Red Diamond

RUSSIA'S INVASION OF UKRAINE IN 2022: WHAT ARE WE OBSERVING?

INFORMATION OPERATIONS IN BELARUS

NEW DEVELOPMENTS IN CHINA'S NUCLEAR DETERRENT

OPERATIONAL ENVIRONMENT & THREAT ANALYSIS   SUMMER 2022

Editor's Note: This issue of Red Diamond covers a variety of topics, including some initial thoughts on Russia's invasion of Ukraine. While this operations unfurls, we are keeping watch daily to collect observations in conjunction with the entire Army, Joint, and Intelligence Community so that over time we develop lessons learned to inform modernization and increase readiness.

While our (and the world's) attention is tuned into this ongoing conflict, we are continually developing products and services to meet the needs for our customers. One relatively recent development is our China Landing Zone (https://oe.tradoc.army.mil/how-china-fights/), accessible with one click from the TRADOC G-2 homepage (https://oe.tradoc.army.mil). The China Landing Zone supports the DoD-wide shift to the Pacific with links to ATP 7-100.3 *Chinese Tactics*, and a plethora of related products to enhance your learning on the People's Liberation Army (PLA).Some of what you'll discover on the Landing Zone includes the audiobook version of the ATP, podcast interviews with the author, real use cases of how others have incorporated this information into training, and the How They Fight interactive training for China that will teach you all the basics about PLA force structure, equipment, and tactics.

This issue of Red Diamond also presents you with information about Russian capabilities in the Arctic, Belarusian use of information operations against its own citizens, Chinese nuclear capabilities, and two articles that guide you through applying information from the China ATP into your training using DATE World. We hope you find that these articles enhance your knowledge of conditions in the operational environment (OE), and spark ideas for adding real-world conditions into training at every echelon. As always, TRADOC G-2 is here to help, so please reach out for assistance or to participate in our communities of interest.

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Article 1
Russia's Invasion of Ukraine in 2022: What Are We Observing?
by Jennifer Dunn

On the 24th of February, as warned by the U.S. intelligence community, Russia invaded Ukraine with the largest mobilization of conventional ground forces seen in decades. This recent aggression, part of the ongoing Russo-Ukrainian War that dates back to 2014, is an example of large-scale combat operation (LSCO) by a near-peer actor, for which the U.S. Army has been training, equipping, and manning itself to confront

For nearly a year, Russia prepared to execute this operation in Ukraine, slowly building up forces along Ukraine's border by moving tanks, armored fighting vehicles, artillery, air defense, reconnaissance, and other enabling assets forward. Open-source reporting first highlighted the buildup in April of 2021, noting that the troops massing on Ukraine's eastern border comprised the largest force Russia had mustered since it annexed Crimea in 2014.[1] Between April 2021 and February 2022, the U.S. government and intelligence community, in conjunction with European partners, monitored Russia's movements warning that as Russia's troop numbers increased along Ukraine's borders, the likelihood of Russia invading also increased.

U.S. Government sources estimated that at the start of the invasion, Russia had massed roughly 120 battalion tactical groups (BTGs) along the Ukrainian border, the largest mobilization of any Army seen in Europe since World War II.[2] As such, this operation presents a unique opportunity for military analysts across the Department of Defense to observe, develop insights, and generate lessons learned to inform future U.S. military modernization requirements.

Organizations across the U.S. Army are coordinating in a concerted effort to accomplish this critical task. TRADOC, tasked to lead this effort, has begun capturing a running estimate of what we know based on what we're seeing in Ukraine. Below summarizes three initial findings to date:

- **Russia's approach to large-scale conflict with its modernized military is untried and thus far, at just about four months into the conflict, their actions are producing mixed results**. Notably:
    - o BTGs, as the unit of action, are proving to be too small for combined arms. This in conjunction with terrain has significantly impacted Russia's ability to mass.
    - o Russia's training strategy, focused on the BTG, lacks multi-echelon concepts that are key to winning in LSCO.
    - o Russia's senior leaders have Syrian combat experience, but lack LSCO experience.

- **Russia is fighting Ukraine, not the United States or NATO**. According to Russian doctrine, Russia has a pretty nuanced view of conflict and they would likely categorize this conflict as "local war/armed conflict" as opposed to "large-scale war." These terms and their definitions are key because how Russia fights a "local war" (i.e. non-U.S. adversary) will likely differ from how Russia will fight "large-scale war" (NATO or U.S. as adversary).[3] We cannot view Russia's actions in this conflict in isolation.

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[1] https://www.reuters.com/article/us-ukraine-crisis-usa-idUSKBN2BV2Z3
[2] https://www.economist.com/the-economist-explains/2022/01/31/how-big-is-russias-military-build-up-around-ukraine; https://www.nytimes.com/article/russia-ukraine-nato-europe.html
[3] To read more, check out the soon to be published ATP on Russian Tactics.

- **Russia is learning from its mistakes**. After the early challenges we observed, Russia has implemented changes to improve performance, at least in some areas. These include the establishment of a unified commander, implementation of convoy discipline, and execution of a tactical pause for reconstitution and regeneration.

- Since resuming operations post-pause, **Russia's tactics now more closely reflect U.S. understanding of Russian doctrine:** they are employing extensive use of fires and using their maneuver forces to support artillery in achieving focused regional objectives. We are also seeing Russia employ electronic warfare capability to greater effect.

Other noteworthy observations

- Information has had significant demonstrable impacts across the competition continuum (competition, crisis, and conflict) with strategic, operational, and tactical implications.

- The use of unmanned aerial vehicles and anti-tank guided missiles in this conflict highlights the proliferation of small, "cheap," disposable, and highly lethal systems.

- Intelligence, surveillance, and reconnaissance conducted by government, military, and commercial systems.

- Urban terrain (and other complex terrain) presents a challenge for executing operations.

- Russia's challenges with conducting LSCO are noticeable in planning (seizing opportunities) and poor command and control.

- Russian LSCO includes hybrid/mixed forces: conventional, unconventional, proxies, militia, and cyber/information actors.

- Contested logistics and force generation have presented a significant challenge for Russia.

- Russian electronic warfare and cyber operations have "uneven" application and impacts.

- Russia has demonstrated the intent and capability to escalate the conflict with the use of chemical, biological, radioactive, or nuclear weapons.

- Russia has exhibited unconstrained use of fires with and area effects munitions.

As noted, the above observations are drawn from a running estimate and subject to change as the conflict continues. This estimate was generated from analysts' observations and coordinated with representatives across the Army training, education, leader development, and modernization communities. TRADOC G-2 hosts a weekly analytic session with members of these communities to review the estimate and capture new threat observations. If you're interested in monitoring the progress of this running estimate, or even contributing to the community's body of work, consider joining us on MS Teams.

TRADOC - continues to play a key role in collecting threat observations and insights to inform the greater Army efforts to generate lessons learned (LL). The LL identified from this process will inform Army modernization efforts across doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy.

All of this information is available on TRADOC's Russia Landing Zone, including the ability to view the Running Estimate, join the community of practice, or submit an observation. The Russia Landing Zone is located at How Russia Fights Landing Zone – OE TRADOC (army.mil).

Want to know what China is learning about the Russia Ukraine conflict? That is available on the China LZ located at How China Fights Landing Zone – OE TRADOC (army.mil).

Recognizing that the latest version of FM 3.0 is being relooked based on LL from the Russia-Ukraine conflict, we anticipate that there will be subsequent updates to training materials, and other related assessments that will significantly impact Army training. Our intent is to ensure we provide exercise planners, scenario developers, curriculum developers, and instructors with what they need to know to continue to train and develop Soldiers and leaders with threat-informed training materials.

Article 2
How Will the Russia-Ukraine Conflict Impact Russia's Military Modernization?
by Jacob Barton, Ph.D

The flawed Russian invasion of Ukraine has had wide ranging effects on its forces. However, the most critical impact may yet be realized. The current conflict will have long-term ramifications on Russia's military modernization and its ability to prepare for or sustain a conflict with NATO and the West. Observations from the invasion suggest that Russia may find itself without the personnel, weapons, or ammunition it believes it needs for a war with the West.

The amount of Russian Armed Forces casualties from the conflict is staggering. According to the latest independent estimates, approximately 15,000 Russian troops have been killed in the war. Considering the investment required to produce these soldiers, Russia cannot afford to lose the volume of soldiers its leaders appear willing to sacrifice. Consider that an infantry lieutenant costs Russia $10,000 to train over five years, with other officers costing up to $60,000 each. An experienced fighter pilot can cost up to $14 million to train over a period of 14 years.[4] Given the years of training and the hundreds of millions of dollars lost, Russian Armed Forces will need to make radical adjustments to training, recruiting, and retention to recover.

Russia is already experiencing challenges in its recruiting efforts. Although official statistics are unavailable, several leading Russia watchers highlight the difficulty Russian Armed Forces are having contracting enough forces to refit operational units in Ukraine. It has even reduced the minimum contract period to four months to accommodate. Prior to the conflict, Russia recognized the demographic stresses on its military and its diminished ability to recruit candidates from urban areas. To overcome these challenges it established over 80 new recruiting centers in rural areas where the standard of living among young adults is significantly lower and the attractiveness of a military lifestyle is higher. Yet, even with this initiative, Russia is having difficulty countering the negative public sentiment broadcast on social media, particularly from Russian troops deployed to

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[4] Mia Jankowicz, "Russia's losses in Ukraine include many elite troops that take years and millions of dollars to train, BBC investigation finds," April 12, 2022, https://www.businessinsider.com/russia-has-lost-expensive-time-consuming-soldiers-to-train-bbc-2022-4.

the front lines. With morale amongst its forces at its lowest in recent history, the Russian Armed Forces will almost certainly see lower numbers of enlistments in the coming years. With that in mind, if Russia decides it must retain a consistent force size, it will be forced to adjust the mix of contract to conscript troops, relying more heavily on conscripts that have minimal training. Furthermore, Russian military training institutions will need to make concessions to decrease training time or increase throughout, putting more stress on a widely considered underperforming force.

Russia has lost more equipment than it can afford. According to data provided by the Ukrainian Land Forces, a total of 2,238 armored vehicles, 873 tanks, 408 artillery systems, 179 aircraft, and 154 helicopters have been destroyed.[56] According to Russian Defense industry figures,[7] the approximate cost of a Russian armored vehicle is at least $70,000, a Russian T-72 is at least $500,000, a T-90 is between $2.5 million and $4.5 million, a TOS-1 220mm Multiple Rocket Launcher is $6 million, a 2S19 152mm Self-propelled Howitzer is at least $2 million, an Su-27 at least $26 million, an Su-25 is at least $11 million, and an Mi-28 at least $15 million. For only the first two days of Russia's invasion, Ukrainian forces estimate the materiel cost from the destruction of Russian tanks, aircraft, and weapons at $3 billion.[8]

When the materiel costs are extrapolated to other economic impacts, the daily cost of war for Russia likely exceeded $20 billion at the height of the conflict with current estimates at over $4 billion per day, according to figures from the Consultancy.[9] At over 70 days into the conflict, that equates to over $280 billion. While some of these figures may be inflated, Russia has undoubtedly lost far more equipment than they expected. Even a conservative estimate of only their equipment losses exceeds $6.2 billion. Russia likely does not have the resources to replace this equipment because it would cost more than it allocates for the procurement of new equipment in a given year. Based on historical production and the current impact of Western sanctions, the Russian defense industry almost certainly could not produce new equipment to replace these destroyed systems in the next five years. Notably, Russia retains a surplus of legacy equipment with as many as 7,000 tanks and they have already taken many of them out of warehouses and vehicle graveyards to refit frontline units. This likely means that if Russia replaces its destroyed equipment with legacy equipment, it will be forced to outlay significantly more resources for its operations and maintenance budgets to keep these systems in use, a consequence that would have second-order impacts on its modernization budgets.

Russia's future modernization and quickly decreasing stockpile could imply they will rely more on other countries for military assistance. In keeping with its traditional tactical doctrine, Russia has expended a tremendous amount of ammunition and ordnance, attempting to destroy its enemy and take Ukrainian territory during more than two months of conflict. Open-source estimates suggest that Russian Armed Forces are down to 30 percent of their total ammunition stockpiles. This figure is questionable, but calculations derived from known Russian ammunition sources indicate that it has no more than 70 percent remaining. Coupled with a high failure rate—

[5] David Averre, "Putin's mighty war machine on the SCRAPHEAP," MAILONLINE, April 24, 2022, https://www.dailymail.co.uk/news/article-10747991/Russia-lost-873-tanks-179-aircraft-21-800-troops-just-two-months-fighting.html.
[6] Gandharv Walia, "Ukrainian army damaged 1,000 tanks, 200 aircraft, 2,500 armored vehicles of Russian forces, claims Zelensky," WION, May 01, 2022, https://www.wionews.com/world/ukrainian-army-damaged-1000-tanks-200-aircraft-2500-armored-vehicles-of-russian-forces-claims-zelensky-475357.
[7] Costs projected in U.S. dollars.
[8] Renaud Foucart, "The cost of war: how Russia's economy will struggle to pay the price of invading Ukraine," March 11, 2022, https://theconversation.com/the-cost-of-war-how-russias-economy-will-struggle-to-pay-the-price-of-invading-ukraine-178826.
[9] Research: 'Ukraine war costs Russian military €20 billion per day', March 2, 2022, https://www.consultancy.eu/news/7433/research-ukraine-war-costs-russian-military-20-billion-per-day

between 10 and 40 percent—among its ballistic missiles, and it explains why some Russian units are losing confidence in their ability to maintain this level of operational tempo.

Equally important, successful Ukrainian targeting of Russian logistics is limiting Russia's ability to get ordnance to its forces in need. As the fight continues, supply chain disruptions from the resulting sanctions will further hinder Russia's ability to bring in external sources of ammunition and discreet supplies like microchips needed for its precision missiles and artillery—specifically, those Russia wants available for a war with NATO. These problems portend a situation where Russia would be forced to rely on other countries, like China, for more military resources. A future in which Russia relies on Chinese-made equipment may make for a more capable but increasingly subservient Russian force relative to its southern neighbor. Most signs suggest that Russia's leaders would be unwilling to accept a role that makes Russia "junior partner" to China.

Based on Russia's defense spending trends and the weakening of its economy, Russia will likely be unable to meet its modernization goals for at least the next five to ten years. According to the Bank of Russia's economic forecast, its gross domestic product (GDP) will reduce by 8 – 10% in 2022.[10] Russia's Economic ministry sees its GDP contracting by 12.4%, while Western economists say the drop could be over 15%. Meanwhile, Russia's official military spending in 2021 increased by 2.9% to $65.9 billion, or just over 4% of Russia's GDP, according to SIPRI.[11] This equates to less than 8% of the U.S. Defense budget for fiscal year 2022. In 2021, Russia repeatedly revised its defense budget to allocate funds for arms procurement and modernization, making a 14% increase over its 2020 budget.

Relatedly, Russia's 10-year defense priorities highlighted in their State Armament Plans (GPVs) demonstrate its desire for more arms procurement and modernization. GPV 2020, which ran from 2011 to 2020, focused on increasing the overall share of modernized equipment to 70%. The newest publicly available plan, GPV 2027, calls for total spending of about $330 billion and 3%–4% of GDP from 2018 to 2027. However, the allocation among its services leaves its ground forces—those suffering the majority of the causalities in this conflict—under-resourced. According to Congressional Research Service reports, Aerospace Forces and the Russian Navy received top priority during GPV 2020, allowing for the introduction of new and upgraded legacy systems, including improved missiles and precision-guided munitions.[12] Russia's ground forces have been the lowest funding priority in its modernization plans, and most allocated funds went towards upgrading existing platforms. Upgrading small amounts of its total platforms negatively affected modernization by decreased standardization across units and increased maintenance costs. Still, these funding priorities are likely to continue. Unbalanced modernization funding combined with less buying power means Russia will be forced to make sacrifices in modernization or force structure and readiness over the next decade.

The combination of these factors most likely means Russia will be unable to modernize enough equipment to remain near parity with the U.S. in this area. Currently, the United States remains the world's biggest military spender by a large margin, making up 38 percent of the global share. Looking ahead, Russia will be faced with calls for dialing back foreign policy goals, a smaller military structure, and reduced deployed footprints, with more prominent use of private military contractors and proxies and a greater reliance on its nuclear deterrents.

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[10] https://www.cbr.ru/eng/press/keypr/#:~:text=According%20to%20the%20Bank%20of%20Russia's%20baseline%20forecast%2C%20GDP%20will,the%20same%20period%20in%202022.
[11] Miriam Berger, "Russia boosted military spending ahead of Ukraine war, report says," April 25, 2022, https://www.washingtonpost.com/world/2022/04/25/ukraine-russia-global-military-spending-2021/.
[12]Andrew S. Bowen, "Russian Armed Forces: Capabilities," June 30, 2020, https://crsreports.congress.gov/product/pdf/IF/IF11589.

Article 3
Information Operations in Belarus
by [John Cantin](#)

Belarusian Government Use of Information Operations since the 2020 Election

Since the election in Belarus in the summer of 2020, the Belarusian government and security services of Victor Lukashenko's regime have engaged a well-organized resistance using technology and social media to organize, inform, and persuade individuals to join or support the resistance. The Belarusian government has countered with its own information operations effort to disrupt demonstrations, marches, etc., while identifying leaders, enablers, and the foot soldiers of the anti-Lukashenka movement.

Figure 1. Protesters clashed with police on election night.
Photo from Radio Free Europe/Radio Liberty (RFE/RL) [Hope And Horror: How Belarus Has Changed Since An Election Ignited A Crisis One Year Ago (rferl.org)](#)

As the protests became more numerous and frequent in the fall of 2020, the Belarus Intelligence Services ramped up their efforts to infiltrate and disrupt antigovernment groups.[13] The Belarusian KGB (Belarus was the only former Soviet Republic to keep the KGB name) also began an

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[13] *Belarus election: Protesters clash with police after disputed presidential vote,* Euronews, 10 AUG 2020 https://www.euronews.com

information campaign that accused anyone who opposed the Lukashenko government of being a terrorist.

Information Operations Execution and Implementation

The Belarusian KGB doubled down on their "terrorist" theme by flooding social media with dubious news reports, blogs, tweets, etc. that highlighted the opposition allegedly committing various crimes and fomenting unrest in Belarus at the behest of Western-backed spies and operatives. These messages and themes have been constantly broadcasted on Belarus's official government television, radio, and social media since the August 2020 election.

This allowed the KGB to do several things, such as identifying resistance leaders, enablers, and financers as the resistance movement became bigger and more complex. Once resistance members were identified, the KGB classified them as terrorists and began to name journalists, politicians, bloggers, and their families and associates. This proactive, offensive effort by the Belarusian intelligence and security services left the antigovernment movement in a mostly reactionary mode, focused on protecting their networks vice challenging the regime's control.

By pushing the narrative that the government's crackdown on the opposition is an anti-terrorism fight, the government was able to successfully legitimize its efforts. While the information effort is typically aimed at other governments and international organizations, the primary target of Belarusian information operations is the Belarusian people themselves.

In the guise of conducting anti-terrorism operations, the government proceeded to identify and label opposition figures and their family members and associates, the media, and anyone else the Belarusian government wanted to get rid of as terrorists. The government named several politicians (Sergei Tsikhanouskaya, Sviatlana Tsikhanouskaya, Valery Tsepkalo, and Siarhei Tsikhanouski) and journalists (such as Roman Protasevich) as terrorists and/or terrorist sympathizers, and issued arrest warrants for hundreds of opposition leaders and supporters. All of the arrests were well publicized on the official state media outlets with a clear message for Belarusians: do not participate in or tolerate dissent or you will end up in jail, as will your family.

Belarusians weren't the only target for the government's information campaign; the international community watching Belarus was also a key target. When Belarus forced an international flight to land and then detained wanted journalist/opposition figure Roman Protasevich and his girlfriend without real consequences from the international community, the Belarusian government used this incident as evidence of their victory over terrorism.

The fact that the Belarusian government seems to have gotten away with violation of international laws, norms, and customs only cements the image of Lukashenko and the government as invulnerable to outside influences and pressure and as successfully setting the narrative at home.

Now that Russia has invaded Ukraine, there is evidence of both the Belarusian government and the resistance directing information capabilities in support of Russia or Ukraine accordingly. In light of the conditions in Ukraine the last two years and potentially some comparisons that could be drawn between Putin and Lukashenko, this is a serious condition in the operational environment that must be monitored. "The Putin regime also has a large, complex, somewhat opaque network of nonstate hackers at its disposal, from cybercriminals it recruits to front companies it finances to patriotic hackers it directs. And now, quite clearly, that Russian cyber power has extended to Belarus—as the Kremlin leverages the Belarussian government to launch cyber and information

operations in service of its war on Ukraine."[14] This is a real-world example of just how potent regional alliances can be no matter how informal they are.

Implications for U.S. Training

Rotational training units should familiarize themselves with DATE World nations and understand that any of the countries in DATE World have the capability, strategic interests, and foresight to execute information warfare (INFOWAR)[15] to gain an advantage against the U.S. Control of the information domain is essential to the success of governments in stamping down opposition. They will have reliable, redundant methods to put out their message and block opposing views. They also have the additional home-field advantage which presents a challenge that U.S. forces will have to grapple with in future theaters of operation. U.S. forces need to train to be able to stay on message while at the same time refining and adapting in order to counter enemy INFOWAR. Moreover, U.S. forces need to consider how they can preempt enemy INFOWAR in order to stay one or two steps ahead.

Preemption and interdiction may come down to simply ending the enemy's ability to communicate its message (or anything else) or otherwise render it ineffective. Training to get ahead of enemy INFOWAR and messaging will reduce the enemy's overall effectiveness on the battlefield. Enemy forces also have the advantage of human terrain familiarity and cultural norms, customs, etc., so U.S. forces need to consider these conditions in their intelligence processes and prepare to exploit.

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[14] Justin Sherman. "The Cyber Conflict Isn't Limited to Ukraine." Barron's 4 March 2022. https://www.barrons.com/articles/the-cyber-conflict-isnt-limited-to-ukraine-51646405827
[15] See TC 7-100.2 Opposing Force Tactics. Chapter 7, Information Warfare.

Article 4
New Developments in China's Nuclear Deterrent
by [Brad Marvel](#)

Introduction

The People's Republic of China (PRC) successfully detonated their first nuclear device in the deserts of Eastern Xinjiang In October of 1964. Though American and Soviet intelligence organizations were aware of the impending test, the populations and political leadership from both countries seemed taken by surprise by the speed of China's nuclear advancement.

Even before this first test, the U.S. and its allies struggled to contextualize China as a nuclear power. This struggle continued throughout the latter half of the 20th century and seems to have accelerated as China's wealth, military power, and international profile all expanded over the last two decades. China has done little to alleviate this problem, consistently refusing to engage any external party in any meaningful arms talks, or even to explain in any detail the specifics of their nuclear weapons policy.

Zhou Enlai announces China's first successful nuclear test in 1964
https://commons.wikimedia.org/wiki/File:Zhou_Enlai_announced_the_success_of_China%27s_atomic_bomb_test.jpg

This article explores some of the history behind the West's understanding—and misunderstandings—of China's nuclear arsenal, explains what is now known (and not known) about the contemporary Chinese nuclear capability, and looks at the future and how nuclear weapons interact with the "China Dream."

Background

Nuclear weapons were a critical wedge issue driving the Sino-Soviet split. The USSR—seeing China as a vital ally in the great power competition in Asia—enthusiastically supported China's emerging nuclear program in the late 1950s. As the PRC and USSR gradually fractured along mostly ideological grounds, however, Soviet support for a nuclear China began to waver.[16] Mao himself likely put the final nail in the coffin of Soviet nuclear technical support when he shared his views on nuclear war in 1957:

> *"We shouldn't be afraid of atomic missiles. No matter what kind of war breaks out, conventional or nuclear, we will win. . . . If the imperialists unleash war on us, we may lose more than 300 million people. So what? War is war. The years will pass and we will get to work making more babies than ever before."*[17]

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[16] (Torigian, 2021)
[17] (Zedong, 1957)

The Soviets, embroiled in a growing Cold War and rather desperate to avoid any sort of nuclear exchange with the West, were horrified. Statements like these coupled with an increasingly contentious political relationship irreparably fractured the PRC/USSR partnership, and the Soviets withdrew all support for China's nuclear ambitions by 1959.[18] Ironically enough, the CIA was just as alarmed as the Soviets were about China's emergent nuclear status, concluding in 1963 that China "holds the view that a nuclear war would destroy capitalism and leave the field clear for Chinese survivors to build a new world."[19]

The reality was that China was not nearly as fanatical as Mao's posturing led its competitors to believe. The backdrop for China's nuclear ambitions was far more pragmatic than ideological: during the Taiwan Strait Crisis in 1954–58, China had directly faced the threat of unilateral nuclear intervention from the United States. This threat was very real: the U.S. threatened nuclear attack publicly on multiple occasions, while the Joint Chiefs privately and officially recommended that President Eisenhower order nuclear strikes on the Chinese mainland.[20] President Eisenhower rejected this course of action and the PRC subsequently agreed to a ceasefire before the conflict escalated to a major war.

U.S. Navy aircraft deployed to the Taiwan Strait in 1958
https://commons.wikimedia.org/wiki/File:F4D-1_Skyrays_VF-213_on_USS_Lexington_(CVA-16)_off_Taiwan_1958.jpg

The die was cast, however, and the Chinese Communist Party (CPC) now enthusiastically backed the development of a nuclear deterrent. Mao's blustering about nuclear war turned out to be more theater than a legitimate strategy: as China entered the world of nuclear powers, the CPC made clear their nuclear policy shortly after their first nuclear test in 1964: *"The Chinese Government hereby solemnly declares that China will never at any time and under any circumstances be the first to use nuclear weapons."*[21]

Having experienced firsthand what they would later describe as "nuclear blackmail" during the Taiwan Strait Crisis, China's new nuclear strategy made sense as one aspect of what the Chinese still called a "People's War." The PLA was oriented strictly toward self-defense, but nuclear weapons were a necessity to meaningfully defend oneself against nuclear-equipped opponents. The "No First Use" policy was at the heart of this strategy: China endeavored to maintain its

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[18] (Torigian, 2021)
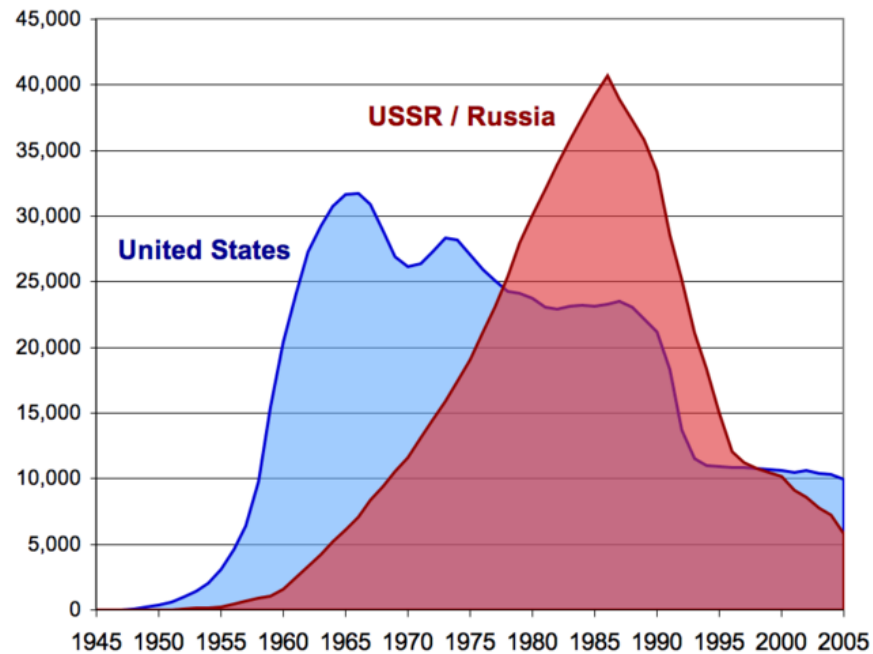[19] (Central Intelligence Agency, 1963)
[20] (Kulacki, 2020)
[21] (Li Bin, 2016)

territorial sovereignty and military relevance, but staunchly refused to be drawn into the ever-growing nuclear arms race now being run by its two largest global competitors.

Over the next few decades, China continued to advance its nuclear capability, adding intermediate-range ballistic missiles (IRBMs) in the early 1970s, and intercontinental-range missiles (ICBMs) by the end of the 1970s. The number of warheads and missiles, however, remained very low. As American and Soviet arsenals expanded significantly through the 1980s (culminating with a combined total of around 63,000 warheads between the two by 1986),[22] China never fielded more than a couple hundred warheads of its own.

China's small nuclear warhead stockpile and limited number of delivery platforms essentially dictated the

American and Russian nuclear stockpiles, 1945-2005
https://commons.wikimedia.org/wiki/File:US_and_USSR_nuclear_stockpiles.png

country's nuclear tactics throughout the Cold War. Nuclear exchanges are fundamentally one of two different types: *counterforce* or *countervalue*. Counterforce strikes attempt to destroy or disable the opponent's military power, primarily their nuclear forces. Countervalue strikes are essentially the final expression of deterrence-by-punishment, typically targeting large population centers as retaliation for a nuclear strike. Counterforce tactics require large numbers of warheads and the ability to target them with relative mass and precision, while countervalue tactics require only the ability to deliver warheads in the vicinity of very large target areas. China's No First Use policy made the development of any significant counterforce capabilities unnecessary. And so, China's nuclear fleet remained small, and China largely recused itself from the many years of arms-limitation talks that finally resulted in major drawdowns of the U.S. and Soviet/Russian nuclear fleets.

The end of the Cold War aligned roughly with a new birth of the PLA and a new vision for China's place in the world. Mao's vision of an insular and self-sufficient communist state was gone, replaced by what would become known as the "China Dream." The PRC now envisioned itself as a future great power, wielding both soft and hard power to back Chinese interests both regionally and globally. Comprehensive modernization of the PLA and a nearly complete revision of PLA doctrine were at the heart of this new vision, but the Chinese nuclear strategy remained more or less the same as it had been for half a century. It would not be until the late 2010s that China's

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[22] (Nagdy, 2020)

nuclear arsenal—and possibly its nuclear policy, strategy, and tactics—began to show signs of evolution.

The Modern PLA Nuclear Capability and Doctrine

Mobile, land-based ballistic missiles have long been one of the PLA's flagship capabilities. As such, these missiles were the natural choice for the PLA's Second Artillery Corps'—later the PLA Rocket Forces' (PLARF)—frontline nuclear delivery mechanism from the very beginning of the Chinese nuclear program. Unlike most other nuclear powers, the PRC never really attempted to build a true nuclear triad: the simultaneous fielding of a global strike capability featuring land-based ballistic missiles, submarine-launched ballistic missiles (SLBMs), and free-fall nuclear bombs dropped

The DF-2, an early Chinese nuclear ballistic missile
https://commons.wikimedia.org/wiki/File:Dongfeng_2_(CSS-1).jpg

from fixed-wing aircraft. Chinese development instead focused on building small numbers of truck-launched missiles, whose small signature and mobility would allow them to survive an enemy's first strike and launch a retaliatory countervalue strike. These ICBMs were augmented by very large numbers of shorter-range missiles, able to threaten several potential regional opponents. Additionally, the PLA Navy attempted to field a ballistic missile submarine (SSBN) in the early 1980s, to mixed results, and is in the process now of building a fleet of relatively modern SSBNs armed with capable, modernized SLBMs.[23]

As China's nuclear force expanded its capability, the No First Use policy remained strictly in place.[24] PLARF nuclear forces are kept in a relatively low state of readiness: nuclear warheads are stored separately from their delivery mechanisms, and the number of warheads and intercontinental delivery platforms remains very small. This approach yielded two very important advantages from the Chinese perspective. First, it allowed them to develop a meaningful nuclear capability at a relatively low cost. Nuclear forces of all types are expensive, and the PLA of the 1980s and 90s was highly resource constrained. The relative cheapness of the small-scale PLA nuclear force enabled substantial modernization elsewhere in the PLA while preserving the strategic value of a nuclear deterrent. Second, China's No First Use policy helped to facilitate the

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[23] (Funaiole, 2021)

[24] (Li Bin, 2016)

development of a massive and sophisticated conventional ballistic missile capability that became the core of China's regional area-denial strategy.

This at first seems somewhat counterintuitive—how did nuclear policy enable conventional weapons?

The Intermediate Problem

Nuclear crises were regular occurrences as the United States and the Soviet Union rapidly expanded their nuclear forces early in the Cold War. As both sides matured their nuclear doctrine, the concept of mutually assured destruction (MAD) became the central thesis informing policy decisions and arms limitations treaties. MAD essentially posits that nuclear war is fundamentally unwinnable: any nuclear exchange inevitably leads to mass nuclear war, and likely, the extinction of humanity, or at the very least, the destruction of your own country.

Intermediate-range nuclear missiles were probably the most serious threat to the MAD balance. This also seems somewhat counterintuitive, as they are in general far less expensive, powerful, and capable than ICBMs or SLBMs. The issue arises from their short-range, and consequently, very short amount of time between launch and impact. ICBMs and SLBMs fly high and far, their huge engines giving ample signatures for satellites to detect, and their long flight times plenty of time to plan and execute a retaliatory strike. Shorter-range missiles are harder to detect and give little to no time to react, thus making a "decapitation" strike (an attempt to "win" a nuclear war by destroying the opponent's ability to retaliate) more possible, which in turn, undermines MAD.[25] This reality eventually forced the United States and the Soviet Union/Russia to agree that short- and medium-range missiles were too much of a threat to MAD, and a bilateral treaty banning their development and use—the Intermediate Nuclear Forces (INF) treaty—was ratified in the late 1980s.[26]

China, meanwhile, argued that their No First Use policy exempted them from the problems addressed by the U.S./USSR arms limitation talks. The Chinese position claimed their small nuclear arsenal and low readiness level prevented them from executing a "decapitation" strike, and thus, they were free to develop missiles of any range and in any number. This resulted in China fielding the world's largest and most sophisticated IRBM fleet, with the implicit promise that most of these systems are conventionally armed. As such, China's opponents didn't need to assume PLARF IRBMs launched against regional targets were nuclear-armed, and thus, a full-scale nuclear response was not required.[27] This dynamic held more or less firm for over 30 years. Developments in recent years, however, are rapidly changing the strategic environment.

Emergent Issues: Chinese Nuclear Policy and Expansion

Over the last two years, three major changes arose that promise to dramatically alter the strategic landscape on which China's nuclear policy is based: the death of the INF treaty, the development of new and far more capable PLARF delivery systems, and the expansion of the Chinese nuclear fleet.

Pressure on the INF treaty began soon after it was ratified, but didn't culminate until U.S. tensions with both Russia and China in the late 2010s became untenable. As mentioned above, China

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[25] (Gassert, 2020)

[26] (Treaty Between The United States Of America And The Union Of Soviet Socialist Republics On The Elimination Of Their Intermediate-Range And Shorter-Range Missiles, 1987)

[27] (Li Bin, 2016)

publicly developed large numbers of very capable intermediate-range missile systems, while Russia likely did the same surreptitiously. The gradual proliferation of threat long-range precision strike systems put the United States at significant operational risk, and the U.S. suspended the INF treaty in early 2019. Russia followed suit the next day.[28] Predictably, both sides quickly began developing (or revealing) new longer-range strike platforms, and China's status as the sole conventional long-range strike superpower evaporated, as did the decades-long established MAD balance between the U.S. and Russia.

The death of the INF treaty roughly coincided with breakthroughs in new PLA strike systems. While several of these were simple upgrades to existing cruise and ballistic missile systems, one new capability in particular—the hypersonic glide vehicle (HGV)—proved particularly alarming to the U.S. and its allies. HGVs have been around in one form or another for many years, but generally lacked the precision and resilience to reliably deliver a nuclear warhead. HGVs are particularly problematic to the MAD dynamic due to the way they fly: instead of the relatively simple ballistic trajectory taken by a conventional ICBM, HGVs can conduct significant maneuvers on re-entry. This makes detecting and countering HGVs more challenging, which puts further pressure on MAD: HGVs show significant promise as a "decapitation" weapon.[29]

Finally, also in the late 2010s, China embarked on the first significant expansion of its nuclear force in a generation. Citing the vulnerability of their current systems to counterforce strikes, the PLARF began building large numbers of new missile silos and warheads, alarming both the United States and countries throughout the region. DIA suggests that China may field as many as 1,000 warheads by the end of the 2020s, which would make their arsenal entirely comparable to both the

The Dongfeng-17 one of China's new long-range hypersonic missiles
https://commons.wikimedia.org/wiki/File:Dongfeng-17_sketch.svg

United States and Russia.[30] The mix new of silos and warheads also has the distinct possibility of creating the basis for a future-ready nuclear force, and thus, a potential Chinese counterforce tactic. That said, China repeatedly reiterated its No First Use policy, and this looks unlikely to change in the near future.

Toward A New Nuclear Dynamic

The world's nuclear weapons environment changed little between the end of the Cold War and the late 2010s. Then, seemingly overnight, new developments drastically altered the landscape, creating a far more precarious and less predictable scenario. It is clear that new arms talks are necessary, but the decline in Russo-American relations and China's outright rejection of any sort of discussion are actively precluding such talks from taking place. This lack of open discussion is simultaneous with the rapid ongoing development of new systems, some with unprecedented and potentially unbalancing capability sets.

The most difficult problem facing China at present is how to maintain its conventional long-range strike capability in the face of its nuclear forces' expansion. Assuming China does indeed build

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[28] (Witte, 2019)

[29] (Cone, 2019)

[30] (Bugos, 2021)

large numbers of new warheads and nuclear-capable strike platforms, the United States and the nations of the Western Pacific may no longer be able to take No First Use at face value, and thus the launch of any ballistic missile from Chinese shores targeting any U.S. ally in the region may be assumed to be nuclear. This dynamic seriously undermines the PLARF's impressive conventional strike capability, as China would have to consider the consequences of a nuclear exchange even when conducting a conventional strike.

In short, China is at a significant strategic crossroads: if it wishes to maintain its current strategy and tactics in the Western Pacific, it must reach an understanding with the U.S. and its allies as to the state of its nuclear forces. If not, China risks a massive and potentially unintentional escalation of conflict. Understandably, a powerful nuclear deterrent is an important aspect of China's hoped-for ascension as a world power, but as the U.S. and USSR learned generations ago, nuclear brinksmanship is a dangerous and largely unproductive path to take.

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Article 5
Implementing Chinese Tactics in Training Events, part 1 Defense
by James (Jay) Hunt

Army Techniques Publication (ATP) 7-100.3, Chinese Tactics, provides key insights for the U.S. Army training, professional education, and leader development community on how Chinese ground forces approach tactical operations. This article series provides a comparison of concepts

and conditions presented in the ATP with the opposing force (OPFOR) as described in the Training Circular (TC) 7-100 series and the Decisive Action Training Environment (DATE). It is intended to suggest practical areas of emphasis for training developers' incorporation of ATP conditions and S2 development of threat models.

Each article discusses purposes and philosophies that might shape a training event road-to-war and main tactics, battlefield organization, and control measures, implementing force groupings and highlighting ground conditions or battle drills. This article focuses on implementing ATP 7-100.3 conditions for a defense.

For this series and compliance with AR 350-1 and TRADOC Regulation 350-70, examples will use the fictional country of Olvana, the DATE Pacific large regional hegemon that presents many of the conditions of China as described in the ATP.

An expanded view of defensive operations.

ATP 7-100.3 describes the People's Liberation Army (PLA) view of defensive operations as its most sacred mission in defending Chinese territory from outside aggression (para 1-10). During offensive action, the defense plays a key role to preserve forces, control key terrain, maintain the initiative, and attrition of enemy combat power (para 8-1). This approach is not significantly different from the composite doctrinal OPFOR or almost any modern military.

The PLAA takes the position that defensive actions are ultimately to preserve one or more assets, such as friendly forces, key terrain, or the initiative. In addition, defensive operations can play a key role in a wider operational or strategic sense by attritting the enemy's strength, forcing it to commit greater forces in an attempt to achieve an objective, and reducing or restricting the options available to enemy commanders. ATP 7-100.3, para 8-1	The purpose of any given defensive battle depends on the situation, resources, and mission—as determined through the decision-making process. The OPFOR recognizes four general purposes of tactical defensive missions: • Protect personnel and equipment. • Restrict freedom of movement. • Control key terrain. • Gain time. TC 7-100.2, para 4-1

Table 1 Comparison of Defensive Purposes

What might be considered new is the ongoing evolution that the PLA that recognizes the potential impact of a multi-domain environment and a connected and informationized battlefield. Chinese perceptions of traditional advantages, such as terrain and developed positional defenses, are evolving to account for attacks across a range of capabilities at depth with the likelihood of communications disruption. Largely based on concerns that communications will be attacked and command and control will be affected, there is an increased acceptance of initiative-taking and emphasis on mission understanding at lower echelons of command. While this may be aspirational in the near term, the modeling of leadership similar to Western forces will continue to shape PLA robustness in the face of multi-domain attacks.

> Developer Tip: Portrayal of Olvanan defenses should present targetable nodes throughout their depth requiring a range of offensive capabilities, including long-range fires, Special Operations Forces (SOF), and electronic warfare (EW) attacks.

Main Tactic Selection

Assuming that a defense of some kind is warranted, determining the type and composition will vary greatly based on the commander's training requirements.

For scenarios in which the Olvanans are conducting a defense of a large area, they will likely field large groupings of forces for their Operational Combat Group. These will mainly consist of light forces. These forces will usually conduct some form of positional area defense leveraging fortifications and predetermined kill zones ("annihilation zones" in the ATP) to destroy the attackers with coordinated direct and indirect files. As the force structure both real and fictionalized develops, these groupings will task organize more heavy forces and specialized groupings to mitigate penetration risk of their defensive line.

Where Olvana has projected or built up forces away from their mainland, the force structure may have a significantly heavier profile. The ATP suggests that such a combat grouping would still rely on light infantry supported by task-organized heavy and anti-tank elements to form a main defensive line, but the decisive element would be a large armor-heavy counterattack force similar to how the U.S. Army might execute a mobile defense. The ATP describes these forces as the Frontier Defense Group and the Depth Defense Group respectively (4-48, 4-49). The ATP suggests that the conduct of this form of defense reflects a measure of adoption of selected Western tactics and techniques by the PLA.
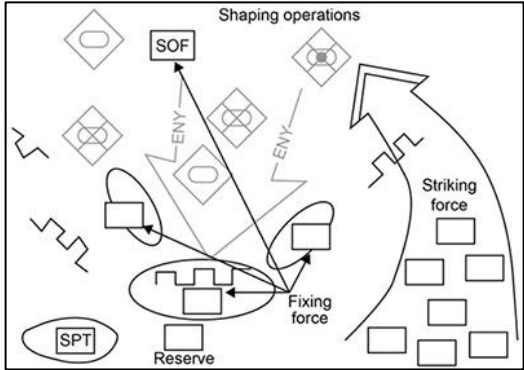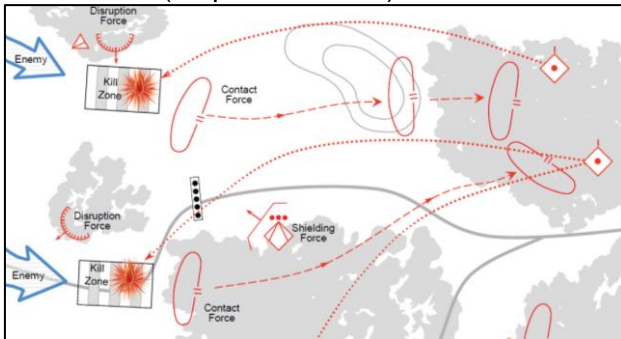
MOBILE DEFENSE	MANEUVER DEFENSE
The mobile defense is a defensive task that <u>concentrates on the destruction or defeat of the enemy through a decisive attack by a striking force</u>. … The striking force is a dedicated counterattack force in a mobile defense constituted with the bulk of available combat power. (emphasis added)	Maneuver defenses cause the enemy to continually lose effectiveness until he can no longer achieve his objectives…<u>through a succession of defensive battles in conjunction with short, violent counterattacks and fires</u>. … In the course of a maneuver defense, the tactical commander tries to force the enemy into a situation that exposes enemy formations to destruction. (emphasis added)
ADRP 3-90, para 4-15	TC 7-100.2, para 4-62 through 65

Table 2 Comparison of Mobile Defense and OPFOR Maneuver Defense

Developer Tip: Either form of defense may be used to meet commanders' training requirements. The road-to-war narrative should allow for situational ambiguity to ensure commanders and analysts are challenged when developing situational understanding of enemy courses of action (ECOA).

Organizing the Battlefield

Describing operational zones and other control measures is a common method of organizing a unit area of responsibility and operations. The ATP suggests that PLA battlefield organization is evolving from being highly prescriptive about the physical sizes of these zones to a more flexible approach with two or more zones described for defensive operations (8-15). This is similar to the OPFOR construct of arranging zones and control graphics based on functional roles with each zone describing specific roles and likely activities to meet mission parameters. Terms are different, but the roles and activities are mostly very similar.

ATP 7-100.3 Chinese Tactics	TC 7-100.2 OPFOR Tactics
Deep Area (8-16) •Not targetable by organic weapons systems •Reconnaissance, counterrecon, screen •SOF, air/missile support •Disrupt/slow enemy advance, providing intelligence	**Security force or element** (2-55) •Security, intelligence, counterrecon **Disruption Zone** (2-38, 2-39) •Disruption, disaggregation, fixing enemy and placing long-range fires, counterrecon, air defense, force early deployment •Attack [key systems] •Gain & maintain contact with key elements •Deceive and guide attacker
Frontal Blocking Zone (8-17) •Analogous to the Western security zone •Screen/cover, early warning, disruption, reconnaissance, counterrecon	
Frontier Defense Zone (8-18) •Primary defensive area, bulk of combat power •Force enemy to commit power, leave forces vulnerable to counterattack •Occupied by frontier defense group(s), depth group	**Battle Zone** (2-42, 2-43) •Conduct decisive actions in close combat •Inflict casualties on a vulnerable enemy unit •Prevent the enemy from moving a part of his force to impact OPFOR actions elsewhere on the battlefield.
Depth Defense Zone (8-19) •Deep area of the defensive zone •Depth defense groups (counterattack force), combat reserve groups •Protection from air/artillery assault, ensure mobility, and ensure concealment of counterattack	
Rear Defense Zone (8-20) •Logistics, support, etc. •Rear area security units—possibly police units •Protection against deep artillery and air strikes, enemy SOF or irregular actions in rear areas; ensures mobility for retrograde/reinforcement	**Support Zone** (2-46) •Generally free of significant enemy action •Logistics, support •Security forces to defeat enemy SOF, infiltration •Camouflage, concealment, cover, and deception (C3D) to protect against standoff RISTA and precision attack

Table 3 Comparison of Battlefield Zones, ATP 7-100.3 vs TC 7-100.2

The ATP suggests that, where the OPFOR generally places significant combat power in the disruption zone, the Chinese model presents a Western-style screening and covering force forward. The combat power is shifted to the main defense ("Frontier Defense Group") and the counterattack ("Depth Defensive Group"). The Chinese model supports these forward security forces with long-range fires and possibly short-range ballistic missiles (SRBM) or rockets.
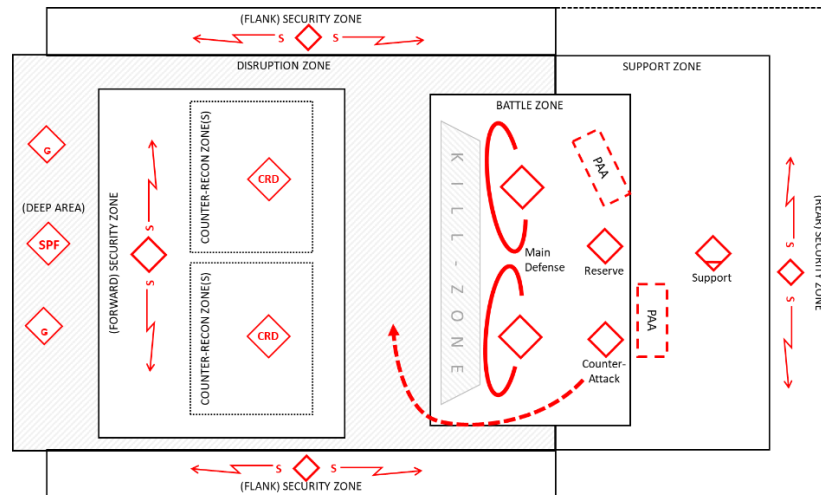

Figure 1 Sample Functional Layout for OPFOR Area Defense
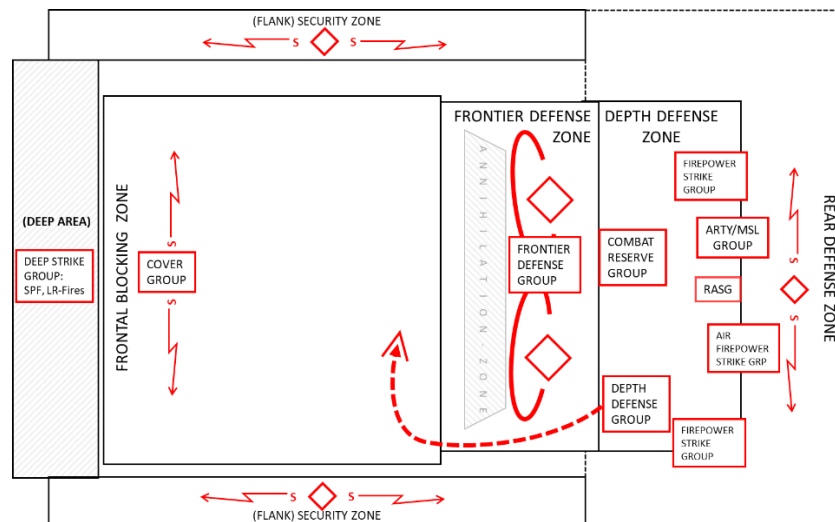
Figure 2 Sample Functional Layout for Olvanan Mobile Defense

> Developer Tip: Anchor the action element and array the various zones based on the aggregate of the enduring and universal functions and actor-unique adjustments. If the Olvanans are executing an area defense, start with the main defensive line. If conducting a mobile defense, the Depth Defensive Group might be the action element. Do not fall into a prescriptive doctrinal template: "form follows function."

Force Groupings and Roles

The ATP describes a Chinese force structure that is evolving to meet its expanded understanding and tactics. The highly structured and rigid deployment patterns of previous generations are starting to give way to more flexible and dynamically task-organized groupings. This "building the plane in flight" makes threat modeling difficult, forcing developers and analysts to focus on roles and tactical functions rather than stock hierarchies. As noted in the ATP, Chinese naming of these groupings is similarly flexible and appears to be unstandardized and still somewhat in development.

ATP 7-100.3 Chinese Tactics	TC 7-100.2 OPFOR Tactics
Cover Group (4-47) •Conduct counterreconnaissance, (limited) defense •May withdraw to conduct vigilance/security or conduct operations behind enemy lines. •Consists of reconnaissance or light armored units enabled by light artillery, antitank, anti-air, and EW units.	**Security Force** (4-27) •Supports intelligence, surveillance, and reconnaissance efforts •Supports disruption efforts •Prevents or mitigates the effects of hostile actions against the overall key components, including logistics and support elements
	Disruption Force (4-19 – 4-21) •Deny the attacker the synergy of effects of his combat system at the main defense by disrupting disaggregating, and desynchronizing •Maximum use of stay-behind forces and affiliated forces •Limited objective attacks against key systems
Frontier Defense Group (4-48) •Main line of defense: hold the defensive line, blunt the attack, inflict heavy casualties	**Main Defense Force** (4-25) •Primary defensive mission
Depth Defense Group (4-49) •Conduct counterattacks •Reinforce weak areas; defeat aerial incursions; and encircle, isolate, and assault any enemy forces operating in rear areas •In a mobile defense, the depth defense group is the decisive component	**Counterattack Forces** (4-29) •Causing the enemy's offensive operation to culminate •Complete the defensive mission and regain the initiative for the offense
Combat Reserve Group (4-50) •Maintain security and reinforce the main defensive line, if necessary •May also conduct counterattacks against enemy penetrations	**Maneuver Reserve** (4-31) •Conducting a counterattack, as directed •Block or destroy enemy penetrations •Conducting anti-landing missions •Assisting forces' breaking contact/withdrawal

Table 4 Comparison of Force Groupings, ATP7-100.3 versus TC 7-100.2

The Cover Group, deployed to screen or cover generally 3–5 kilometers forward of the defensive line focuses on intelligence, surveillance, and reconnaissance (ISR). Compared to the OPFOR

security and disruption zone elements, it has much less emphasis on disruption activities and counterreconnaissance action against robust elements.

The ATP suggests that compared to what would be the focus of the OPFOR disruption zone, there is much less emphasis on using irregular elements to enable the regular forces. While there is discussion of the "People's struggle," this sort of assistance would likely be present only in a defense of the mainland, and even then minimally effective. The area forward of the main defense ("Frontal Blocking Zone") still plays an important role in supporting the defense. The emphasis is more shaping and guiding versus disruption or disaggregating. The coordinated use of obstacles, limited objective attacks, deception, electronic warfare, and indirect fires direct the attacking forces into kill zones ("annihilation zones") where they might be actioned, or towards the more fortified segments of the main defense.

The main defense ("Frontier Defense Group") is generally similar to the OPFOR defenses. As stated previously, forces with heavy assets will shift the action element role to the counterattack and resource it with additional forces accordingly.

Where the OPFOR leverages indirect fires at maximum range and air power to execute deep strikes, the ATP suggests a significantly different approach. SRBM and rockets might be used instead of close air support (CAS) to strike at deep targets and disrupt attacking forces.

The force structures of the fictional DATE countries, particularly Olvana, are similarly adapting. As of this writing, the Olvana Army force structure is being updated to facilitate a more agile grouping and organizing. The existing Olvana force structure may still be used to represent the conditions described in the ATP. The example below illustrates how elements from the current Olvanan force structure (two brigades with additional elements) might be task organized into a combat group with combined arms brigades (CA-BDEs) to be more representative of conditions described in the ATP.
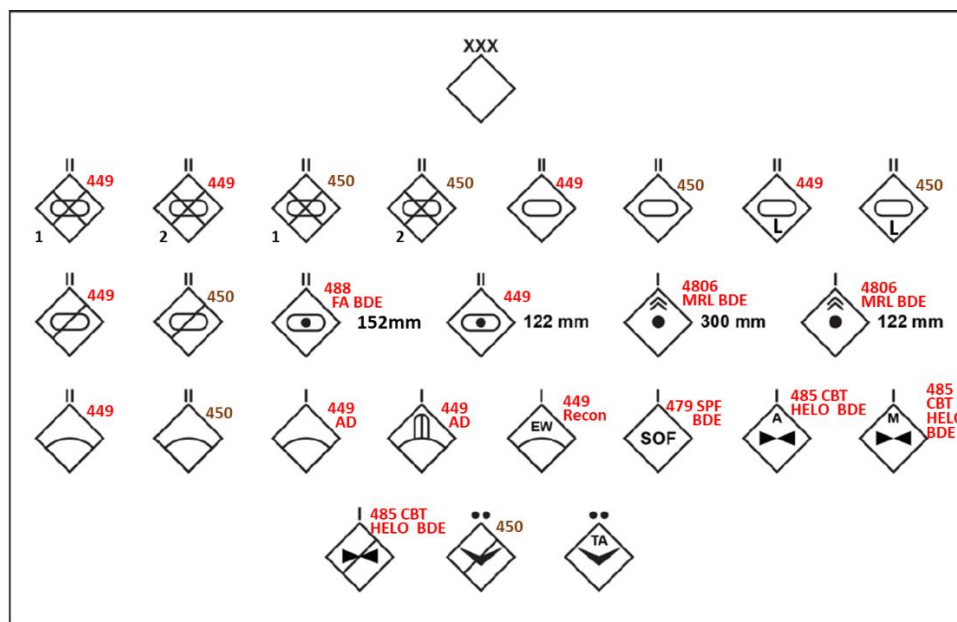

Figure 3 Sample Task Organization of Olvana Force Structure

> Developer Tip: The structural ambiguity may itself be a training objective, forcing analysts to identify forces by role in a particular situation while mitigating some of the risks of tactical mirroring or template biases. When developing orders of battle for a given training event, be aggressive when choosing capabilities that meet the training requirements, such as SRBMs and INFOWAR.

Unique Conditions and Techniques

There are several conditions that ATP 7-100.3 presents that might be incorporated into training events that demonstrate the application of Chinese tactical preferences. These should not be construed as prescriptive but may provide unique add-ins to training event requirements.

Breakout (8-79). The ATP suggests that the evolution of the Chinese military mindset is trending towards increased lethality of coordinated, complementary fires. The belief that most mechanized opponents will seek to encircle and isolate units or groups from their formation makes this a significant concern for commanders. This may be in part a reaction to Western forces' heavy use of isolation and containment to disaggregate forces. This action is similar to elements of several OPFOR Tactical Tasks and is under consideration for addition to the list. OPFOR personnel should consider training this as a battle drill. Commanders should expect breakout as a programmed reaction to an attempted isolation action.

Anti-landing and Air Defense (9-47). The defensive depth portrayed in the ATP makes defending the Depth and Rear Defense Zones a challenge. China fears the use of vertical envelopment to conduct air insertions of troops into rear areas, and it relies heavily on security forces to counter this threat. While dispersed, security forces are expected to detect and neutralize smaller aerial insertions and infiltrations of SOF elements. Their desired technique is to conduct anti-air ambushes when helicopters are most vulnerable—descending and immediately after landing. This requires security forces to detect and track enemy air elements as they move into the security zone, then rapidly mass combat power in and around the landing zone. Anti-air ambushes may be aggressively forward deployed and integrated with observation posts and radar along the most likely air avenues of approach. The ATP also suggests that the Chinese are acutely aware of the propaganda value of thwarting an air insertion and downing aircraft. OPFOR planners might incorporate intentional gaps in the rear areas to bait air insertions for optimized anti-landing actions.

Increased initiative. The previously discussed desire to develop lower-echelon leaders' situational awareness and initiative is an ongoing process. The Chinese assumption that communication interference will detract from their coordination and synchronization may be manifested in training events. Units should ensure that this fear is realized with extensive use of multi-domain attack vectors against command and control capabilities. It would also be accurate for OPFOR, in the face of such interference, to have a company or platoon exercise initiative by doing something unexpected. Analysts should be challenged with identifying incongruous behavior that might suggest opportunities or threats.

Conclusion

The shift in emphasis to China is a challenge to all Soldiers. Training developers, OPFOR personnel, and unit commanders all must maintain awareness of the evolving understanding of the

pacing threat and ensure that training events reflect its unique characteristics. They are not the Russians, Krasnovians, Missourians, or Cortinians. The composite OPFOR as described in the TC 7-100 series and the DATE actors are valuable and flexible tools to implement the mindset and unique characteristics of Chinese tactics.

Article 6
Implementing Chinese Tactics in Training Events, part 2 Offense
by James (Jay) Hunt

Army Techniques Publication (ATP) 7-100.3, Chinese Tactics, provides key insights for the U.S. Army training, professional education, and leader development community on how Chinese ground forces approach tactical operations. This article series provides a comparison of concepts and conditions presented in the ATP with the opposing force (OPFOR) as described in the Training Circular (TC) 7-100 series and the Decisive Action Training Environment (DATE World). It is intended to suggest practical areas of emphasis for training developers' incorporation of ATP conditions and S2 development of threat models.

Each article discusses purposes and philosophies that might shape a training event road-to-war and main tactics, battlefield organization, and control measures, implementing force groupings and highlights unique conditions or battle drills. This article focuses on implementing ATP 7-100.3 conditions for an offense.

For this series and compliance with AR 350-1 and TRADOC Regulation 350-70, examples will use the fictional country of Olvana, the DATE Pacific large regional hegemon that presents many of the conditions of China as described in the ATP.

A similar, yet distinct approach to offensive operations.

ATP 7-100.3 describes offensive actions as the decisive form of land operations for the Chinese People's Liberation Army Army's (PLAA). The approach is most often against enemy formations but may also focus on key terrain. While this is not unique to the PLAA, the focus of its execution is distinct from how the OPFOR has traditionally executed offensive actions as described in TC 7-100.2, Opposing Force Tactics.

The Chinese model relies much more on separating and isolating portions of an enemy's defense for subsequent defeat in detail, rather than the common OPFOR's disruption of an enemy's defense and massing of combat power to overcome it. The envelopment of a flank, whether an actual enemy flank or one created through action, takes advantage of areas in which the enemy has no concentrated defenses, does not expect an attack, or is in some other way vulnerable. Where no clear flank exists, PLAA elements will leverage all domains (including air, electronic, virtual) to create a vulnerable point for an enabling attack.
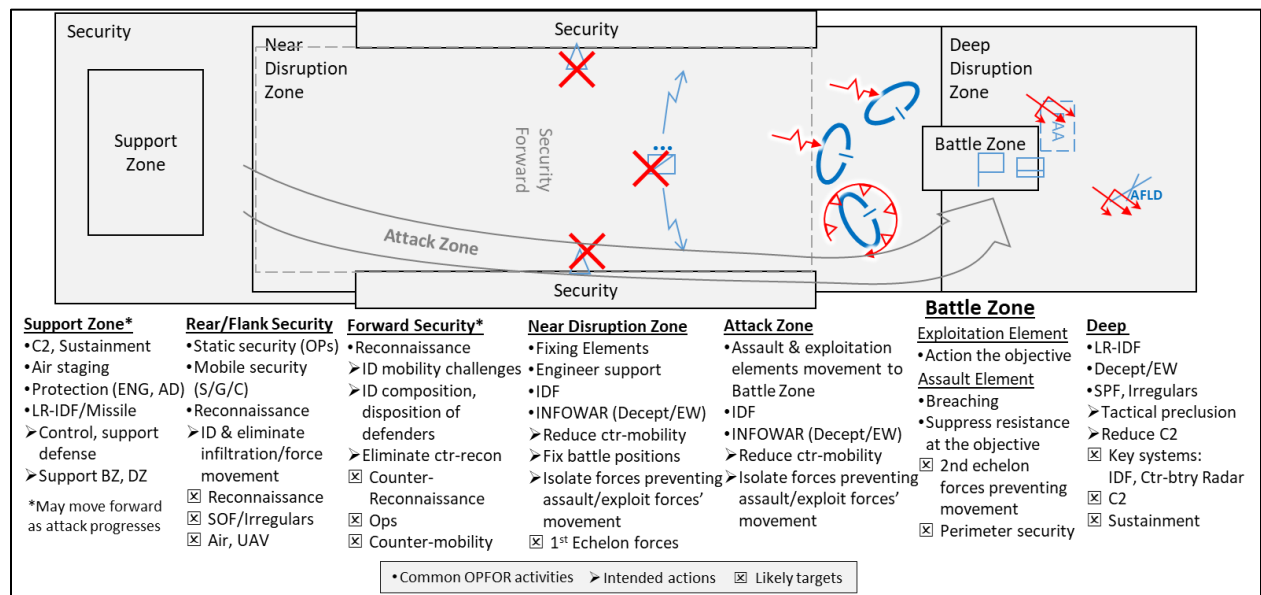
Security

Near Disruption Zone

Security

Deep Disruption Zone

Support Zone

Security Forward

Battle Zone

Attack Zone

Security

AA

AFLD

Support Zone*
- C2, Sustainment
- Air staging
- Protection (ENG, AD)
- LR-IDF/Missile
  ➤ Control, support defense
  ➤ Support BZ, DZ

  *May move forward as attack progresses

Rear/Flank Security
- Static security (OPs)
- Mobile security (S/G/C)
- Reconnaissance
  ➤ ID & eliminate infiltration/force movement
  ⊠ Reconnaissance
  ⊠ SOF/Irregulars
  ⊠ Air, UAV

Forward Security*
- Reconnaissance
  ➤ ID mobility challenges
  ➤ ID composition, disposition of defenders
  ➤ Eliminate ctr-recon
  ⊠ Counter-Reconnaissance
  ⊠ Ops
  ⊠ Counter-mobility

Near Disruption Zone
- Fixing Elements
- Engineer support
- IDF
- INFOWAR (Decept/EW)
  ➤ Reduce ctr-mobility
  ➤ Fix battle positions
  ➤ Isolate forces preventing assault/exploit forces' movement
  ⊠ 1st Echelon forces

Attack Zone
- Assault & exploitation elements movement to Battle Zone
- IDF
- INFOWAR (Decept/EW)
  ➤ Reduce ctr-mobility
  ➤ Isolate forces preventing assault/exploit forces' movement

Battle Zone

Exploitation Element
- Action the objective

Assault Element
- Breaching
- Suppress resistance at the objective
  ⊠ 2nd echelon forces preventing movement
  ⊠ Perimeter security

Deep
- LR-IDF
- Decept/EW
- SPF, Irregulars
  ➤ Tactical preclusion
  ➤ Reduce C2
  ⊠ Key systems: IDF, Ctr-btry Radar
  ⊠ C2
  ⊠ Sustainment

• Common OPFOR activities   ➤ Intended actions   ⊠ Likely targets

Figure 1 Sample Functional Diagram for OPFOR Integrated Attack (with common activities, actions, targets)

The PLAA holds that forces have multiple combat power effects through coordination and synchronization of their capabilities and that isolation of an element from its parent is the most effective way to diminish the enemy force and subsequently annihilate it. This philosophy extends to isolating reinforcements, reserve forces, and support elements from contributing in any significant manner.

Rather than focusing on winning direct confrontations through technological superiority, technology advantages, deception, and agility are used to offset or negate enemy strengths while finding and exploiting enemy weaknesses. This effectively results in a return to classical tactics, albeit across multiple domains, to enable flank-creation, envelopment or isolation, and defeat in detail.

ATP 7-100.3 Chinese Tactics (7-3)	TC 7-100.2 OPFOR Tactics (3-1)
• Destroy, defeat, or neutralize enemy formations, personnel, or equipment	• Dislocate
• Enable friendly freedom of maneuver	• Gain freedom of movement
• Restrict enemy freedom of maneuver	• Restrict freedom of movement
• Gain information	• Gain information
• Gain control of key terrain	• Gain control of key terrain, personnel, or equipment
• Disrupt enemy operations	• Disrupt

Table 5 Comparison of Offensive Purposes (rearranged to highlight commonalities)

While the PLAA is certainly capable of the mass wave attacks observed in the past, their new emphasis on agility and leveraging a multi-domain environment and a connected battlefield may result in a more focused and lethal adversary. Traditional advantages of massive overmatch are being supplemented with an understanding that offensive operations against an advanced defender are more complex. The PLAA recognition that operations will exercise a range of capabilities at depth with the likelihood of communications disruption. An increased acceptance of

initiative-taking and emphasis on mission understanding at lower echelons of command is intended to mitigate such disruptions and allow continued operations. While this may be aspirational in the near term, the modeling of leadership similar to Western forces will continue to shape PLA robustness in the face of multi-domain operations.

> Developer Tip: Portrayal of Olvanan offensive actions should present varying levels of command resiliency and interoperability throughout their depth.

Organizing the Battlefield

Describing operational zones and other control measures is a common method of organizing a unit's area of responsibility and operations. The PLAA offensive battlefield organization is similar to the OPFOR's with naming being the main distinguisher. The emphasis on fixing the enemy combat with a minimum of force while maneuvering to attack flanks common in OPFOR doctrine is an evolving mindset for the PLAA. As in other areas, their formation groupings and battlefield control measures reflect the aspirational goal of increased command flexibility and enabling of initiative at lower levels.

ATP 7-100.3 Chinese Tactics	TC 7-100.2 OPFOR Tactics
Deep Area (7-23) •Beyond organic sensors and weapons ranges •SOF, scouts, manned/unmanned aircraft •Possibly supported by long-range fires •Reconnaissance, counterrecon, counterfire, screening, blocking •Provide early warning, target long-range fires, intelligence	**Disruption Zone** (2-38, 2-39) •Disruption, disaggregation, fixing enemy and placing long-range fires, counterrecon, air defense, force early deployment •Attack [key systems] •Gain & maintain contact with key elements •Deceive and guide attacker
Security Zone (7-24) •Along forward edge of Frontline Zone •Security, reconnaissance, and counterrecon	**Security force or element** (2-55) •Security, intelligence, reconnaissance
Frontline Zone (7-24) •Area of main offensive action and early objectives including the enemy's main defensive line - should be within the range of organic fires •Frontline Attack Group, possibly Depth Group •Breach the defensive line, enabling the Depth and Thrust Maneuver Groups to move into enemy rear areas	**Battle Zone** (2-42, 2-43) •Conduct decisive actions in close combat •Inflict casualties on a vulnerable enemy unit •Prevent the enemy from moving a part of his force to impact OPFOR actions elsewhere on the battlefield.
Reserve Zone (7-25) •Depth Attack Group, Thrust Maneuver Group(s), Reserve Group. Command	

Group(s), Firepower Group(s), forward logistics bases •Usually contains defensives to resist enemy penetration/infiltration	
Garrison Zone (7-26) •Augmentations and reinforcements, may serve as an assembly area •Supporting capabilities such as logistics, EW, and long-range artillery •Typically contain one or more security zones around key positions •People's Armed Police (PAP) may conduct security	**Support Zone** (2-46) •Generally free of significant enemy action •Logistics, support •Security forces to defeat enemy SOF, infiltration •Camouflage, concealment, cover, and deception (C3D) to protect against standoff RISTA and precision attack

Table 6 Comparison of Offensive Battlefield Zones, from ATP 7-100.3 and TC 7-100.2

The Security Groups' mission follows closely with the OPFOR model of screening for mobility challenges and enemy composition and dispositions. The forward security group will maneuver well in advance of the Frontline Attack Groups and will usually be supported by their organic indirect fires and those of the Firepower Group. The screen frontage may be wider than planned to minimize the risk of betraying the intended attack direction.

The Frontline Attack Groups will generally serve as fixing elements to enable Thrust Attack Group or Depth Attack Groups' maneuver to attack flanks or other objectives. The naming of the action elements that conduct the penetration or flank attacks enabled by the Frontline Attack Groups appears less important than their role.

The number, size, and range of firing positions will adapt based on the defender's counter-battery capabilities. Firepower Groups will support forward elements in the Advance and Unfolding phases at maximum range, transitioning to massed aimed fires in support of the Attack Groups. Firepower Groups will also be integrated with short-range ballistic missiles (SRBM) or rockets to achieve a combined arms effect similar to close air support.

> Developer Tip: Ensure that groupings and their movements do not betray the intended points of attack through deception and information warfare. Conduct deep attacks for both practical effects as well as deception.

Force Groupings and Roles

The ATP describes a Chinese force structure that is evolving to meet its expanded understanding and tactics. The highly structured and rigid deployment patterns of previous generations are starting to give way to more flexible and dynamically task-organized groupings. This "building the plane in-flight" makes threat modeling difficult, forcing developers and analysts to focus on roles and tactical functions rather than stock hierarchies. As noted in the ATP, Chinese naming of these groupings is similarly flexible and appears to be unstandardized and still somewhat in development.

ATP 7-100.3 Chinese Tactics	TC 7-100.2 OPFOR Tactics
Reconnaissance and Intelligence Group (4-35) •Enables, develops, supports reconnaissance and intelligence planning •Conducts reconnaissance **Advance Group** (4-41) •Roughly similar to an advance guard. •Security, counterreconnaissance •Initiates contact with the enemy main body •May assume follow-on security or reserve role	**Security Force** (3-33) •Supports intelligence, surveillance, and reconnaissance efforts •Supports disruption efforts •Prevents or mitigates the effects of hostile actions against the overall tactical-level command and/or its key components **Disruption Force** (3-34) •Deny the attacker the synergy of effects of his combat system at the main defense by disrupting disaggregating, and desynchronizing •Maximum use of stay-behind forces and affiliated forces
Frontline Attack Group (4-42) •Conduct the initial assault; breach or other small penetration; Break-through and capture enemy first-line positions. •Concentrate combat power on the narrowest possible front, then attack.	**Fixing Force** (3-29) •Fixes enemy forces so that they are not free to maneuver •May consist of a number of units separated from each other in time and space, particularly if the enemy forces required to be fixed are likewise separated **Assault Force** (3-32) •Destroy an enemy force or seize a position •Create opportunity for the action force
Depth Attack Group (4-43) •Advances deep into enemy position once initial breach is achieved •Likely task-organized armored forces •Seizes critical terrain, annihilating or occupies enemy positions, defends against counterattack **Thrust Maneuvering Group** (4-44) •Exploit advantages created by the depth attack group •Highly mobile armored or air assault force •Continues attack against deep positions, targeting command nodes, supply areas, and key terrain •Cut off enemy retrograde routes, disrupt counterattacks	**Exploitation Force** (3-38) •Exploits windows of opportunity to achieves the mission objective **Strike Force** (3-39) •Rapidly destroys a key enemy organization through a combination of massed precision fires and maneuver that accomplishes the final destruction of the targeted enemy force

Combat Reserve Group (4-45)	Offensive Reserve (3-41)
•Remains in rear area •Reinforces the frontline attack group or depth attack group if necessary	•Acts as an enabling or action force •Size and composition situation-dependent

Table 7 Comparison of Selected Offensive Force Groupings, ATP7-100.3 versus TC 7-100.2

The force groupings for the offense are broadly similar between the Chinese model and the OPFOR. Each prefers to fix the enemy's combat power while maneuvering to strike at flanks and key systems.
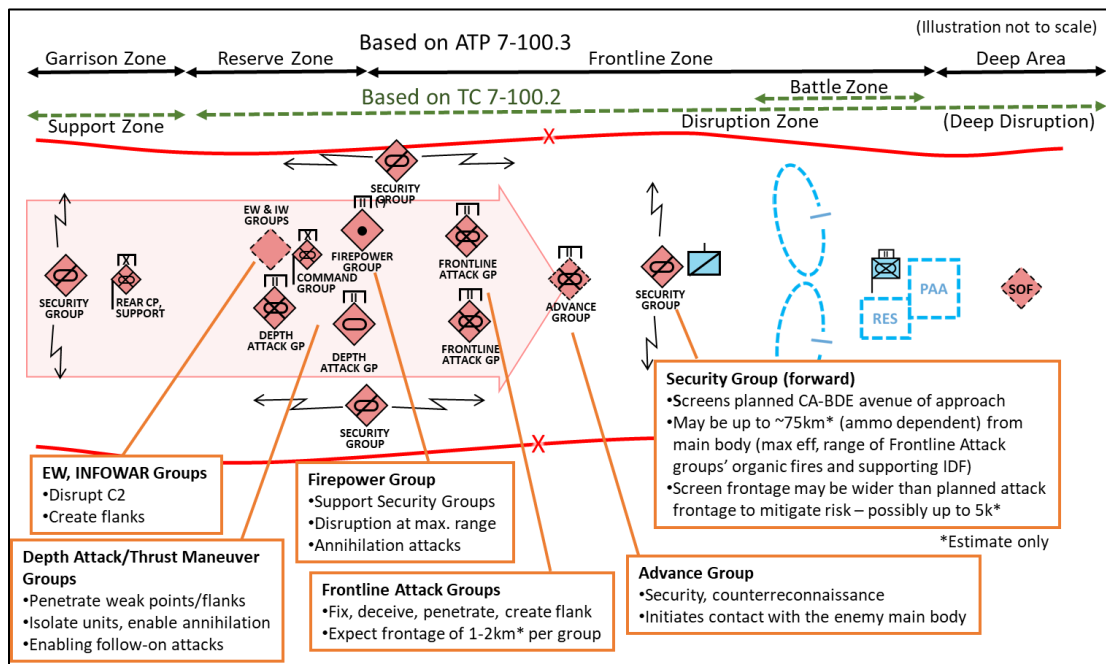
Figure 2 Sample Olvanan CA-BDE Advance Formation

The Security Groups' mission follows closely with the OPFOR model of screening for mobility challenges and enemy composition and dispositions. The forward security group will maneuver well in advance of the Frontline Attack Groups and will usually be supported by their organic indirect fires and those of the Firepower Group. They may also be supported by an Advance Group. The screen frontage may be wider than the planned attack corridor to minimize the risk of betraying the intended point of attack (up to 5km for a CA-BDE).

The Advance Group supports the Security Group while seeking to find and initiate contact with the enemy forward elements. The implementation of this element may vary based on conditions and forces encountered. In some cases, it may function similarly to a movement to contact's advance guard with the tasks of gain and maintain contact, disrupt, or fix the enemy. In others, the Advance Guard functions more like the OPFOR reconnaissance attack, finding and initiating the fix ahead or the Frontline Attack Groups in order to facilitate bypass of a Depth Maneuver Group. This capability may also be used as part of the deception plan to focus the enemy's attention away from the planned actual point of penetration.

The Frontline Attack Groups will generally serve as fixing elements to enable the Depth Attack Groups' attacks against the enemy flanks or other objectives. They may also conduct probing across all areas of contact with the enemy defenders to identify potential weak points and vulnerabilities.

The Thrust Maneuver Group, if used, strikes at deeper targets and disrupts or precludes reinforcements from supporting the defense. Where the OPFOR leverages indirect fires at maximum range and air power to execute deep strikes, the ATP suggests a significantly different approach. Short-range ballistic missiles (SRBM) and rockets might be used instead of close air support (CAS) to strike at deep targets and disrupt defenders and reinforcements.

These groupings described in the ATP may still be aspirational and under development. The force structures of the fictional DATE countries, particularly Olvana, are similarly adapting. As of this writing, the Olvanan Army force structure is being updated to more accurately represent this more agile force grouping. The existing Olvana force structure may still be used to represent the conditions described in the ATP. The example below illustrates how elements from the current Olvanan force structure (two brigade tactical groups (BTG) with additional elements) might be task organized into a combat group more representative of conditions described in the ATP.
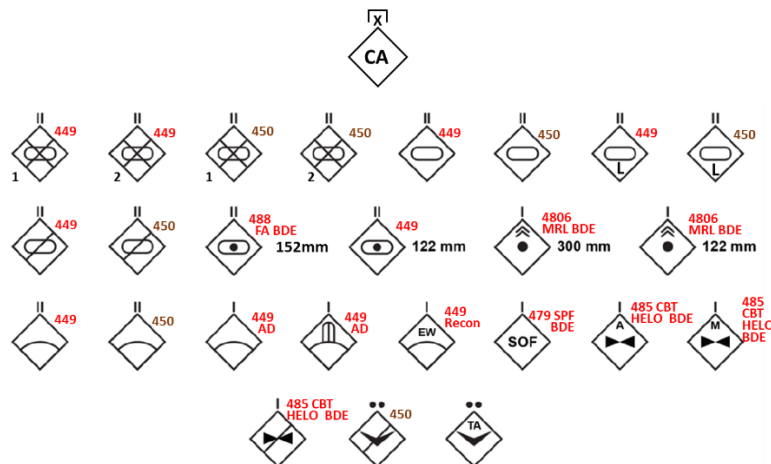

Figure 4 Sample Task Organization of an Olvana Combined Arms Brigade

Developer Tip: The structural ambiguity may itself be a training objective, forcing analysts to identify forces by role in a particular situation while mitigating some of the risks of tactical mirroring or template biases. When developing orders of battle for a given training event, be aggressive when choosing capabilities that meet the training requirements, such as SRBMs and INFOWAR.

> Developer Tip: The structural ambiguity may itself be a training objective, forcing analysts to identify forces by role in a particular situation while mitigating some of the risks of tactical mirroring or template biases. When developing orders of battle for a given training event, be aggressive when choosing capabilities that meet the training requirements, such as SRBMs and INFOWAR.

Unique Conditions and Techniques

There are several conditions that ATP 7-100.3 presents that might be incorporated into training events that demonstrate the application of Chinese tactical preferences. These should not be construed as prescriptive but may provide unique add-ins to training event requirements.

Most Common Tactic – Envelopment

The envelopment is the most common of the offensive tactics discussed in the ATP and can be expected to be executed in one form or another at all echelons. The PLAA's philosophical preference for fixing, deceiving, or precluding a portion of an enemy force then attacking a flank will be a key counter-task for developing plans and exercises. As the tactics mentioned in the ATP (penetration, pursuit, firepower, ambush, raid) are fairly well understood, this section will focus on the basic Chinese expression of envelopments.

The Chinese use of the envelopment as described in the ATP is similar in execution to the OPFOR integrated attack described in TC 7-100.2 (3-64). Fixing forces and information warfare (INFOWAR) elements prevent the enemy's combat power from interfering with the assault and exploitation of an objective. The OPFOR description of the integrated attack does not, however, go into depth on some of the key elements described in the ATP, such as using penetrations and multi-domain attacks to create a flank or to exploit a vulnerable point in the enemy's defense.

> Developer Tip: Leverage deception and other INFOWAR elements to portray several possible flank or penetration points of attack. Reinforce isolation as a battle drill.

Information and Firepower Assault. Of the firepower attacks described in the ATP, the Information and Firepower Assault (7-101) appears to be uniquely able to create the conditions for decisive action in the offense. This comprises a "blitz" of indirect fires to destroy, degrade, or neutralize key targets, and electronic attack to disrupt and isolate command and control. This may be sufficient to accomplish the mission or set the conditions for subsequent operations.

> Developer Tip: Drive confusion at the enemy center of gravity with coordinated *firepower strikes* that either disrupt the intended target or support the deception effort.

Vertical Envelopment. The thrust maneuvering group (4-44), usually assumed to be a highly mobile armor force, may also be an air-mobile assault force. Such an attack opens another flank that the enemy must defend, attacking command nodes or supply areas, disrupting reinforcements or counterattacks, and blocking retrograde routes.

Increased initiative. The previously discussed desire to develop lower-echelon leaders' situational awareness and initiative is an ongoing process. The Chinese assumption that communication interference will detract from their coordination and synchronization may be manifested in training events. Units should ensure that this fear is realized with extensive use of multi-domain attack vectors against command and control capabilities. It would also be accurate for OPFOR, in the face of such interference, to have a company or platoon exercise initiative by doing something

unexpected. Analysts should be challenged with identifying incongruous behavior that might suggest opportunities or threats.

Conclusion

The shift in emphasis to China is a challenge to all Soldiers. Training developers, OPFOR personnel, and unit commanders all must maintain awareness of the evolving understanding of the pacing threat, and ensure that training events reflect its unique characteristics. They are not the Russians, Krasnovians, Missourians, or Cortinians. The composite OPFOR as described in the TC 7-100 series and the DATE actors are valuable and flexible tools to implement the mindset and unique characteristics of Chinese tactics.

Article 7
Threat Countries Continue to Integrate the Subterranean Environment into their National Planning
by LTC Bryce Frederickson

In the current operational environment (OE), threat forces apply sanctuary strategies to enhance their success against U.S. and coalition forces. One sanctuary strategy employed by both Russia and China is the use of the subterranean environment as a means of mitigating combined arms maneuver and intelligence collection assets, and to increase the survivability of their strategic and operational capabilities. Military-purposed underground facilities (UGFs) is just one section of the subterranean environment that these countries continue to design and develop into their strategy to be successful on the battlefield. Additionally, both Russia and China have the capabilities and resources to put forth well-trained engineers and employ modern construction techniques as UGFs are continuing to be built and upgraded in both these countries.

The use of the subterranean environment runs deep in warfare history. There are many examples which have been researched and well documented, such as WW2 Okinawa island defense, Viet Cong tunnels, Taliban caves in Afghanistan, and Hamas tunnels. These historical examples show the effectiveness of using the subterranean environment to mitigate a superior force, provide maneuver, and to inflict large amounts of causalities with a smaller force.

Russia and China continue to dedicate resources into design, construction, and improvement of UGFs, so it is important to understand the complexities of operating in the subterranean environment. This increases the potential for the U.S. and its allies to come into contact with a UGF on the battlefield. This is a brief overview how underground facilities are being used and integrated in Russia and China.

Russian Subterranean Facilities

The Soviet Union prepared to survive the Cold War by building UGFs to survive a nuclear conflict, and those remain to this day. The Russian UGF architecture consists of command posts, large rural facilities, and urban bunkers along with city infrastructure (subway and sewer system). Russia continues to show, through its actions and use of its resources, that it continues to complete ongoing UGF projects, upgrade current facilities, and plans to build new UGFs.

The Russian UGFs in and around its major population centers consist of population bunker holdovers from the Soviet Union, modern military command posts, and the city's infrastructure such as the subway and sewer system. The city's underground infrastructure can be quickly converted and used to potentially support military forces that are defending the city. Additionally, military forces that enter Moscow, the capital, would come into contact with military command posts. Fewer than 10 years ago, Russia reportedly began constructing a fortified national defense facility in Moscow that included UGF and emergency evacuation transport routes.[31] The use of UGFs in population centers helps demonstrate part of the Russian strategy.

In rural areas, the most notable UGF is the Yamantau Mountain in the Ural mountain range. This project began construction 25 years ago and is located about 850 miles east of Moscow.[32] The Ural mountain range and especially the Yamantau Mountain can easily be found on Google Earth and shows the isolation and its sheer size. Building UGF structures in a mountain range enables the country to take advantage of the terrestrial opportunities provided by mountains and dense rock. Additionally, Russia continues to upgrade this mountain facility, which shows its strategic importance. The Kosvinsky mountain complex and the Yamantau mountain complex are two major command and control centers that were scheduled for upgrade in 2017."[33]
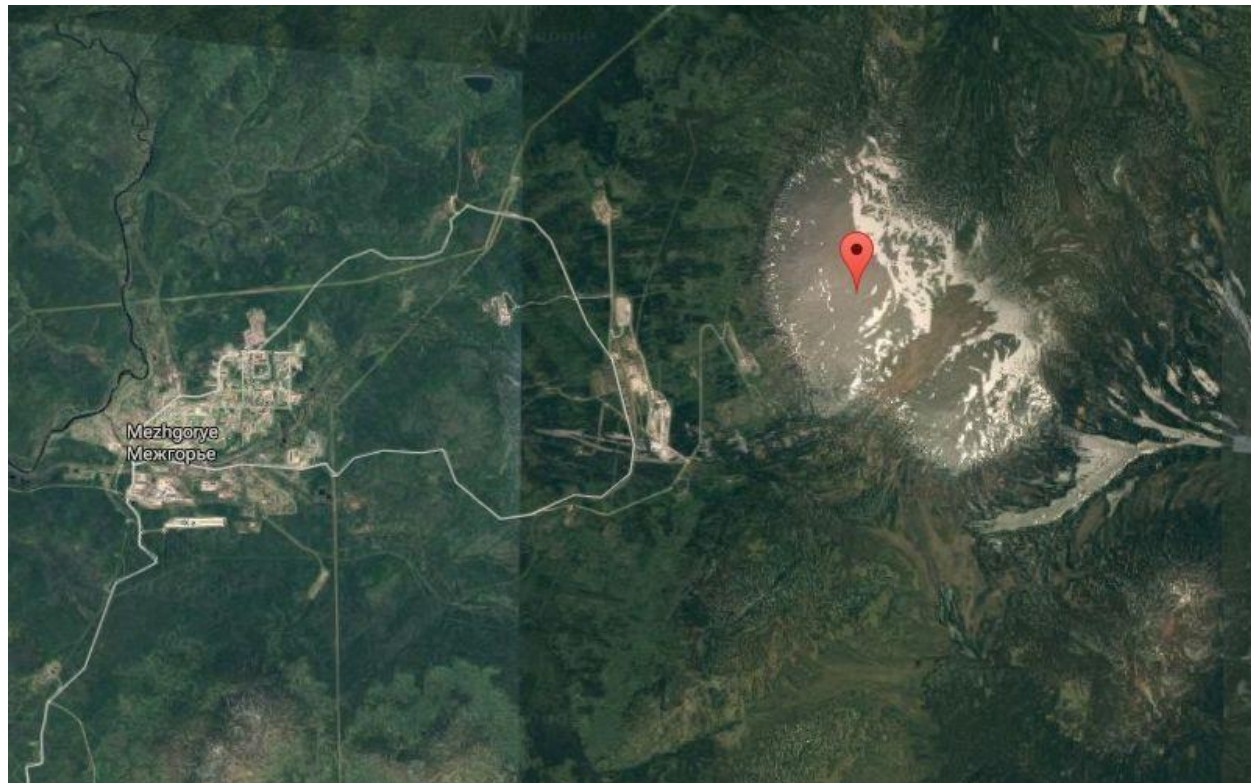

Figure 1, Google Earth Image of Yamantau Mountain

[31] Michael Snyder "Russia has constructed massive underground shelters in anticipation of nuclear war", 25 March 2015
[32] Introduction : "Underground Facilities: Intelligence and Targeting Issues", By Jeffrey T. Richelson
[33] Bill Gertz "Russia sharply expanding nuclear arsenal, upgrading underground facilities", 13 December 2017

This allocation of resources demonstrates Russia's commitment to have UGF near its population centers; how these may interact with civilian bunkers is to be determined, however forces entering this city will encounter this military UGF.

China Subterranean Facilities

China has also built its military UGFs to maximize use of the country's terrain. China has a natural barrier with the Yellow Sea, East China Sea, and South China Sea creating an ideal location for UGFs to provide sanctuary against attacking forces. China views their rocket forces and strategic air force as critical and has constructed UGFs to provide sanctuary from attack on these forces.

A recent report from India provides an idea of what one of the rocket force missile launch facilities looks like. Construction at one such location for which construction began fewer than 5 years ago, which allegedly has the potential to hold a brigade-size ballistic missile formation.[34] The image, viewable at the link above, shows two UGFs that most likely would be for a mobile ICBM system. Additionally, looking at this rocket force's garrison, the argument could be made that the UGFs are a critical capability. Any attacking force would have both surface and subsurface engagements as any soldiers above ground would protect the UGFs.

China has also exported their technologies and started building an underground bunker in Djibouti, accomplishing both force projection and sanctuary for their personnel. "A portion of the underground part of the base likely includes hardened bunker areas for a command post and other sensitive operations spaces."[35] This type of base provides China's military a strategic advantage in the region, and also demonstrates their intent of having a long-term base. It remains important to monitor any further construction by China in the future to shape the picture of where China spends its resources on these expensive facilities, and its potential motives.

The use of the subterranean environment in warfare has existed for centuries and always provided the defense a military advantage over the attacking force. With the continued planning, dedication of resources, and construction of military purpose Underground Facilities in both Russia and China to maximize the terrain and provide sanctuary for their capabilities, the subterranean environment will be a factor in any future conflict. During any large scale combat operation, if the attacking force has not planned and prepared for operations in the subterranean environment the military advantage would stay with the defender and create more complexities for the attackers. The US Army ATP 3-21.51, Subterranean Operations provides a foundation for units that are planning on training for the Subterranean Environment. Future commanders need to understand the complexity future conflicts will present in managing both surface and subsurface engagements, potentially at the same time.

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[35] Joseph Trevithick, 2017 "China's Base in the Horn of African has a Huge Underground Bunker"

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Images

1. Image of Yamantau Mountain
https://www.google.com/maps/place/Mount+Yamantau/@54.2553576,58.0081058,21866m/data=!3m1!1e3!4m5!3m4!1s0x43da11ec259ad429:0xb1a93bfd75ecbd70!8m2!3d54.255!4d58.102

Article 8
Worldwide Equipment Guide (WEG): Providing Deeper Insights into Russia's Arctic Capabilities
by Stuart Curtis and James (Jamie) Stevenson

25 April, 2020 – Training at Franz Josef Land Russian-Arctic archipelago, Russian paratroopers testing new equipment developed for extreme cold weather operations. Image distributed by Russian Ministry of Defense.

Image URL: https://www.cbc.ca/news/politics/russian-arctic-training-1.5563691

TRADOC G-2 continually updates content for the Worldwide Equipment Guide (WEG). Over the last year, based on continuing community interest in the Arctic and the publication of the Army's January 2021 Arctic Strategy, WEG content analysts have updated a wide range of assets to better account for Russia's Arctic-capable military equipment. Previous updates were highlighted in the October-December 2019 edition of Red Diamond.

In Spring 2021, DoD once again identified Russia as an advanced threat that poses a persistent challenge to U.S. national security.[36] Russia's formidable, sustained military presence in the Arctic exacerbates this challenge. Russia views itself as the natural leader in the Arctic for several reasons. Roughly one-third of the country lies above the Arctic Circle.[37] More than half of the inhabitants of the Arctic and more than half of the Arctic landmass are Russian. Also, the Arctic represents the shortest route to North America, so much of Russia's strategic deterrent is based in the Arctic. This region provides the Russian economy with large amounts of hydrocarbon resources and, during the summer months, provides a sea line of communication between Russia's easternmost and westernmost territories. Russian military improvements that

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[36] Lloyd J. Austin III, United States Secretary of Defense, Memorandum for All Department of Defense Employees, Message to the Force, 4 March 2021. Address Advanced Threats, Extract: "… we will ensure that we remain fully ready to respond to and effectively deter nation-state threats emanating from Russia…."

[37] Nicolay Laverov, Russia – Volume 1, Area Studies, Regional Sustainable Development Review, 2009

enable Arctic influence and control and secure long-term strategic interests are not surprising.[38]

Russia's presence and operations in the Arctic are managed primarily by its Northern Military District, formerly known as the Northern Fleet Joint Strategic Command, which serves as both a military district and an operational strategic command.[39] Highlights of the Northern Military District's activities in the Arctic area of responsibility (AOR) include deploying ground and air mobility systems, increasing its combat aircraft presence, improving coastal missile defenses, sustaining sea combat patrols and exercises, conducting combined arms training, and refining electronic warfare capabilities. With these Russian activities in mind, the additions and updates to the WEG provide a linkage between Russian activities in the Arctic region and the relevant systems and platforms in use.

Russian Military Posture in the Arctic

Russian military priorities in the Arctic include strategic deterrence, employing conventional power in the Barents Sea region, and securing Russia's Arctic sea lanes. Forces assigned to the Northern Military District include air defense division in Severomorsk and an Arctic Air Squadron with fighter-bombers. The Northern Fleet includes Russia's only aircraft carrier and nuclear cruiser, seven ballistic missile submarines, and dozens of submarine, naval aviation, and surface assets. Ground forces include two Army Arctic motorized rifle brigades and a Naval Infantry brigade in addition to support formations. These are the forces who operate much of the equipment below. If needed, Arctic-based forces can draw upon three Guards airborne/air assault divisions that are based south of the Arctic Circle but have reinforcement of the Arctic forces as an assigned mission. These units will not have as much purpose-built equipment as the Arctic units do, but they do train in the Arctic, including the high Arctic, regularly. Other Russian forces rotate periodically to high latitudes for training exercises.

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[38] Roger McDermott, Russia's Northern Fleet Upgraded to Military District Status, Eurasia Daily Monitor, The Jamestown Foundation, January 6, 2021, https://jamestown.org/program/russias-northern-fleet-upgraded-to-military-district-status/

[39] Andrew S. Bowen, Russian Armed Forces: Capabilities, IN FOCUS, June 30, 2020, Congressional ResearchService https://crsreports.congress.gov/product/pdf/IF/IF11589

RUSSIAN MILITARY BASES IN THE ARCTIC

Murmansk Area

Arctic Ground Mobility

Citing a good characterization of known mobility challenges, the Arctic comprises vast swampy tundra, mountains, rivers, large quantities of boulders, and limited roads which complicate mobility and maneuver.[40] In spite of those conditions, Russia continues improvements to airborne forces and amphibious capabilities by giving priority to deployments and upgrades for its Arctic security operations capability, which supports the Northern Sea Route and other Arctic areas of interest.[41] Of course, terrain and weather considerations cannot be inflated when

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[40] Dr. Lester W. Grau, A Cold, Soggy, Boggy, Slog: Ground Forces in Higher Latitude Combat, Infantry Magazine, April-July 2016, https://www.benning.army.mil/infantry/magazine/issues/2016/APR-JUL/pdf/2)%20Grau_Slog.pdf

[41] Clifton B. Parker, Russia's Arctic Military Build-up Explained, Freeman Spogli Institute for International Studies, Stanford University, https://fsi.stanford.edu/news/russias-arctic-military-build

planning for Arctic operations and the equipment necessary to ensure unimpeded mobility. Given these ongoing activities, the following platforms are addressed to highlight unique ground mobility vehicles and cold-weather airlift transport.

The Vityaz DT-30PM Amphibious All-Terrain Tracked Carrier is capable of nearshore offload from an amphibious landing ship, and can negotiate waterways in severe ice conditions. This carrier proved effective as a troop and cargo carrier and as a weapons system platform during Vostok-2018, which was an exercise that included soldiers and equipment from Russia's Arctic Brigade.[42] The DT-30PM is an excellent recovery vehicle and has a high "pull" ratio, approaching an immobilized vehicle from multiple directions. In addition, these transporters are effective for search and rescue teams operating in extreme conditionsand feature a fully-enclosed forward-control cab that provides seating for a driver and four passengers.

Vityaz DT-30PM Amphibious All-Terrain Tracked Carrier Source: Worldwide Equipment Guide (WEG) https://odin.tradoc.army.mil/Search/WEG/Vityaz%20DT-30PM

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[42] Atle Staalesen, A large-scale Russian military exercise is coming to the Arctic, The Barent's Observer, https://thebarentsobserver.com/en/security/2018/12/large-scale-russian-military-exercise-coming-arctic

Charborz M3 Russian Arctic Buggy
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/Search/WEG/charborz

Entering field testing and limited service in 2018, the **Charborz M3 Arctic Buggy** variant is expected to improve mobility across ice and snow as recently demonstrated in Russian Special Forces training. This buggy is armed with a top-mounted machine gun, allows for additional troop capacity, and can tow light infantry on sleds. During testing, Russian news outlets provided ample data on the reported success of this vehicle as a highly mobile carrier to support either Special Forces missions or conventional platoon- and company-size infantry tactics.[43]

Arctic Air Capability

Russian demonstrations of aircraft capabilities during Arctic operations and exercises show that Russia's arctic air presence represents a formidable capability. Press releases on high interest "scrambled" combat aircraft from deployed squadrons offer updated performance and capability data on a competitive mix of interceptors, bombers, and multirole aircraft, all supported by an assortment of C4ISR and sustainment platforms. This information, in part, informs WEG analysis. These aircraft are launched from air bases in northern Russia, the Rogachovo airfield on Yuvhny Island separating the Barents and Kara Seas, and airfields on remote archipelagos in the Arctic Ocean.

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[43] Nikolai Litovkin, Russia has developed a versatile new buggy for its special forces, Russia Beyond, 22 May 2019, https://www.rbth.com/science-and-tech/330389-new-russian-buggies-for-army

Newer to the WEG is the **Tu-160 "Blackjack"** which is a supersonic, variable-geometry bomber similar to the USAF B-1 bomber.

The "Blackjack" is a competitive system with recent activity involving polar air combat exercises and air-refueling training over the East Siberian Sea. Also, recently completed aircraft modernization upgrades for the "Blackjack" include low observable coatings, engine power and efficiency improvements, increased operational range, new avionics, improved cockpit, and new communications.

Tu-160 (Blackjack) Russian Strategic Bomber
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/Search/WEG/Tu-160

Also available in the WEG is the **MiG- 31BM "Foxhound,"** which is a highly competitive system fielded in units rotating to the southern island of the Novaya Zemlya archipelago. Originally designed as a supersonic interceptor, the "Foxhound" is assessed as one of the fastest jets in the world. In addition, the MiG-31K variant is modified to carry a nuclear-capable, air-launched ballistic missile. This strategic capability presents political and military considerations to what could potentially be a fourth dimension to Russia's nuclear deterrence framework.[44] These combat aircraft represent a Russian air capability that is active over the Arctic skies.

MiG-31 Russian Interceptor/Attack Aircraft
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/Search/WEG/Mig

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[44] Cynthia Roberts, Revelations about Russia's Nuclear Deterrence Policy, War On The Rocks, 19 June 2020, https://warontherocks.com/2020/06/revelations-about-russias-nuclear-deterrence-policy/

Northern Sea Route (NSR) Coastal Defense

Russia's military activities in the Arctic also include extensive investments into missile defense systems.[45] With emphasis on complex coastal defense systems defending the NSR, these systems are components of its Arctic anti-access/area denial (A2/AD) bubble, which allows Russia to better defend its territory and deny aerial, maritime, or land access.[46] Deployed to defend NSR sea approaches are **SS-N-26 "Strobile"** anti-ship cruise missile systems which entered Russian service in 2010. Recent "Strobile" configurations include the Bastion-P launch system featuring the

SS-N-26 (Strobile) Russian Anti-Ship Cruise Missile
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/Search/WEG/strobile

Belarusian MZKT-7930 special wheeled chassis which has excellent mobility in rough Arctic terrain. Many SS-N-26 Bastion-P batteries have been deployed over the last four years to support Barents Sea exercises, and this anti-ship missile system is one of several key coastal defense capabilities for Russia's Northern Fleet.[47]

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[45] Pavel Devyatkin, Russia's Arctic Strategy: Military and Security (Part II), The Arctic Institute, 13 February 2018, https://www.thearcticinstitute.org/russias-arctic-military-and-security-part-two/

[46] Mathew Melino and Heather A. Conley, The Ice Curtain: Russia's Arctic Military Presence, Center for Strategic and International Studies (CSIS), https://www.csis.org/features/ice-curtain-russias-arctic-military-presence

[47] Trude Pettersen, Northern Fleet gets Bastion mobile coastal missile, The Barents Observer, 25 February 2016, https://thebarentsobserver.com/en/security/2016/02/northern-fleet-gets-bastion-mobile-coastal-missile-systems

S-400 Triumph Russian Long-Range Surface-to-air Missile System
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/WEG/Asset/S-400_Triumph_(SA-21_Growler)_Russian_Long-Range_Surface-to-air_Missile_System

Defending NSR air approaches **are S-400 high to medium air defense (HIMAD) systems**. The S-400 is anupdated WEG entry; it has proven to be quite complicated to operate and deploy over a wide coverage area. It is known that S-400 regiments require the integration of airborne early warning aircraft, and given the expanse of Arctic coverage areas, an economy-of-force application of aircraft is not possible. Essentially, a sizable number of aircraft are required to detect any forward tracking information within the S-400 air defense network.[48]

Other S-400 operational vulnerabilities to consider relate to typical areas of sustainment and communications. First, there are significant fuel and maintenance expenses required to operate a large number of airborne early warning aircraft to support effective S-400 operations. Also, there is a requirement for air defense aircraft to be launched or be "on alert," and deployment arrays require separate short-range air defense systems positioned in defense of widely dispersed S-400 battery locations. These factors increase sustainment demands and require a high reliance on air-interface networking, all of which is complicated, susceptible to error, and extremely expensive. Given the high number of deployments combined with great logistical and operational expense, these two coastal defense systems represent, in part, Russia's increased investments to restrict access and promote interdiction capabilities in both the Arctic maritime and air domains.[49] A variety of other coastal defense assets that enable Russia's defense of the NSR and sustain its Arctic A2/AD effort are found in the WEG.

Navigation and Reconnaissance

Forecasting and route planning information are essential to NSR sea navigation, and Russia has continued its efforts to maintain information about weather, ice, sea-state through the use of satellites, shipboard helicopters, fixed-wing aircraft, shore-based and drifting ice stations, and drifting buoys. Over the last 70 years, Russia emplaced thousands of navigation markers, light buoys, light beacons, radar reflectors, and radar beacon responders

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[48] Peter A. Wilson and John V. Parachini, Russian S-400 Surface-to-Air Missile System: Is It Worth the StickerPrice?, The Rand Blog, 6 May 2020, https://www.rand.org/blog/2020/05/russian-s-400-surface-to-air-missile- system-is-it-worth.html

[49] Mathew Melino and Heather A. Conley, The Ice Curtain: Russia's Arctic Military Presence, Center for Strategicand International Studies (CSIS), https://www.csis.org/features/ice-curtain-russias-arctic-military-presence

throughout the Arctic.[50] Also, civilian security coordination between Russian search and rescue (SAR) centers and information collection and intelligence sharing activities during joint military exercises in the Arctic underscore the impressive level in maintaining situational awareness and a common operating picture of the Arctic.[51] [52]

Ironically, with all the Russian investment in resources to improve navigation along the NSR and during Arctic exploration, there is still a deficit of radio navigation infrastructure to service the vast expanse of the Arctic seas. Found onboard Russian military and commercial vessels is the **Kvitok 3IA Russian radio navigation receiver**, which is the receiving component for wide area radio navigation networks along the NSR that connect the eastern and western passages. The 3IA receiver is used to integrate into several navigation networks such as the Chayka (Russia's version of Loran) network chains in the Barents and Kara Seas. Of note, radio navigation receivers are considered a reliable navigation solution to infrequent and intermittent satellite-based geolocation anomalies, which is a topic of ongoing research by international navigation and timing experts.[53]

In addition, legacy global navigation satellite system (GLONASS) geolocation devices can sometimes lose their exact position, in part, to high Arctic atmosphere interference, also described as high latitude ionosphere irregularities.[54] [55] While, in contrast, there is a favorable performance consideration in terms of accuracy based on higher orbits and increased availability of GLONASS

NPI-2 Personal Navigation Receiver
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/WEG/Asset/NPI-2_Russian_Personal_Navigation_Receiver

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[50] The Northern Sea Route, Its Development and Evolving State of Operations in the 1990s; Nathan D. Mulherin, Cold Regions Research & Engineering Laboratory, U.S. Army Corps of Engineers (April, 1996), page 38

[51] Pavel Devyatkin, Russia's Arctic Strategy: Military and Security (Part II), The Arctic Institute, 13 February 2018, https://www.thearcticinstitute.org/russias-arctic-military-and-security-part-two/

[52] Luc Rainville, Jeremy Wilkinson, Mary Ellen J. Durley, Scott Harper, Julia DiLeo, Martin J. Doble, Andrew Fleming, David Forcucci, Hans Graber, John T. Hargrove, John Haverlack, Nick Hughes, Brett Hembrough, Martin O.Jeffries, Craig M. Lee, Brendon Mendenhall, David McCormmick, Sofia Montalvo, Adam Stenseth, Geoffrey B. Shilling, Harper L. Simmons, James E. Toomey IV and John Woods, Improving Situational Awareness in the Arctic Ocean,Frontiers in Marine Science, 25 November 2020, https://www.frontiersin.org/articles/10.3389/fmars.2020.581139/full

[53] Navigation and Timing Foundation, https://rntfnd.org/2017/08/09/gps-problems-in-russia-try-chayka/

[54] Russian GNSS Devices, Page 7, https://www.unoosa.org/documents/pdf/psa/activities/2015/RussiaGNSS/Presentations/52.pdf

[55] Ionosphere Irregularities, https://earth-planets-space.springeropen.com/articles/10.1186/s40623-016-0506-1

spacecraft.[56] Also improving both sea and ground geolocation capabilities in the Arctic, Russian modernization of its GLONASS constellation includes adjustments to spacecraft orbits and upgrading downlink signal protocol.[57] A popular GLONASS receiver used by Russia's Arctic ground forces is the NPI-2 wearable GLONASS receiver, which is assessed to be increasingly comparable to U.S. military GPS receivers such as the Defense Advanced GPS Receiver (DAGR), which has an excellent track record of providing effective navigation assistance to support operations.[58]

Ilya Muromets Class Russian Icebreaker
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/Search/WEG/Ilya%20Muromet

The NSR is considered navigable year- round from Murmansk to the river seaport of Dudinka, with the risk of large sea ice masses going out to sea. Despite sea ice melt observations from climate change studies, the physical aspects of navigating the NSR remain a significant issue in certain areas. From Novosibirskiy Islands (aka New SiberianIslands) to Wrangel Island, navigation is through first and multi-year sea ice with icebreaker assistance; usually two icebreakers accompanying a small convoy of vessels. One such icebreaker is the **Ilya Muromets-Class Russian Icebreaker**, which is in service in the Northern Fleet and routinely escorts combat and support ships along the northwestern coast of Siberia. Commissioned in 2017, this is the first icebreaker built for the Russian Navy in almost 40 years. Also, it is the largest icebreaker ever built for the Russian Navy and can carryup to 50 combat-equipped marines.

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[56] Anton Lavrov, Russia's GLONASS Satellite Constellation, Moscow Defense Brief Magazine, 14 September 2017,https://bmpd.livejournal.com/2845443.html

[57] GLONASS Satellites and Signals, GPS and GNSS for Geospatial Professionals, Department of Geography, Penn State University, https://www.e-education.psu.edu/geog862/node/1874

[58] Defense Advanced GPS Receive (DAGR), https://www.baesystems.com/en-us/product/defense-advanced-gps-receiver

Assisting with ice reconnaissance missions, the **An-24LR aircraft** features a side-looking airborne radar (SLAR) which enables ice reconnaissance, ice-breaker guiding and route reconnaissance for both military and commercial vessels. The SLAR payload is configured inside detachable pods and typically affixed under the wing. The LR model is a variant to the highly reliable **An-24 "Coke" transport aircraft**, and is considered a valuable component supporting NSR navigation.

An-24 (Coke) Russian Transport/Passenger Aircraft
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/Search/WEG/AN-24

Combined Arms Equipment

Russian tactics in the Arctic are tailored to account for weather and terrain effects. To the extent possible, ground forces will maneuver using speed, surprise, and integrated combined arms to disrupt and overwhelm the enemy. With an emphasis on counter-reconnaissance and target acquisition, an effective combat vehicle in use is the **BTR-82A armored personnel carrier (APC)**, which is an amphibious system that can quickly maneuver in Arctic terrain. It is fitted with a climate control system designed to ensure the stable operation of the vehicle's sights and mission systems in the extreme cold of the Arctic.

BTR-82A Russian 8x8 Amphibious Armored Personnel Carrier
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/WEG/List/Infantry_Vehicles&Armored_Personnel_Carriers_(APCs)&Amphibious_Armored_Personnel_Carrier_(APC)&Russia_(RUS)&PRO_Azerbaijan&PRO_Bangladesh&PRO_CFE_Treaty&PRO_Hungary&PRO_Russian_Federation&PRO_Syria&Land

The APC also features an improved transmission and is powered by a diesel engine that is engineered to start quickly when cold. Another key combat vehicle is the amphibious **MT-LBu "Toros" tracked personnel carrier**. The "Toros" is an Arctic-adapted vehicle used for carrying personnel and equipment in support of maneuvering forces, and can also serve as command and control vehicle. In addition to deep cold, this vehicle can operate in rugged, high latitude terrain. Russia maintains one of the world's largest main battle tank (MBT) inventories.

Adding firepower to these tactics is the **T-80BVM MBT**, designed specifically for use in the Arctic and fielded primarily to coastal defense units in Russia's northern territories, with many observed in Northern Military District garrisons.[59] [60] As with most modern Russian MBTs, this tank features a 125mm smooth bore main gun with a typical basic load that includes high explosive, anti-tank

T-80 BVM Russian Main Battle Tank Source: Worldwide Equipment Guide (WEG) https://odin.tradoc.army.mil/Search/WEG/bvm

(HEAT) and armor-piercing, fin-stabilized discarding sabot (APFSDS) ammunition. The gas-turbine engine is thought to provide a significant advantage in Arctic conditions as it can start relatively quickly compared to a standard diesel; the turbine engine allows the tank to start in under one minute compared to forty-five minutes with an unheated diesel engine. These combat platforms work, in part, to find and fix the enemy and create conditions for the employment of artillery to quickly destroy enemy formations. Recent training for Northern Military District artillery units reveals typical indirect fire systems that would likely be used to service such targeted formations.[61]

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[59] Alexander Mladenov and Krassimer Grozef, Red Strom Rising: Russian Tank Modernization, Land Warfare International, October/November 2018, Volume 9, Number 5

[60] New more powerful tanks roll into Northern Fleet garrisons https://www.thebarentsobserver.com/en/security/2019/02/new-more-powerful-tank-rolls-northern-fleet-garrisons

[61] Over 1,000 Northern Fleet artillery troops to hold firings in Russian Arctic drills, TASS, Russian News Agency, 4August 2020, https://tass.com/defense/1185719

A mainstay indirect fire system familiar to the force is the **2S1 "Gvozdika"** Arctic variant, a 122mm self-propelled howitzer which is a legacy system that has proven to be an integral artillery weapon. While the design is old and its 122mm gun lacks the range of modern howitzers, it can still be effectively used in combined arms operations. One can find this self-propelled howitzer in one of the high-mobility Arctic brigades of the Northern Military District's 14th Army Corps.

According to a recent military posture review, the 80th Separate Motorized Rifle Brigade (MRB) is described as a

2S1 (Gvozdika) Russian 122mm Self-Propelled Howitzer
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/WEG/Asset/2S1_(Gvozdika)_Russian_122mm_Amphibious_Self-Propelled_Howitzer_(SPH)

high-mobility force specifically tailored to operate in Arctic conditions, and the organic artillery fielded in the brigade is the **2S1**.[62] The 2S1 is mounted on a modified MT-LB chassis which has wider tracks that increase mobility in rugged terrain, and crew compartment heaters to keep gun crews warm. Its reliability as an old performer for Russian ground forces is balanced by a few vulnerabilities, as it reportedly takes about twenty minutes to prepare for amphibious operations, and additionally, due to its weight, the vehicle can only carry 30 rounds while in the water.[63] These combat systems represent a portion of the assets Russian ground forces can move and synchronize to find, fix, and finish enemy forces in the Arctic.

Electronic Capabilities

Accounting for electronic warfare (EW) lessons learned from previous military operations in Ukraine and Syria, Russia has considerable data that informs future operations and modernization on the EW front.[64] [65] In addition, EW experts worldwide increasingly believed that Russia had taken a huge leap forward in its EW capabilities, but the current Russian invasion of Ukraine may reshape that conclusion. As one might expect, Russia's EW capabilities in the Arctic include a typical mix for a named advanced threat, and examples of these technologies include: cellular communications jamming, GPS location spoofing, satellite jamming, and disrupting early warning aircraft.[66]

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[62] Mathieu Boulegue, Arctic Force Structure, Russia's Military Posture in the Arctic, Chatham House, 28 June 2019https://www.chathamhouse.org/2019/06/russias-military-posture-arctic/4-arctic-force-structure

[63] Peter Suciu, In the 1960s the Soviet Union Developed an Amphibious Howitzer, 6 June 2021, https://nationalinterest.org/blog/reboot/1960s-soviet-union-developed-amphibious-howitzer-186985

[64] OSCE Special Monitoring to Ukraine (SMM), 10 AUG 2018, https://www.osce.org/special-monitoring-mission-to-ukraine/390236

[65] Madison Creery, The Russian Edge in Electronic Warfare, Georgetown Security Studies Review, 26 June 2019, https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/

[66] Roger McDermott, Russia's Electronic Warfare Capability: Training and Procurement, Eurasia Daily Monitor Volume: 15 Issue: 76, https://jamestown.org/program/russias-electronic-warfare-capability-training-and-procurement/

These are high priority activities for Russia to sustain in the "High North" given the creation of an electronic warfare center under the command of the Northern Military District.[67] In late 2020, the Northern Military District Center for Radio-Electronic Warfare conducted a field test of resources from its Murmansk battalion, deploying collection and jamming systems at test ranges on the Kola peninsula.[68]

One of these systems, the **Krasukha** family of EW systems. Featured is the IRL257E Krasukha-4 electronicwarfare system, which is a competitive tier 2 system. The Krasuha-4 is a broadband multi- functional jamming system designed to target low earth orbit satellite signals, ground-based radars, airborne surveillance radars, and radar-guided weapons. It is also suspected of being able to damage internal electronic components on targeted radar, EW, and communications systems.

1RL257E Krasukha-4 Russian Mobile Multifunctional Jammer
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/Search/WEG/krasukha

Complementing Krasukha coverage is the **RB-341V Leer-3 EW system**. It is one of Russia's newest drone-based EW systems. The Leer-3 combines jammers and several Orlan-10 unmanned aerial vehicles (UAV) to manipulate, exploit, and disable cellular networks. An example of exploitation is the system's purported ability to enable spoofing actions on mobile network subscribers. The Leer-3 is also reportedly capable of blocking specific mobile devices impeding other non-targeted devices.

WEG Analysis Supports Understanding Arctic Capabilities

To gain a better understanding of Russia's Arctic proficiency, the WEG is a great reference to find information about the systems and platforms that enable Russian military forces to operate in the

Leer-3 Russian Drone-Based EW System
Source: Worldwide Equipment Guide (WEG)
https://odin.tradoc.army.mil/Search/WEG/leer-3

Arctic. Russia's military forces are inextricably linked to the Arctic, which makes gaining

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[67] https://www.russiamatters.org/analysis/military-assets-arctic-russia-west-correlation-forces

[68] Thomas Nilsen, Russia exercises long-range radio-electronic warfare on Kola, The Barents Observer, November 04, 2020, https://thebarentsobserver.com/en//security/2020/11/russia-exercises-long-range-strategic-radio-jamming-kola

deeper insights into Russian Arctic-capable systems an important facet of understanding the operational environment. Long standing investment in Arctic development and military capability continues to enable Russian military forces to operate and sustain themselves for extended periods of time, year-round, in isolated locations in the Arctic. Russia continues to demonstrate a high priority on Arctic military operations and presumably challenges any nation with Arctic interests. As a foundational research tool for training, WEG users are encouraged to view the recent addition and updates to the WEG help to provide a greater understanding about Russian activities in the Arctic region.

DID YOU KNOW? The WEG is now viewable on mobile devices.

WEG "Russia" Search query on iPhone 6 (375 x 667 px)
URL: https://odin.tradoc.army.mil/WEG