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PLA in the Arctic: under the ice?

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KEY TAKEAWAYS

- The Arctic presence of the PLA has evolved alongside Russia's power projection and strategic needs, as the PLA enhances its own capabilities in the region.
- China is advancing its technologies and combat capabilities for the Arctic's conditions, ensuring its ability to operate independently and alongside Russian forces. A main concern is the development of its nuclear capabilities and ICBM responses in the Arctic environment.
- The civil-military connection is evident and should be carefully considered when commercial enterprises are introduced in the Arctic.
- Natural resources play a pivotal role in the growing Chinese presence in the Arctic. Investments in LNG and minerals are closely linked to PLA operations.
- Technological developments for Arctic conditions are progressing rapidly, influencing not only regional security but also broader geopolitical dynamics.

Keywords

Peoples Liberation Army (PLAN)

Arctic

China-Russia

Polar Region

Northern Sea Route (NSR)

ICBM

Civil-Military Fusion (CMF)

Dual-use

Intelligence

Introduction

The People's Liberation Army (PLA)'s Arctic ambitions represent a significant expansion of Chinese military capabilities into polar regions, with interconnected aspects worth examining in detail. Turning the PLA into a "White Dragon" is a consequence of China's *Arctic policy*. Just in 2024 China steadily expanded its military influence in the Arctic region through a series of military drills, natural resource extraction ventures, polar research, fishing operations, and what has been seen among the Arctic states as staging *provocative events*. It is not only the growing Chinese presence in numerical terms but, more crucially, the depth of its presence and the Russian connection that is concerning. This paper primarily looks into the impact of PLA activities, but it is hard not to include dual-use operations.

The pattern of Sino-Russian military exercises in the Arctic has evolved significantly, starting with limited observer status for Chinese forces in Russian Arctic exercises and moving towards more integrated joint operations. The initial phase began with Chinese observers at Russian Northern Fleet exercises in the mid-2010s. This evolved into more direct participation, though initially limited to non-Arctic components of larger Russian exercises. A significant milestone was Chinese participation in *Vostok-2018*, which included elements in the Bering Sea and demonstrated the PLA's growing comfort with cold-weather operations. Joint naval exercises have progressively moved northward in the Arctic. The *2021 "Joint Sea" exercise* included elements in the Sea of Japan with cold weather components, and *by 2023, joint exercises* included specific Arctic scenarios, particularly focusing on escort operations along the Northern Sea Route and submarine-related activities that will enable China to operate under the ice-cap and ensure the Chinese Strategic Forces a nuclear second strike capability, intelligence gathering as well as challenging NATO presence.

More Bang for the Buck?

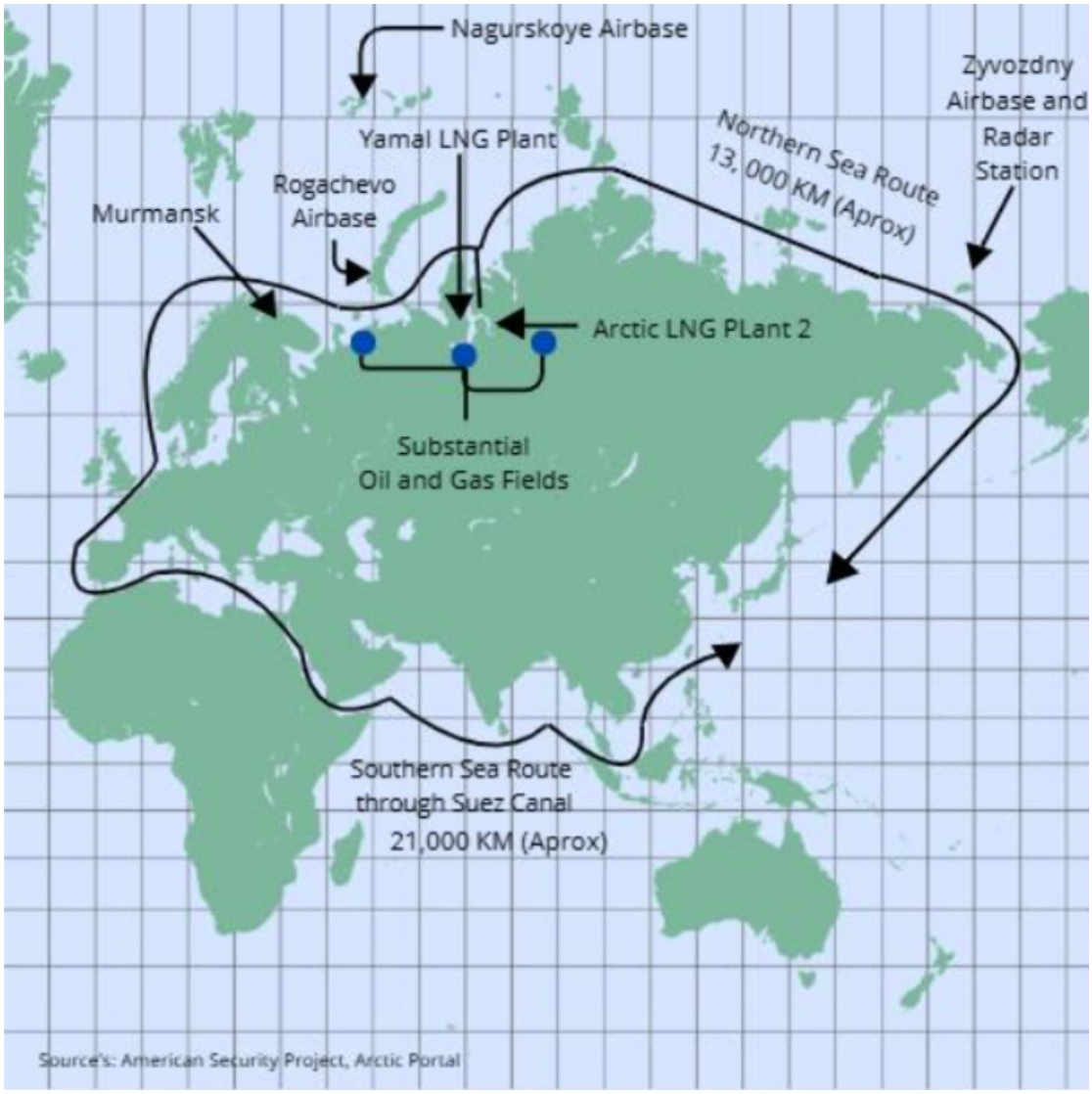
In terms of naval capabilities, the PLA Navy has made substantial investments in developing submarines and surface vessels that can operate in Arctic conditions. The type *095 nuclear submarine* is particularly important, as these vessels are specifically designed with under-ice operations in mind. This represents a major shift in Chinese submarine doctrine and capabilities, potentially allowing for deterrent patrols or intelligence gathering under Arctic ice and to ensure a second-strike nuclear capability for China. The PLAN has also been quietly upgrading its surface combatant fleet with ice-strengthened hulls and cold-weather systems while simultaneously developing civilian-military dual-use vessels, ranging from research vessels to "commercial" fishing vessels, that could provide logistics support in Arctic waters.

Militarily, in coordination with the Russian Federation, China has been able to expand its footprint into the Arctic region. In July 2024, Russia and China flew four strategic bombers over the Chukchi Sea and Bering Sea. It was the first time that these planes took off jointly from a Northern Russian air base and was also the first time that a *Chinese bomber* flew into the Alaskan Air Defense Identification Zone. In late September 2024, Russia and China ran their first joint coast guard patrol. China and Russia also conducted the large *North Joint 2024* military drill. These drills have focused on protecting Pacific and Arctic Sea routes from potential US attempts to block them. This consisted of two phases of training, anti-submarine measures and aerial defense. President Putin declared that it was the *largest military drill* of its kind in over thirty years. These exercises reflect a broader strategic alignment between China and Russia in the Arctic, though with clear Russian primacy in terms of experience and capabilities. The progression suggests a systematic approach to building Chinese Arctic military capabilities under Russian tutelage while strengthening regional joint operational capabilities. They also demonstrate joint Sino-Russian resolve regarding Arctic interests, particularly concerning the Northern Sea Route and resource development. This has implications for other Arctic stakeholders and suggests a long-term commitment to military cooperation in the region. The challenge is not least present for the EU and the Nordics when the US has seemed to distance itself from Europeand democratic states, in orderto align itself more with Russia and authoritarian states, at least in the White House. This bilateral cooperation has been essential for China to develop its own capability to operate independently, and even if the major concern put to date has been the Sino-Russian connection, the PLAN operations will increasingly have to be viewed from its own ability and operational capacity.

In regards to naval operations, there has been a focus on escorting merchant vessels through ice, under-ice, submarine operations, and anti-submarine warfare in *Arctic conditions*. These exercises have increasingly incorporated scenarios involving protection of maritime economic assets, particularly around energy infrastructure. Ground forces have expanded cold-weather training, including Arctic warfare techniques, survival skills, and logistics in extreme conditions. Chinese troops have trained alongside Russian Arctic specialists, gaining experience in polar operations. There has also been a growing sophistication in joint air

operations in Arctic conditions, including long-range aviation exercises and aerial refueling in cold weather environments. Recent exercises have included scenarios involving the defense of Arctic installations, such as *LNG facilities* at Yamal, and ports as Sabetta.

As a result, the PLA Forces have undergone significant adaptation to Arctic operations. This includes establishing specialized units trained for cold weather operations and developing equipment specifically designed for polar conditions. These units have conducted joint exercises with Russian forces in cold weather environments, suggesting a level of preparation for potential Arctic deployments. These forces' logistics capabilities have also been enhanced, with particular attention paid to the challenges of sustaining operations in extremely cold conditions. Much of China's changed military position in the Arctic has happened in the backwater of the full-scale Russian invasion of Ukraine, and it is unclear if this has been an advantage for China or if it has slowed down the PLA's march into the Arctic.



The strategic forces dimension should be particularly concerning for European observers, especially as the partnership and trust of the US has been severely damaged. China has shown increasing interest in Arctic trajectories for its strategic weapons systems, particularly ICBMs (intercontinental ballistic missiles), as these northern routes could potentially complicate missile defense systems as well as ensure a nuclear second-strike capability. There's also evidence of Chinese investment in early warning capabilities across the Arctic region, including radar systems and satellite coverage. The PLA particularly focuses on establishing control capabilities along the *Northern Sea Route*, viewing it as a critical strategic waterway for both commercial and military purposes. Technical cooperation eases this, and the wide array of exercises has served as platforms for testing joint communications systems in Arctic conditions, sharing ice navigation techniques, and developing common procedures for emergency response in polar environments. In addition, support operations with an increased focus on logistics chains exist, including establishing and operating temporary ice bases, refueling operations, and maintenance in extreme cold conditions. This includes testing of new cold-weather equipment and joint rescue operations.

Integration of Sino-Russian Civil and Military Capabilities

The integration of Sino-Russian civilian and military capabilities along the Northern Sea Route (NSR) represents a sophisticated blend of economic and security interests. This integration manifests in several interconnected ways, and often more than symbolically civilian. The development of ports along the NSR demonstrates this civil-military fusion approach. Ports like Sabetta and Yamal have been developed primarily for LNG exports. They include military-grade radar systems, expanded berths capable of accommodating military vessels, and sophisticated surveillance systems. Chinese investment in these facilities, mainly through the Belt and Road Initiative, has included dual-use technologies and capabilities for commercial and military purposes.

The joint development of maritime domain awareness capabilities combines civilian vessel tracking for commercial purposes with military surveillance systems. Chinese-provided satellite coverage, ostensibly for commercial shipping support, integrates with Russian military surveillance networks. This includes advanced radar systems, underwater acoustic monitoring arrays, and automated identification system (AIS) *tracking networks* that serve both civilian traffic management and military intelligence purposes.

The integration of security forces shows patterns that should be concerning. Russian military units providing protection for *energy infrastructure* increasingly train alongside Chinese security personnel, particularly around critical LNG facilities. These joint protection forces operate under civilian authority but maintain military capabilities and training. Chinese security contractors at key infrastructure points coordinate with Russian military units, creating a layered security approach.

Joint emergency response capabilities have been developed that combine civilian and military resources. This includes search and rescue operations, oil spill response, and ice-breaking capabilities. Chinese and Russian forces conduct regular exercises integrating civilian vessels and aircraft with military assets, mainly focusing on scenarios involving threats to economic infrastructure. These response capabilities are not necessarily a threat to Europe, on the contrary they could serve a civilian purpose. However, the covert operations combined with Russia's invasion of Ukraine should raise concerns in Europe.

The development of communication infrastructure along the NSR demonstrates sophisticated integration. Chinese-supplied communication systems serve commercial shipping but maintain military-grade encryption and security capabilities. These networks integrate with Russian military communication systems while supporting civilian operations, something that should be a concern for Europe.

Joint research and development programs, particularly in areas like ice navigation technology and *Arctic-capable sensors*, serve both civilian and military purposes. Chinese technical expertise in areas like satellite navigation complements Russian experience in Arctic operations, creating sophisticated dual-use capabilities. The mix of civilian and military capabilities also goes into the joint training programs on the military side, which increasingly integrate civilian and military elements. Exercise often involve scenarios protecting economic assets while simultaneously testing military capabilities. These include *protection of LNG terminals*, escort of commercial vessels, and response to hybrid threats against infrastructure.

The management of shipping along the NSR demonstrates sophisticated integration of civilian and military capabilities. Chinese commercial vessels operating along the route participate in Russian military exercises, while military vessels conduct escort operations under civilian authority. This creates a flexible force structure that can rapidly transition between commercial and military operations. Commercial operations serve as platforms for *intelligence gathering*. Chinese fishing vessels and research ships operating along the NSR are equipped with sophisticated sensor systems that feed into joint military networks. This creates a comprehensive surveillance capability while maintaining civilian cover.

Planned expansions of NSR infrastructure show continued integration of civilian and military capabilities. New ports and facilities are being designed with dual-use capabilities from the outset while existing infrastructure is being upgraded to support commercial and military operations. This integrated approach presents challenges for European observers, as it becomes increasingly difficult to distinguish between civilian and military activities. The sophisticated blend of capabilities suggests a long-term strategy to develop comprehensive control over the NSR while maintaining plausible deniability regarding military intentions.

Intelligence and technology

The intelligence and technical aspects of PLA Arctic capabilities are particularly sophisticated. Chinese civilian research stations in the Arctic region have dual-use potential for signals intelligence gathering. The PLA has invested heavily in polar-specific satellite coverage and has developed *Arctic-capable unmanned aerial* and underwater vehicles. These systems are supported by enhanced polar navigation capabilities, crucial for operating in the unique conditions of high latitudes.

Force projection elements have seen significant development, though often disguised as civilian infrastructure. The PLA has been establishing polar logistics bases under civilian cover, developing Arctic-capable amphibious forces, and enhancing its ability to conduct air operations in polar conditions. Perhaps most significantly, the PLA has been developing a specialized Arctic warfare doctrine, indicating serious long-term strategic *interest in the region*.

The combination of these capabilities suggests a comprehensive approach to developing Arctic military capabilities, often concealed behind civilian and scientific activities. The PLA's approach appears to be systematic and long-term, focusing on building the hardware and expertise needed for sustained Arctic operations. This military development parallels China's broader Arctic strategy, combining economic, scientific, and military elements to pursue what Beijing sees as its polar interests.

The focus on submarine capabilities stands out from a PLAN perspective, as it represents a potential challenge to NATO's traditional dominance of the underwater Arctic environment. The development of both nuclear and conventional submarines suggests an ambition to contest this strategic space actively. This naval development is complemented by sophisticated underwater surveillance systems and anti-submarine warfare capabilities, indicating a comprehensive approach to underwater operations in the Arctic.

Money instead of weapons, or both?

China has been expanding its trade and mineral extraction influence primarily through partnerships with an isolated Russia. The Arctic LNG 2 project is a Russian gas initiative that is the second largest on the Gyada peninsula. During 2022-2023, Novatek, Russia's liquefied natural gas (LNG) producer, secured orders for gas turbines and related technology from Chinese suppliers for its Arctic LNG 2 project. It was sanctioned on November 2023 and the Chinese companies *CNPC and CNOOC pulled out*, but *Wison New Energies* withdrew its support first on June 21, 2024 and in August a fleet of Chinese cargo ships delivered the *modules 1-3* power generation equipment to the site intentionally bypassing the sanctions. Despite U.S. diplomatic efforts to curtail this cooperation, China continued supplying the *equipment until January 2025*. At that point, new sanctions enacted at the end of Biden's term effectively

suspended the deliveries.

The Chinese company MCC International Incorporation set up a partnership with Polar Lithium. Polar Lithium is a Russian joint venture between the state-owned Rosatom and Nornickel (the world's largest nickel producer). They aim to develop the *Kolmozerskoye lithium deposit* located on the Kola peninsula. In June, Rosatom and Hainan Yangpu NewNew Shipping Co. Ltd agreed to ship goods from the Port of Archangelsk to China. This was followed by a similar agreement between Rosatom and NewNew to form a joint venture that aims to operate container vessels year-round on the Northern Sea Route (NSR).

Provocative Events on Svalbard

The Yellow River Research Station, located on the Norwegian archipelago of Svalbard, celebrated its 20th anniversary. To commemorate this the Chinese travel agency, Newayer, chartered a vessel for 183 tourists. At the research base, the tourists almost all wore matching red jackets and Chinese flags, when they visited the station. A *woman in a PLA uniform* stood saluting and taking pictures with the tourists. On her arm was a PLA ground forces patch. Eight tourists on the cruise were PLA veterans, with at least one still having an ongoing, yet not active-duty role with the PLA. Concerns were raised in Norway as military actions and symbolism are forbidden on Svalbard by treaty. *The Chinese embassy denied* all wrongdoing when questioned by the Norwegian government.

Russia has been testing the waters to potentially open its own research station in the abandoned mining town, Pyramiden, located on Svalbard. The Russians have floated this station as possibly international, and thus, Russia has approached several countries, including China. China has yet to know whether it would become involved if the *Pyramiden project* were to continue.

Activities with Dual Use Possibilities

Concerns have been raised that the research China is doing in the Arctic has dual use purposes and may be used for military means. At the Yellow River Station, the Chinese Research Institute of Radio Wave Propagation (CRIRP) has two ongoing projects until 2030. CRIRP is a subsidiary company of China Electronics and Technology Group Corporations (CETC), China's largest military electronics conglomerate. An expose article in *Newsweek* has highlighted this connection and has lead to further scrutiny *from international Western actors*. In the Chukchi Sea, the *Harbin Engineering University*, which has been frequently linked to the military sector, has been researching underwater acoustics. This is especially important in the use and monitoring of submarines.

China's Arctic fishing activities remain relatively limited compared to its global fishing operations, though they serve important strategic purposes beyond commercial fishing. The

primary connection to *PLAN operations* comes through dual-use capabilities and presence operations. China currently has a small but growing number of vessels operating in Arctic waters, primarily in the Barents Sea and off Greenland. These operations are often conducted through joint ventures with Russian companies or under agreements with Greenland. The actual catch volumes remain relatively modest, though China has been actively pursuing fishing rights in newly accessible Arctic waters as ice coverage decreases.

The PLAN connection manifests in several ways. The fishing vessels often serve as platforms for maritime domain awareness, equipped with advanced sensors and communication systems that can feed into PLAN's intelligence-gathering network. These vessels help establish patterns of presence and familiarize Chinese crews with Arctic operating conditions. Some fishing vessels are specifically designed with reinforced hulls and enhanced communication capabilities that exceed normal fishing requirements, suggesting dual-use roles. It should be noted that the usage of fishing vessels *is not specific to the Arctic*, but a rather normalized PLAN behavior.

The integration with PLAN operations appears most evident in three areas:

- First, fishing vessels help establish a legitimate presence in strategic areas, particularly along the Northern Sea Route and near critical chokepoints.
- Second, they provide platforms for gathering environmental and oceanographic data useful for submarine operations.
- Third, they help develop Arctic seamanship skills and cold-weather operating experience that benefit both civilian and military operations.

The connection between fishing fleets and naval operations is particularly evident in crew *training and technology* sharing. Many fishing vessel crews receive specialized training that goes beyond normal commercial requirements, including advanced navigation in ice conditions and sophisticated communications procedures. This training appears designed to support broader maritime operations beyond purely commercial fishing.

While China's Arctic fishing activities remain relatively modest compared to its global fishing operations, their strategic value appears to outweigh their commercial importance. The fishing fleet serves as a *key component* of China's integrated approach to establishing an Arctic presence and developing operational capabilities in polar waters.

It is worth noting that unlike China's distant water fishing operations in other regions, which often involve large fleets, Arctic fishing remains selective and strategic. This suggests a focus on presence and capability development rather than maximum resource extraction. This pattern aligns with broader PLAN objectives in the Arctic region.

Europe's reactions frozen in ice?

The European response in the Arctic has been slow and often too reliant on US military and political support. However, in light of the aggressive actions of the US president against European security and the very survival of Ukraine, little speaks for transatlantic cooperation in the coming years. Europe would need to develop its own Arctic strategy independent of US interests, and limit cooperation with the US if the transatlantic tension continues, or other relevant actors, including China when it suits its interest.

In regards to China and the PLA, the EU would need to strengthen its military capacity in the region to counter combined Sino-Russian military actions. It would require a substantial increase in Arctic-ready maritime and ground troops capable of countering refined military operations and operations other than war. The cooperation with UK would be of particular military interest. With the UKs proximity to the Arctic with useful logistical hubs in the North Sea, its naval capacity, and the common concerns cooperation would increase joint military capacity. Similarly, Norway and Iceland are crucial partners for EU in its counter strategy. The Nordics, and Arctic states, already being in close cooperation with Iceland and Norway this would not only be relatively easy, but also crucial to ensure the security of all partners in the Arctic. To some extent, this would be knocking on open doors, but with the insecurity of the US intentions with Europe and Greenland, it will be essential to expand intra-European cooperation.

There needs to be a better understanding of the interplay between military and non-military operations in the Arctic and the military implications for PLA. The ongoing and future possible usage of research facilities and commercial operations for military purposes is concerning, and the EU needs to closely monitor these and decrease the possible military impact. Much of the earlier studies have focused on the US or NATO, and it is increasingly important to narrow that to an extended European security.

Europe would need to strengthen its understanding of PLA, its operational capacity, and strategic thinking, which could be directed toward European interests. That should not necessarily be negative, on the contrary Europe should explore in what areas collaboration with PLA could be in Europe's interests, and decrease the Russian threat to European security, especially with American threats to European national sovereignty in the Arctic and in Ukraine.

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