on critical and emerging technologies between quad partners to pool collective technology power and to bring the benefits or growing technological outcomes to the region.

China perceives Australian security cooperation with the US and other allies as a key challenge to its ability to achieve a dominant and hegemonic role across the Indo-Pacific. One of Australia's key advantages is its alliance with the US and growing strategic partnerships with Japan, South Korea, New Zealand, and other actors, including closer relations with the

Philippines and Singapore. China is doing everything it can to 'divide and conquer' in the Indo-Pacific, for example, promoting the narrative that AUKUS is US imperialism and encouraging a nuclear arms race (ignoring China's own rapid expansion and modernisation of its nuclear forces).

China uses the Belt and Road Initiative and other forms of soft power, as well as gray zone actions, to influence, and directly coerce states to distance themselves from the US and abide by their version of the rules, including on issues of territorial and political sovereignty. This is particularly focused on ASEAN and Southwest Pacific Island states.

Recommendations for Strengthening Australia-US Cooperation

Australia and the US should continue to institutionalise their high levels of strategic, operational and tactical integration through additional Australian staffing into regional Headquarters (i.e. INDOPACOM) and into planning processes in Washington DC. Wherever possible Australia and the US should seek an 'all domains, all the time' approach to continue to embed habits of cooperation and reinforce seamless operational integration when it is called for.

Australia should be encouraged to step up its activity to grow its commercial and dual use space sector, with a strong focus on launch to provide responsive and resilient space support to the US in peace time, for deterrence purposes and to ensure that in times of operations there is a well-developed and well-practiced system of US, Australia (and wherever possible other regional and global) partners able to launch payloads into space to assure access to, and the benefits of freedom of maneuver in the domain – which is absolutely critical for modern warfare and for any modern economy.

Both Japan and Korea are established and mature space partners, but due to population, high levels of air and maritime traffic and to the demands of their own requirements, they are not in the same position Australia is to contribute a net benefit to the US and others in terms of increased cadence and diversity of orbits and inclinations for the placement of space capabilities.

Australia needs to boost its strike options and its IAMD capabilities urgently, and while programs are beginning to address the gaps, a lack of spending commitment and progress in delivering capability and growing Australian industry capacity for its own and for partner requirements needs attention. This should be a key area of focus for the alliance in the immediate future as a priority.

[i] https://www.defence.gov.au/about/reviews-inquiries/defence-strategic-review

PANEL III QUESTION AND ANSWER

COMMISSIONER SCHRIVER: Thank you very much, and I hope we can get to your recommendations during some of the questions and answers. We will begin the questioning with Commissioner Friedberg.

COMMISSIONER FRIEDBERG: Thank you very much. Ms. Shrimpton, I'd like to start with you. You make an interesting observation to the effect that China is seeking to establish positions as far into the U.S. lines of communications and access as possible. Could you elaborate on what you have in mind? Do you imagine China trying to actually militarize or put weapons on features or get access from sovereign states, or is it something less than that that's intended just to deflect our attention?

MS. SHRIMPTON: Thank you for the question. It's a really -- it's a really important one. I do see them as looking to extend military-relevant -- not always, or, you know, overtly military capabilities and -- further and further afield. And this extends as far as South America, for example, when you look at some of the installations that support its space capabilities, which in turn support its ability to extend military operations.

Within the Pacific as well, an increasing focus on security relationships, including through policing as an entry, is -- is increasingly an issue. And it -- it provides a foothold, an excuse, if you like, for -- for China to flow in other forces, were they be some kind of domestic crisis or some issue with its diaspora in some of these countries.

So I think I'm -- I'm watching very closely not only the -- the economic relationships that a -- a previous panel member mentioned as well. I think they're very important from a coercion perspective and an influence perspective in times of crisis. But looking at actual infrastructure investments and security, not necessarily military but security kind of agreements and -- and footholds that allow that sort of military force flow again, in, I think, are very interesting and very important.

COMMISSIONER FRIEDBERG: Okay. Thank you very much. Mr. Kotani, you emphasized the importance of the nuclear aspect. Could you say a little more about what you mean when you say that United States and Japan should prepare or do more to prepare for a Chinese nuclear threat? Under what circumstances do you see such threats being made? What form would they take, and what kinds of preparations would adequately address them?

MR. KOTANI: Well, thanks for the question. As we know, China is now rapidly increased the strategic nuclear arsenal. But also, the Pentagon's annual China military report emphasizes the possibility that China could develop low-yield nuclear warheads as well. And as I mentioned in my testimony, the -- as China increases its nuclear options, we might see a scenario of so-called stability-instability paradox where China could reach a strategic parity with the United States while maintaining a conventional superiority in the western Pacific.

And if China also possesses low-yield nuclear options, then that could be a challenge for Japan and the United States in terms of extended deterrence when the United States has very few -- few low-yield options in the Pacific theater. So from a Japanese perspective or U.S. allies' perspective, it's good for the United States to have more low-yield options.

I understand now in -- now the United States has a low-yield warhead for the ballistic -- submarine-launched ballistic missiles, and also, U.S. is now developing air-launched nuclear cruise missiles. But given the -- China's A2/AD capabilities, the air-launched missiles may not be relevant in time of war, and the ballistic options are -- are politically sensitive. So I'd like to see United States to develop nuclear -- submarine-launched nuclear options.

COMMISSIONER FRIEDBERG: Okay. Do I have time for one more? Mr. Ibarra, just very quickly, how likely is it, do you think, that the Philippines will continue along the, for lack of better term, pro-U.S. path that it's been following recently? As you note in your written testimony, this is a -- a shift in position of the Philippines. How likely is it to be maintained or to shift back to a -- a much less cooperative posture?

MR. IBARRA: Well, it's -- it's all going to depend on domestic politics. If the current vice president, the -- the daughter of the former president, who has nearly unraveled the alliance with the United States, is going to become the next president, we are expecting that she might bring back the -- bring back similar policies from -- from the Duterte administration.

But domestic politics may not be on his side this time if that happens because the Marcos administration now is showing that despite Duterte's -- President Duterte, the father's -- despite Duterte the father's appeasement policy of China, it did not mean -- really yield into a better security situation for the Philippines. So convincing the public that doing so again and expecting a different outcome is going to be very difficult for Sara Duterte if she wins the next -- the next election.

COMMISSIONER FRIEDBERG: Thank you very much.

COMMISSIONER SCHRIVER: Commissioner Glas?

COMMISSIONER GLAS: Many thanks to you all, especially with this time difference, to accommodate the Commission. Hearing from you has been incredibly illuminating, and your testimony is fantastic. I just have a couple thoughts. I mean, I'm -- I'm looking at the different recommendations from all of you about better coordination, collaboration, training, funding, you know, our efforts together as allies to combat this growing threat, and a recognition from all of you as experts in this field that this is a growing threat, and we need to be much more coordinated moving forward.

This -- this gets at some of the discussion earlier. Mr. Kotani, and I'm sorry if I'm mispronouncing your name, you talked about Japan increasing its GDP expenditure towards the military from 1 percent, now to 2 percent. Mr. Ibarra, you talked about that the political will in the Philippines right now is looking at social and economic issues, and we have, you know, the election and things like that.

When I'm hearing all these recommendations -- boils down to more money, more resources, more people, more time, more commitment by both the U.S. government and your governments to combat this threat. But there is a thing called political will by the people and public opinion.

And I'm wondering, in each of the countries, Japan, Australia, and the Philippines, is there a growing recognition that this is an immediate threat? Or where -- where do things shake out there? Because I would even say here, in the United States, not everybody is fully aligned about what the threats are. It's a big question to answer in three minutes. But we'll start with Ms. Shrimpton, and then we'll go to Mr. Ibarra and Kotani.

MS. SHRIMPTON: Sure. Thank you very much for -- for the question. It's a really important one. Of course, for democracies, this matters enormously. Look, we -- we have polling that does show that we've -- that public opinion is probably -- actually ahead of politics in Australia on this one, which is really interesting. We -- we probably need to think about how outside of government, we can use that to -- to try and -- and shift the position a little. We have really strong rhetoric around how immediate and important the threat is, but we're not matching that with resources, in my view.

And while we do have a plan to reach 2.4 percent of GDP over the forward estimates, what we call the forward estimates of three- to five-year time horizon, 2.4 percent of not enough is not enough, in my view. So I think -- look, I think that the public opinion is actually there for us, for many of us.

And we've got to think really hard about how we -- how we leverage that and how political leaders can themselves take a bit of confidence and courage from that to make bolder choices around not only how they talk to their people, talk to each other, but also make the argument and the justification for greater spending on defense. It's an investment in security. And I think we all need to do a little better, frankly, on that, Australia included.

COMMISSIONER GLAS: Thank you. Mr. Ibarra?

MR. IBARRA: Thank you. Since the Philippines won the arbitration against China in the South China Sea, Filipino public opinion has become very strongly against -- against China. Part of the problem under the Duterte administration before was how to manage this swelling political opposition against Duterte's appeasement policy. But the Marcos administration right now has public opinion on its side. We think that Marcos Jr. also pursued this policy right now because it's a popular policy.

A lot of Filipinos are supporting closer relations with the United States, and a lot of Filipinos want to see the Philippine government defend their maritime rights more seriously than the previous Duterte administration. So public support is on -- on this administration's side, and I -- I suppose, on all future administrations because, again, the South China Sea arbitration decision has crystallized Philippine public opinion to be not toward China.

COMMISSIONER GLAS: Thank you. Mr. Kotani?

MR. KOTANI: Yes. So in October 2021, we had a general election, and our ruling party advocated the increase of our defense spending from 1 percent to the 2 percent of GDP. And also, the government party advocated the introduction of longer-range strike capabilities. But at the time, only 20 percent of the general public supported this idea. But after the -- the Russians' invasion of Ukraine, the -- the number increased up to 55 percent. It was a very big surprise for Japanese policymakers.

And I would say the Japanese people is -- are becoming very realistic about the security situation surrounding Japan partly because of the Russians' invasion of Ukraine, but also China's military activities in and around the Japanese territory. So I -- I think the current trend is -- is very much sustainable, and I -- I think the Japanese government will continue to invest more into our defense development. The problem the -- is our yen is now weak, and our purchasing power is declining, so we have to come up with this good -- good idea to address this issue. Thank you.

COMMISSIONER GLAS: Thank you.

COMMISSIONER SCHRIVER: Commissioner Helberg?

COMMISSIONER HELBERG: Thank you. In Europe, we saw how most Europeans, Ukrainians included, believed Russia would not attempt a full-scale invasion of Ukraine right up until the moment that the invasion happened. And history shows us that wars are often entirely unthinkable until they happen. What is your assessment of how people in Australia, Japan, and the Philippines view the possibility of war breaking out in the Pacific? And what is your assessment of how the Chinese people view that -- view the possibility of war?

COMMISSIONER SCHRIVER: Do you want to start with --

MS. SHRIMPTON: Do you want us to -- would you like me to go first on this one?

COMMISSIONER HELBERG: Sure.

MS. SHRIMPTON: Sure. Okay. Look, I think, you know, we talk about it still, but it's -- it's -- it's -- it's an abstraction, I think, for most people in daily lives. There are -- there are still, you know -- dominating the views of -- of many Australians are the -- the hit-pocket kind of questions and the -- the cost of living. I think Ukraine really should have been a -- more of a wake-up call than it was.

That said, we too look with -- with sort of, I guess, a -- a growing fear and a growing recognition that this points to a greater possibility of war, to increased aggression shown by the PLA and China. And this is, you know, including explicit campaigns or actions against Australian military aircraft, against -- recently against Australian Navy divers. These things do not go down well with the Australian public. And you will have seen that there was quite -- quite a flare-up around whether or not the prime minister appropriately addressed that with -- with Chinese counterparts and was quick enough to act on that recent sonar example.

When it comes to the Chinese people, I think, you know, Xi Jinping is doing the hard work to prepare his population for -- for what it might need to do, using, of course, his -- his incredible ability to control information and messaging and the narrative to -- to sort of create the sense of -- of that external threat that is -- that is not real.

So, you know, they're probably overachieving. We're probably underachieving in terms of really understanding the possibility and whether or not we've learnt the lessons that we need to from -- from Ukraine and understanding that, you know, these are not necessarily rational actors. They don't think the same way that we do. They're not going to have the same decision calculus that we have. You know, I think there's a little bit of work for us to do, but we -- we are definitely edging towards understanding that possibility -- probability is increasing.

COMMISSIONER HELBERG: Mr. Ibarra?

MR. IBARRA: Thank you for the question. Signals from China and threat assessments about China's propensity to go to war has made some people in the defense sector here in the Philippines believe that war is probably going to break out in this decade or -- or the next. But, of course, everybody here is hoping that it's not going to happen. But some people in the defense sector and even in the foreign policy establishment are expecting a major conflict in the next 20 years or -- or so. The ironic thing about that, however, is that there's -- although there's some contingency planning in that event, it's not -- that possibility is still not really taken seriously at the highest levels. So again, there's still this hope that -- that war eventually will not break out.

But having said that, I think there is already a growing sense of discomfort among Filipinos. As I mentioned in my testimony, perhaps it's time to begin recognizing gray-zone coercion as a form of warfare and that war has already broken out. And we already have -- we already has to -- we already have to respond to this kind of threat, which is already there on the -- on the ground. But again, we're still not quite sure how to respond to this gray-zone coercion, much less how to respond when an formal war actually breaks out. So that's how I would answer the question. Thank you.

COMMISSIONER HELBERG: And Mr. Kotani?

MR. KOTANI: Yes. So as I mentioned, after the Russia's invasion of Ukraine, a -- a majority of Japanese people now support the idea of increasing our defense spending. And behind this change, I -- I would say the -- according to some -- according to some public opinion poll, more than 70 percent of -- of the general public now thinks the -- the war could happen in East Asia. And our Prime Minister Kishida has been saying that the Ukraine today could become East Asia tomorrow, and I think this recognition is now widely shared among the Japanese general public.

And with regard to whether China is thinking about initiating war, the answer is nobody knows. The -- only the Chinese leadership can determine such a decision. But as China's military capabilities grow, I think Japan, United States, and the other friends and allies need to catch up to enhance the credibility of the -- the deterrence.

COMMISSIONER HELBERG: Thank you.

COMMISSIONER SCHRIVER: Commissioner Miller?

COMMISSIONER MILLER: Thank you, and -- and thank you all for your insights today. You are -- you are giving us quite a lot to think about. Professor Ibarra, I'd -- I'd like to go back to you. I think you can tell, by the questions you've been getting throughout this panel, that there is a deep concern in this room and on this side of the ocean in terms of the wide swings of policies that can come from -- and -- and -- and -- and U.S. freedom of action that can come from the divergent takes from -- from one Filipino leader to the next.

You've talked about how -- how that's going back and forth. And -- and of course, politics is politics, and -- and this is not unique at all to the Philippines. It's a fact you deal with in the relationship. You've also talked about how domestic politics is -- is influential and is apparently going in the right direction.

I wanted to ask you how would you assess the institutional pressures to maintain close coordination with the United States despite the -- despite these tos-and-fros? So beyond domestic politics, beyond simply the person at the top, the president, how do you assess the -- the institutional pressures that might be pushing the alliance and -- and policy decisions in a certain direction that may differ from -- from either the presidential view or the domestic political view?

MR. IBARRA: Perhaps my -- my short answer to that question is that these links, ties, to the United States at the military-to-military, intergovernmental, and people-to-people level were part of the reason why, even under the Duterte presidency, the Philippines-U.S. alliance was -- was able to survive. But I'd also like to -- I'd also like to acknowledge the part that the United States played here.

If -- if you remember, during the time when President Duterte nearly canceled totally the Visiting Forces Agreement with the United States, part of the -- part of the things that made him take a step back from that decision was the offer from the United States to provide more vaccines to the Philippines. So socioeconomic considerations really play into decision-making for -- for our leaders.

And the United States, at that time, also began toning down its harsh rhetoric against the war on drugs. It also doubled down on its -- on -- on the clarity of its commitment to the South China Sea. It was during this time that the United States very clearly said to the Philippines that the South China Sea is covered by the Mutual Defense Treaty and that any armed attack in the South China Sea is going to trigger the Mutual Defense Treaty.

So these assurances, these actions by the United States, were also very instrumental, I think, to the Philippines, if -- if not to convince the leader for the -- for the people below him, the military, and the foreign policy establishment, to -- to serve as evidence to convince the -- the president that the United States is worth keeping as a security -- as a security partner. So it -- it really takes two to tango here. And I -- I -- I would not pass on the opportunity to recognize the correct foreign policy decisions, I -- I think, that the United States made during this crucial time of crisis in the alliance.

COMMISSIONER MILLER: Thank you. It's good to hear that there are more than a few trends that are -- that are going in the right direction. Professor Kotani, one grouping that has been floating around the background of all these multilateral regional structures is NATO plus

Japan. How much potential do you think this organization has in the future beyond the idea of Tokyo simply acting in an observer capacity? And do you see any promising areas for expansion?

MR. KOTANI: Well, thanks for the question. So Japan has been working closely with NATO for many areas of cooperation. But in terms of actual security cooperation in Asian contingency, we don't have much expectations for the Europeans because Europeans are already busy with handling the Russian threat in the region. So I would say the -- Japan's cooperation with NATO is still remaining as kind of symbolic.

But I think the -- it could be substantial as Japan now works with some of the NATO member countries, including UK, France, and Germany. We are now concluding the reciprocal access agreements with those countries, and frequently, their defense assets visit Japan and the region. So Japan's cooperation with NATO could be -- could remain as symbolic, but cooperation with some member countries could become substantial even in a -- a time of contingency in -- in East Asia.

COMMISSIONER MILLER: Thank you very much.

COMMISSIONER SCHRIVER: Vice Chair Price?

VICE CHAIR PRICE: Thank you, and thank you all for a very, very interesting panel. And I keep feeling so bad about what time it is where you are and that you're wide awake and able to speak with us. My main questions were already asked by Commissioner Glas, having to do with public opinion, because I think that's so important as we try and fund things in our countries.

But, Mr. Ibarra, you talked about, in one of your recommendations, support for fighting disinformation. Can you talk a little bit about what you're encountering and what -- what the need is? And to any of the other witnesses, if you have any expertise and want to comment on the issue as well in your countries.

MR. IBARRA: Thank you for the -- for -- for the question. One of the things that we're seeing that there's a lot of disinformation about, coming from China, is related to the South China Sea Arbitration Award. So China is supporting legal scholarship that aims to refute the ruling. It tries to promote untested legal theories that contradict the tribunal's reasonings. It tries to discredit the arbitration process itself and the tribunal members. And it's also pressuring foreign governments and international organizations from mentioning or supporting the -- the ruling.

And finally - and perhaps this is of interest to -- to the United States - it's influencing private companies to adopt China's illegal nine-dash line claim. We saw this most recently in the controversy surrounding the Barbie movie. If -- if you haven't been aware, in the Philippines, the Barbie movie was considered for banning because it supposedly depicted the nine-dash line, the illegal nine-dash line in -- in one of its scenes. The map was so abstract that the Philippines decided to allow the movie to be shown here.

But I -- I think, if I'm not -- if I'm not mistaken, Vietnam proceeded with banning the movie despite the abstract -- despite the abstract map. But the problem there is that we -- we see that China has this tremendous influence and cultural influence at that, reaching to -- to the -- to the United States' movie industry, to reaching -- reaching Hollywood.

But closer to home, we know that China has been funding some Filipino individuals and some Filipino groups to espouse or -- or to megaphone, so to speak, China's -- to -- to promote pro-China views in -- in the domestic narrative. The National Security Council of the Philippines just recently said that it's aware that this is a problem and that a list has circulated here, although

it's unofficial, of these individuals and groups that are aligned to -- to Chinese disinformation campaigns.

So many here are already aware of that, and -- and the government is also doing steps to combat that. But we can only guard within our own borders. Perhaps, disinformation about the award and about China's actions are rampant elsewhere, and we would like the United States' help for that in order to combat that in international forums and regional forums as well.

VICE CHAIR PRICE: Anyone else want to jump in?

MS. SHRIMPTON: I would love to, actually, if that's -- if that's okay. I think we're -- we're seeing some very effective misinformation campaigning both in Australia and across the region that we're quite worried about. ASPI, as an institution, has done some very good research, sometimes supported by and in collaboration with the U.S. on this.

You know, their ability to use social media in our free and open societies and -- and our trust, I guess, in -- in the things that we read and see is -- is worrying. You know, there's all -- there's been that much-ventilated concern about what's happening to our data and data privacy and data concerns. We see as an equal, if not greater, concern, the actual manipulation of messaging, and the attempts to influence the way that our populations, particularly our young people, think to be just as important.

They're flirting with some success. You see this around the AUKUS debate emerging in Australia, this moral equivalency -- or equivalency both, you know, in -- in the moral domain, commercial, and military. China is only doing what, you know, America's always done or other countries are doing. It's just a normal thing. You know, this is -- this is not true, but it's a -- but it's an argument that is pretty easy for -- for, you know, a population to -- to swallow.

And they also plant a lot of seeds about U.S. reliability as an ally and point to Ukraine quite -- quite often as, you know -- as -- a way for us to -- to question whether or not, you know, we -- we really can rely on the ally -- the U.S. as an ally in our -- in our time of need. So lots of different ways that those tentacles are in there.

Yes, the U.S. can do more, but also, there are others speaking around and for ourselves. And the importance of the U.S. and the importance of our -- of our collective efforts and our own partnerships is just as important as -- as the U.S. coming in to help this. I think sometimes other voices can -- can help this even -- even more.

VICE CHAIR PRICE: Thank you so much.

COMMISSIONER SCHRIVER: Great. Thank you. Before I ask questions, I believe we have Chairperson Cleveland virtually who would like to ask a question.

CHAIRMAN CLEVELAND: Mr. Ibarra, I am struck by your term unbending ambivalence to characterize the United States in your written testimony. And between that and Barbie, I think you've -- you've earned quite a reputation today, so I -- I appreciate both.

An earlier panel today talked about the potential for cooperation on this new U.S. initiative that's going to build thousands of small unmanned drones or -- or platforms and specifically referenced collaboration between the United States and Japan. I'm wondering if -- if you're familiar with that and -- and where you see future cooperation, future -- maybe medium-term horizon in terms of platforms.

I mean, we have -- whether it's submarines or legacy platforms, command and control, C4ISR, we have established relationships. But I'm curious what your views are on new technology and new strategic initiatives and where Australia, the Philippines, and Japan may -- may be able to collaborate or where the United States may be able to collaborate with -- with your countries.

MR. IBARRA: Thank you, Commissioner. I -- I did listen to the earlier panels, and I -- I did note that discussion. Unfortunately, I don't think that this discussion on unmanned systems are still that salient in the Philippines. I don't think it's -- it's that salient. We've only just begun acquiring some unmanned -- unmanned vehicles for maritime domain awareness very recently.

And informally, from what I've heard from -- from one of these donations, it didn't quite go well because the -- the human component, the training component, was not yet there. So they supplied -- they supplied an -- they supplied the -- the new weapons, but the training was not yet -- yet there. So I think it's not yet part of our -- part of our discussion, but certainly, I -- I do think there's an interest.

I've noticed that there has been a lot of countries donating such kinds of weaponry for maritime domain awareness, not -- not necessarily for -- for military operations. But yeah, I -- I think we still have to catch up in terms of our training and capacity to use those new technologies.

CHAIRMAN CLEVELAND: Either of the other -- of you, because Japan was specifically mentioned as -- this is a -- an opportunity.

MR. KOTANI: Well, so the Japanese government adopted the National Security Strategy in 2022, and that document emphasizes the importance of unmanned systems. And, you know, as China's military power is trying to overwhelm both Japanese and Americans, I think it's -- it's very important for Japan, United States, and other allies and friends to develop more unmanned systems to fill the gap. And also in -- in -- in the case of Japan, we are an aging society, and the -- the lack of manpower is very severe. So from this perspective as well, we have to develop more unmanned systems.

CHAIRMAN CLEVELAND: Thank you. Ms. Shrimpton? Thank you.

MS. SHRIMPTON: Sure. Thank you. I've been watching Replicator with -- with enormous interest. I think it's a fantastic initiative, and it is something that we should all be thinking about. It strikes me as curious and somewhat concerning that we haven't managed to -- to somehow bring that into -- into AUKUS -- into AUKUS and make that an explicit collaboration under that line of work. But I think that talks to some of the difficulties when it comes to the practicalities of implementing technological collaboration around sensitive new capabilities.

So we really need to double down, not only at that sort of political and policy level but right through the bureaucracies and down to program levels, to try and break down some of the barriers that do get in the way of -- of us being able to effectively collaborate more on initiatives like -- like Replicator. They're enormously important, and our ability to have a -- a collective gain from working -- from working together on that as well as operational effectiveness is -- is really, really important.

COMMISSIONER SCHRIVER: Okay. Thank you. I note that on April 10th, President Biden will meet with Prime Minister Kishida in Washington. On April 12th, President Biden will meet with President Marcos in Washington. And in between, on the 11th, there'll be a trilateral President Biden-Kishida-Marcos meeting.

So I'm wondering, maybe a minute each from Mr. Kotani and Mr. Ibarra, either expectations for the -- the summit itself or -- or maybe, more importantly, where -- where do you see the potential for this trilateral grouping? We've talked a lot about minilaterals and -- and different kinds of groupings. This is a -- a relatively new initiative. And I'm curious -- the role, particularly on security matters, and -- and how this particular trilateral might contribute to deterrence in dealing with China's counter-intervention strategy.

MR. KOTANI: So let me go first. So as Japan and United States work closely with the Philippines -- and -- and also, the Philippines now have a realistic government, so I -- I think it's a good timing for -- for the three countries to develop more strategic partnerships. And particularly, we are very much interested in farther capacity building for the Philippine military and the paramilitary. But also, we are very much interested in increasing our access to the Philippine facilities, not only in peacetime but also in contingency.

So as I mentioned, my -- my institute conducted the war game of Taiwan Strait crisis. And one of the findings of the war game was the -- the provision of Philippine facility in crisis can -- can make a difference because we expect the China could destroy all the military bases in Japan and -- and Guam. So Philippine facility could be very important, particularly in the initial phase.

And as United States now concluded the advanced -- I mean, the expanded EDCA and Japan is now negotiating with Philippines about the reciprocal access agreement -- so I -- I think the three countries can address the -- the possible strategic cooperation in -- in this realm.

MR. IBARRA: Thank you, Commissioner, for the -- for the question. I'm sorry if I -- I -- I often sound a bit too tangential here, but I'm going to say it again that the importance of this trilateral goes beyond military security. I think this is a very good example of a really comprehensive security partnership from the Philippines' perspective.

The United States is the Philippines' most important military partner. Japan is the Philippines' most important economic partner. So their partnership together in one forum provides a lot of potential for comprehensive security from both the military and nonmilitary -- nonmilitary domains.

But let -- let me now try to focus on the military aspect more specifically. As Professor Kotani has mentioned, Japan is increasingly also becoming an important security partner of the Philippines. That has not been possible before. It has only been possible recently because of changes in the way that the Japanese government views security -- security matters.

So the Philippines was one of the first recipients of the -- of the Japanese government's official security assistance, so, like, military aid kind of thing. The Philippines was the first recipient of that. And that's -- that -- I think that is a very good symbolic image of the trajectory that Philippines-Japan relations is going to go from now on. So the relationship is probably going to expand from economic partnership to security partnership like the United States as well.

But again, going to the military security side, that official security assistance from Japan was for radars. And several of those radars are in the northern part of the Philippines and toward the Philippine Sea in the eastern seaboard, so it covers the part of the Taiwan Strait and part of the Philippine Sea. And our security arrangements with the United States, our EDCA sites are now in the north but also in central and western Philippines.

So geographically, if you add the -- the geographic coverage of all these systems, it adds up to a more comprehensive coverage of the entire territorial and maritime domain of the Philippines. Hence, it's -- it's -- it's also an important -- it's also going to be an important arrangement from a military security perspective.

COMMISSIONER SCHRIVER: Thank you. Commissioner Sims, if you're still with us online.

COMMISSIONER SIMS: I am, thank you. Thank you all for -- for testifying today. I know it's early in the morning where you all are, so really appreciate it. I had one specific question for Mr. Kotani and then one for everybody.

When I was in -- in Japan earlier this year, I was really struck by what seemed to be a -- a cultural and -- and perhaps a -- a generational shift in, you know, what's probably best described as a pacifist culture since World War II, I think it would be fair to say, and noticed, in meeting with some of the younger members of the Kishida cabinet, they seem to articulate a -- a generational shift in the view of importance of self-defense -- and -- and illustrated in the, you know, increase in the defense spending commitments.

And so I'm curious to hear your perspective on whether that perception I took away from is accurate as we kind of think about what is the sustainability of Japan's kind of renewed increased commitment to -- to its defense.

MR. KOTANI: Well, thank you for the question. So as I mentioned previously, the -- there's a -- a big change in Japanese perception of security issues not only after the Russia's invasion of Ukraine, but I -- I see generational gradual changes in Japanese perception. And I -- I think you're correct. The younger generation is more realistic -- realistic about the security environment around Japan because almost every day, we see a news that the -- that neighboring countries do some negative things in -- in the vicinity of Japan.

So I -- I think the younger generation is becoming very much realistic, although the -- the older generation is still more -- more pacifist than the youngers. But as I said, the -- the Russia's invasion of Ukraine totally changed the Japanese mindset. And a -- a majority of Japanese people now support the increase of defense spending. It's -- it was unthinkable even two -- two years ago. So the -- the actual war in the 21st century, I think, changed the Japanese mindset quite a lot, and I think this trend is very much sustainable.

COMMISSIONER SIMS: Got it. Thank you for that. For -- for each of you, I'd be curious to hear your thoughts on this. You know, all nations around the world are constantly making calculations about where their alliances should lie. And so, you know, for me, this is the importance of Taiwan is that were they to be forcibly absorbed back into the mainland, the military and economic calculations among nations there in the region would -- would possibly change as a result.

So my question for you all is what are countries in the region there wanting to see from the United States to ensure that each nation's calculation is that their country's rational interest is to remain closely aligned with the United States? Whoever wants to start.

MS. SHRIMPTON: I'm happy to jump in there. And probably, you know, the -- the Australian alliance has -- has gone back for -- for so long, and it seems to be so institutionalized that, you know -- you know, there's great -- there's great -- there's great faith in -- in that there. That -- that said, I think all of us is looking for that consistency from the U.S. in -- in its commitments. It is growing them across the board.

I think that we can help ourselves by focusing on our own self-reliance and boosting our own abilities as allies and security partners within those alliances. That helps the argument for Washington and in Washington, right? If we are -- if we are stronger ourselves and better partners, then it's easier for Washington to -- to -- to justify partnering with us and being there.

But yeah, that consistency of message, that consistency of presence, and that comprehensive approach -- I -- I really liked the way one of my colleagues before talked about that sort of complementarity of the economic and the military or that social, economic, and the military commitments to the region. That's really, really noticed. So -- so having that -- that sort of comprehensive approach to the way that it engages and, again, that consistency across the board to underline reliability is really, really important. I think that's what we're looking for.

COMMISSIONER SIMS: Great. Mr. Ibarra, if you wanted to add anything to that.

MR. IBARRA: Yeah. Thank you for the question. So previously, the point of -- you -- one point of irritation by the Philippines toward the United States was what -- what I called the unbending ambivalence of the United States about its commitment to the -- to the Philippines. But after the United States clarified that, indeed, the South China Sea is part of the -- part of the -- it is covered by the Mutual Defense Treaty, the military side was -- was clarified.

But after that, the Philippines now became more aggressive in demanding, so to speak, economic benefits from the alliance as an alternative to Chinese trade investment and developmental assistance. So the Philippines was asking for the United States to provide an alternative to this. Until recently, that alternative was not on the way. The Philippines during -- the Philippines did try to get into the Trans-Pacific Partnership Agreement, but it did not -- it did not fare out.

So the Philippines really wanted to be in the United States' economic orbit as well. But that was not possible and only -- but that was not possible until the United States presented this Indo-Pacific Economic Framework. And right now, very recently, the United States promised a -- a billion worth of investment to the -- to the Philippines. So that's really very -- that's a really very important reassurance to the Philippines of the United States' economic commitment to us as well.

So I think now that the military side has been clarified, the challenge for the United States is to follow through the economic commitments it has -- it has made to the -- to the Philippines. Thank you.

COMMISSIONER SIMS: Great. I don't want to go too far over my time, so thank you all for your answers.

COMMISSIONER SCHRIVER: Thank you. Commissioner Stivers?

COMMISSIONER STIVERS: Thanks. Hoping to drill down a little bit more on the Philippines. Mr. Ibarra, we've talked a lot today about the importance of the U.S. military diversifying its locations to make a counter-intervention from the PRC a lot more difficult and complex.

We've also talked in this panel about public opinion in the Philippines, and we know - and you wrote about this in your testimony - that there's been historic popular opposition against U.S. military presence in the Philippines. But you've also said that public opinion's changing, and it's, you said not towards China. We obviously should assume that activities in the South China Sea and the -- and the excursions that we've seen over recent years are a big factor in that.

So -- so my question is this. In your assessment, are we close to a tipping point here where the -- where -- where public opinion and the opinions of government leaders would -- has changed to the point where an active U.S. presence, military presence in the Philippines, is in the realm of a realistic possibility in terms of the government leaders and public opinion?

MR. IBARRA: I -- I wouldn't say it has reached the tipping point yet, but it certainly is going to that -- to that direction, I would say. China's aggression in the South China Sea has been unceasing recently. There has been a lot of news about Philippines-China confrontations. That is certainly not helping China, and it's certainly crystallizing Philippine public opinion to be closer to the United States.

So I -- I think what has -- I -- I think what has really changed right now is that the character of Filipino nationalism has not been anti- -- is not anti-U.S. anymore. As -- as you know, the Philippines is a former colony of the United Nations. And as all former colonies go, there are a lot of historical injustices that -- that -- that have to be addressed and that are a source of frustration for -- for many Filipinos.

And the experience of American bases in the Philippines as late as the 1990s was that the U.S. bases also brought in -- brought in undesirable things such as violence against women, trafficking of women and children. So those things, we don't want to see. We don't want to see that anymore. But the narrative then has -- has shifted. The -- the character of Filipino nationalism is not anymore anti-U.S., but it's now more anti-China, especially after the arbitration award.

What I'm going to say, though, is that China is using, still, memories of the United States' quote, unquote, atrocities or historic injustices against the Philippines to -- to wedge a divide between the Philippines and the United States. So it's part of the disinformation tool kit that China is -- that China is using against -- against the Philippines.

But because the government has exposed that some of these views have been espoused by people that are probably funded by China, that -- support for those kinds of views have also waned recently. And so I -- I do think that we are nearing that tipping point, but I -- I wouldn't quite say it just yet.

COMMISSIONER STIVERS: Thanks. Thanks.

MR. IBARRA: Thank you.

COMMISSIONER STIVERS: That's -- that makes sense. And because I have one more minute, one other question. We haven't talked as much today about economic coercion from the PRC on -- on any of these countries. In the Philippines, in particular (audio interference) --

MR. IBARRA: I'm sorry, Commissioner. I think the audio has broken down.

COMMISSIONER STIVERS: Asking about economic --

MR. IBARRA: Working again.

COMMISSIONER STIVERS: -- coercion from China towards the Philippines.

MR. IBARRA: Okay. So when the -- the -- when the Philippines filed its arbitration case against China in 2013, the Philippines was almost immediately met with some sanctions from -- from China. So China barred agricultural exports from the Philippines to China through nontariff barriers. It also restricted tourism flows to the Philippines. And with that, Chinese investment to the Philippines has dipped a little. But that economic coercion, we're not yet feeling it right now, although in -- in -- in the -- in the previous years, we've noticed that China seems to be attempting to invest in strategic industries in the Philippines.

They succeeded in having a -- quite a sizable stake in our national grid corporation. They attempted -- they -- they also have a sizable stake in one of the major telecommunications companies in the Philippines. They attempted to take over a previous Korean shipbuilding site in Subic strategic location, the former site of a U.S. naval base. But -- but reports that -- that -- that Chinese investors were trying to -- were -- were trying to invest there made it impossible for that investment to go through.

The Chinese also attempted to invest -- to try to buy out -- try to buy out lots near a -- near an airport that was also a former military -- U.S. military base, former U.S. air base. But again, reports of that, of China's attempts, made it impossible for China to actually take over. But the attempts are there to embed itself deeper into our economy. Fortunately, those attempts have been -- have been thwarted.

Now, we're not -- we're not really -- we're -- we're not really discounting the possibility that China might again impose economic sanctions on us. This is why, as I've said, the economic dimension of the U.S.-Philippines alliance is so very important. If, indeed, China decides to impose economic coercion upon us, economic sanctions upon us, we can perhaps compensate it

with more economic cooperation from the U.S. as well as like-minded countries that wants to invest in us.

COMMISSIONER STIVERS: Great. Thank you.

COMMISSIONER SCHRIVER: Thank you. Commissioner Wessel?

COMMISSIONER WESSEL: I'll add my thanks to those who are probably drinking a lot of coffee or tea to stay awake for the last part of the session, so thank you. I'm -- I'm a strong supporter of engagement in the Indo-Pacific, let me say that, but I -- I want to ask a probing question. There seems to be some sense of entitlement within the region to U.S. largesse and support.

You know, Japan shipped 2.5 million -- roughly 2.5 million autos to the U.S. and accepted fewer than 25,000 in the last year. The Philippines, we continue to invest, continue to engage in trade, despite red-tagging and many other things. Ms. Shrimpton, you described or said that what our allies in the region are looking for is consistency. I think one of my colleagues earlier talked about the tension face -- that we're facing now here in Washington regarding future or further support for Ukraine vs. other challenges and -- and needs that exist.

Put on our hat for a moment and tell us what our allies in the region can do more for the U.S. The question of Replicator and -- and sharing of technology -- I spent a lot of my time on U.S. jobs. I'm interested not in that production going to our allies and friends but having it occur here and being able to create jobs here. So how do we have a greater shared sense of balance in the relationship? And, Mr. Kotani, if you could start.

MR. KOTANI: Well, thank you for the question. I think the -- I think that Japan and the United States have been working very closely to further strengthen the alliance cooperation. And now that the -- the United States is facing a three -- a possible three big challenges in -- in the globe, one coming from Russia in Europe, the other one is the -- the conflict in the Middle East, and a -- and a possible other conflict in Asia.

From the U.S. allies' perspective, we are becoming more concerned about the -- the readiness of U.S. military. And we -- as -- as I wrote in my testimony, I -- I see the U.S. military, particularly the U.S. Navy, is facing a -- a problem of the delay in repairs and shipbuilding. So I -- I think Japan and other allies and friends can contribute to -- to enhancing the -- the readiness of the U.S. military.

So I expect in the upcoming summit meeting between President Biden and Prime Minister Kishida -- I think that both Tokyo and Washington would announce how the two countries' defense industries can cooperate to -- to enhance the credibility -- I -- I mean, the -- the readiness of the U.S. military.

COMMISSIONER WESSEL: Thank you. Mr. Ibarra?

MR. IBARRA: I'm -- I'm sorry if I have to push back on the question a little bit. For -- for most Filipinos, I think the EDCA is a very huge concession from -- from us. So if -- if -- if we try to remember, we -- we closed down American bases in -- in 1992 as a show of Filipino nationalism and also a symbolic gesture to show that the Philippines has now become a truly independent -- independent country.

Trying to return -- trying to return the Philippines to a situation that is very near -- near to having military bases as before, such as what EDCA is trying to do, is a very politically costly move for President Aquino when he tried to -- when he tried to sign this, so. And immediately after the Philippines signed the EDCA with the United States, it was challenged before our Supreme Court. Fortunately, the Supreme Court -- the Supreme Court found that EDCA is okay constitutionally.

But I -- I think the United States should recognize how big a concession EDCA is. Although the Philippines does not like to acknowledge it, that -- and the Philippines tries to frame it that this is not a return to U.S. military bases, functionally, besides the rotational -- the -- the rotational presence of U.S. forces in the Philippines, it kind of like -- it -- it functions almost 90 percent like a -- like a U.S. base except for the -- except for the permanent placement of U.S. weapons and troops in -- in Philippine land.

So for -- for us, that is a very huge concession, plus the fact that we expanded into more bases and to more bases that are not directly related to our primary security concern, which is the South China Sea. So we opened up bases nearer to the Taiwan front rather than the South China Sea front. That, again, is a very huge concession from the view of most -- of most Filipino planners.

Plus, there is still this thing that -- I -- I know you used the term, there's a sense that we are kind of entitled. But part of -- part of what boosts that sense of entitlement from us is the colonial history. It's still -- it's still there. It's not salient right now, but it's still there. And the government is trying hard not to -- not to resurface those kinds of tensions because they know that it's -- it might affect the alliance, but please recognize that it's there. So that's all.

COMMISSIONER WESSEL: I appreciate the answer. Ms. Shrimpton, any comments?

MS. SHRIMPTON: Thank you. I recognize we don't have much time, so I'll try and talk really quickly. I'm going both agree and push back on -- on the question. We should invest in ourselves. We should strengthen ourselves. We should be -- we should be good partners, and we should never rest on our laurels in -- in sort of the work that it takes to -- to convince the U.S. that it's in its -- its own interest to remain very engaged in this region.

That said, I believe very strongly that it is -- so this is a little bit about -- about framing. You know, we've talked about the need to be forward. We've talked about the need to -- to disperse. It is too late once a conflict breaks out for -- really -- for the U.S. to think it can get unimpeded access into the region. Forward allies and partners, the more capable they are, the better, can buy time for the U.S. to get in and protect its own and all of our -- and all of our interests.

I really do think that, you know, what worries -- if we take that adversary perspective, what worries China is not any of us on our own, including the U.S. It is us working together. So the more we talk about that, the more we reinforce that with -- with real tangible collaborations. And that does mean investing in one another. But as the -- as the superior power and -- and the biggest power of us all, you know, it is -- there is an incumbence upon the U.S. to -- to take a real leading role in that, I think.

It helps us with our -- with our national arguments. But once again, if we retreat to national positions here, we all fail. We've got to make a collective argument. We've got to be in this together. And the more we do that, the more we concern China, the greater chance we have to deter, and certainly, the greater chance we have to fight and win. So we have to find ways to do this together and not -- and not on our own.

COMMISSIONER WESSEL: I appreciate the pushback. As I started my comment by saying I support engagement in the Indo-Pacific, it's also important for our friends and allies to understand the tensions in our own system and how many of our people are looking at the extension of U.S. power, U.S. engagement around the globe, against, as we say, kitchen-table economics and what they're facing every day. So looking forward, as Commissioner Schriver said, the upcoming trilateral and understanding what the future course will be.

COMMISSIONER SCHRIVER: Thank you. Unfortunately, there's not time for a second round. I hope our witnesses would be willing to entertain some questions for the record. And with that, we will close. Thank you again to our witnesses. Thank you to the Commission staff for the excellent work. The testimonies, as well as the recording of this hearing, will be on our Commission website.

And finally, I'd like to note that the Commission's next hearing will take place on Friday, April 19th. That hearing will look at China in the Middle East. With that, we are adjourned, and thanks again.

(Whereupon, the above-entitled matter went off the record at 3:53 p.m.)