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Planning the Development of Arctic Maritime Communications in the Era of Hybrid Warfare

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Abstract. Russia's regional presence in the Arctic is the dominant goal of the country's national maritime policy and is ensured by the level of development of the Arctic communications system, while the primary significance from the standpoint of national security belongs to the maritime component of this system, including the Northern Sea Route (NSR), which has the status of a national transport artery. The importance of the Arctic among the national interests of the country is confirmed by the current Maritime Doctrine of Russia 2022 and other strategic planning documents of recent years. The development of Arctic maritime communications is planned within the current horizons up to 2030 and 2036, both in terms of ensuring cargo turnover of the NSR (as the axial framework of Arctic maritime communications) and in the context of approving capital construction activities and facilities. Besides, the subject of planning is the development of the fleet, including icebreakers and reinforced ice-class vessels, which are rightfully a symbol of Russia's Arctic maritime potential. The presence of these vessels together with military ships on the NSR and sea communications of the Arctic Ocean (AO) and the Arctic seas ensure the connectivity and integrity (both maritime and territorial) of the Arctic regional space. Therefore, the replenishment of the Arctic ice fleet in accordance with the needs of large oil and gas projects is of critical importance, especially in the era of hybrid confrontation between Russia and the countries of the "collective West", which has already acquired obvious features of a full-fledged war.
Keywords: *Arctic, sea communications, hybrid warfare, energy projects, Arctic maritime potential, nuclear icebreakers, reinforced ice-class vessels, planning*

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Introduction

The philosopher's stone of world development — a kind of "elixir of life" for everything on Earth — is the "unity and confrontation of the lords of the sea and the lords of the land" [1], which is realized by the formula "continent-vis-ocean", shown by the authors in [2, pp. 272–273]. This

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formula is based on maritime and continental geopolitical traditions [1]. At the turn of the 18th and 19th centuries, the formula "continent-vis-ocean" reflected the confrontation between the two great powers of that time — the Russian and British Empires. The rivalry between them for the possession of the island of Malta (1800) in the center of the Mediterranean Sea marked the beginning of a grand geopolitical epic known as the "Great Game".

The "Great Game" has been going on for over two hundred years — the participants in this geopolitical epic have qualitatively transformed: the Russian Empire through the Soviet Union into modern Russia, "an original state-civilization, vast Eurasian and Euro-Pacific power" [2]. The British Empire — into the so-called "collective West", the basis of which are the countries included in the collective concept of "Anglo-Saxons" [3]. These are primarily the USA and Great Britain [4].

The "ocean-vis-continent" concept is based on the unconditional survivability of both sides: both the lords of the sea and the lords of the land, which is the red line of the "Great Game" — the violation of this order by both military and non-military (hybrid) means will inevitably lead to a general collapse of the universe. On a global scale, both civilizations coexist, constantly weakening and counteracting each other's strengthening. And there is no force that can change the established order of things.

The maritime space as an object of dominance is determined by the concentration of maritime communications, mainly by the localization of logistics chains for the supply of goods.

If in the 18th century, and especially (after the opening of the Suez Canal in 1869) in the 19th century, world trade was concentrated in the Mediterranean Sea, then at the beginning and middle of the 20th century, the focus of the struggle for maritime communications for the same reason shifted to the North Atlantic [5], and then to the Indian Ocean. Thus, at the beginning of the 21st century, a world logistics highway was formed in the northern waters of the Indian Ocean, called the Southern Silk Road according to the Chinese tradition.

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[1] The maritime geopolitical tradition is based on the ideas of marinism, concentrated in the theory of Sea Power by A.-T. Mahan [3; 4] and the concept of absolute possession of the sea by F. Colomb [5]. The universal maxim of these views is the formula "power at sea decides the fate of history" and "who controls the sea, controls everything". The geopolitical tradition of the formation of continental civilization is based on the allocation of the "Heartland" (core land), that is, the continental space that is critical from the standpoint of achieving world domination. Hence the maxim (according to H. Mackinder [6-8]): "who controls the Heartland (Eurasia, as a continent), controls the world island (the continent of Eurasia), and who controls the world island, controls everything". Thus, when characterizing the position of a state on the geopolitical atlas of the modern world, the dominance of either sea power or land mass is determining factor.

[2] Concept of Foreign Policy of the Russian Federation. Decree of the President of the Russian Federation of 31.03.2023, No. 229, Art. 4. URL: http://www.kremlin.ru/events/president/news/copy/70811 (accessed 15 December 2024).

[3] Russia has been actively interacting with the Anglo-Saxons for over 300 years, since the time of Peter the Great [9, pp. 41–118].

[4] It should be emphasized that the dominance of Russia and the Anglo-Americans in the dynamics of world development was predicted long before our days, back in the mid-19th century by A. de Tocqueville, the Minister of Foreign Affairs of France [10].

[5] During this period, a new trend in maritime geopolitics emerged and developed — "Atlanticism", the maxim of which was the formula "who owns the space (who dominates) in the North Atlantic — owns the world", therefore the Battle of the Atlantic was one of the key battles of the Second World War.

Due to the existing tensions in the Red Sea and the Bab-el-Mandeb Strait, as well as, very likely, projection of these tensions to the Strait of Hormuz as Iran's response to the Syrian events of December 2024, a new hybrid confrontation has emerged in the maritime communications from the Suez Canal along the entire route of the Southern Silk Road.

Therefore, in the first half of 2025, the Polar Silk Road zone, which runs through the waters of the Arctic Ocean (AO) and the Arctic seas, seems to be the safest.

The Polar Silk Road is a wider (covering the Central Fairway of the AO) and longer (extending from the Bering Strait to the Atlantic) maritime communication route than the well-known Northern Sea Route (NSR). The unexpected growth of the geopolitical and economic situation of the NSR has led to the growing activity of the United States in the Arctic in the direction of giving international status to Arctic communications, including the NSR, while Russia adheres to the internal status of the NSR as a national transport route [11, pp. 59–67].

The importance of the Arctic in the modern world is determined by the current Maritime Doctrine of Russia [6]: recognizing our country as a great maritime power, it should be emphasized that this status is confirmed precisely in the Arctic, since the Northern Fleet with ships of the oceanic sea zone is based in this maritime region and it is there that Russia's national interests in the World Ocean are focused today.

In general, the organization of year-round commercial shipping along the NSR is complicated by a number of significant circumstances. First of all, this is the difficult ice situation during the winter navigation period, especially on the eastern shoulder from the Vilkitskiy Strait to Cape Dezhnev.

In addition, cold weather is expected starting from 2027/2028 [for more details, see 12, pp. 151–155], which will require an increase in the number of icebreakers and ice-strengthened vessels up to Arc7 class to ensure the planned increase in cargo turnover. However, the main thing is that there is essentially no transit cargo base: there is nothing and nowhere to transport.

Transit in itself is not essential for Russia. The important matter is the provision of this transit, i.e. the presence of Russian ships and vessels on the Arctic communications. Russian ships, including icebreakers and military ships, ensure the connectivity (and, consequently, the territorial integrity) of the regional Arctic space by their presence on the NSR routes. The use of the Chinese model — the transportation of Chinese cargo along the NSR is carried out by Chinese ships and crews, accompanied by Chinese icebreakers and polar pilots — presupposes at least China's interest in ensuring the safety of this route; in this case, Russia should regulate the "critical mass" of ships on the NSR routes at entry points both from the west through the Novaya Zemlya Straits or in the area of Cape Zhelaniya, and from the east through the Bering Strait.

[6] Maritime Doctrine of the Russian Federation. "On Approval of the Maritime Doctrine of the Russian Federation". Decree of the President of the Russian Federation of July 31, 2022 No. 512. URL: https://base.garant.ru/405077499/?ysclid=lmt5iq45yo296296627 (accessed 15 December 2024).

The functional dominant of Arctic communications is the provision of inter-fleet crossings, northern delivery, supply of coastal cargo and transportation of cargo for large energy, especially oil and gas, projects, which form the revenue side of the federal budget of the Russian Federation. The degree of implementation of these functions determines the level of geopolitical, economic and/or other (energy, technological, etc.) — in general, versatile (hybrid) presence of Russia within the regional space of the Arctic and is an indicator of the integrity (both territorial and maritime) and coherence (unity) of the latter.

The desire for such a hybrid presence is realized through the imperative of possession of space, in the limit — achieving positioning of world domination or global superiority not only by military, but also by other, hybrid, means.

With the decline of globalization, the geopolitical tradition of achieving global superiority, which had developed by the end of the 20th century, increasingly incorporates elements of the concept “Make America (Russia, China) Great Again” (national power) and/or regional advantage, the latter corresponds to Russia’s policy in the Arctic in relations with other Arctic countries.

In order to achieve global dominance, the United States uses any possible and accessible tools. The world hegemony of the United States has three points of support.

The first is ensuring the leading position of the dollar in global economic combinations (a tool of geo-economics), and as the current dollar since the 1970s is also a petrodollar, oil is turning into the fourth point of support of the hegemony of the United States according to the principle “who owns the oil — owns the world” (a tool of geo-energetics).

The second is the toolkit of geopolitics, ensuring a permanent presence and control over strategic sea communications and centers of localization of the main world trade routes. This is achieved through the US Navy’s aircraft carrier strike groups, which explicitly or implicitly (hybrid) ensure the global balance of power in favor of the United States, often without even using weapons, but only through a demonstration of force and flag in critical waters, accompanied by qualified information campaigns.

The third is the selection and placement of pro-American elites in critical countries and control over them by means of naval force and the petrodollar.

The phenomenon of ownership of space in the realities of the 21st century means not so much the right to buy or sell objects of ownership, as to have guaranteed access, that is, to possess the latter and have a certain priority (dominate) in the disposal, use and enjoyment of the wealth of these objects.

The confrontation in the struggle for resources and communications that provide guaranteed (to one degree or another) access to these resources and centers of localization of world trade gives rise to wars and military conflicts of varying intensity at the local, regional, continental and even global levels.

Wars coexist in a parallel reality. Politics is the art of the possible, or the "art of compromise" [7]. Somewhere, hot wars, known since time immemorial, arise, which, with reference to [15; 16], are understood as "war is a continuation of politics by other means". The peculiarities of geopolitics in the second half of the 20th century brought new constructs of "cold" and "non-cold" war. The history of the confrontation between the USA and the USSR, and then Russia in the 20th–21st centuries (from Korea in 1950–1953 to Syria today) is full of drama in creating "casus belli" in the era of "cold" and "non-cold" war. This ghost of the battles of the 20th century is the forerunner of the hybrid war, which has been manifested everywhere since the beginning of the 21st century as a new type of confrontation. This is how the main contours of hybrid warfare are formed: the opposition of the parties in the "ocean-vis-continent" formula covers not only military, but also non-military (civilian) sphere.

At the same time, the goal of a hybrid war is achieved, "when destruction of a military nature and scale is achieved using non-military (hybrid) instruments" [13, p. 40] — inflicting great damage to a probable or obvious enemy [14, pp. 506–507] from the standpoint of ensuring national security.

Today, energy, including maritime transportation of energy resources, along with technology and finance, climate and trade, culture and healthcare, as well as other instruments, is becoming an attribute of hybrid warfare.

This article is devoted to the impact of hybrid warfare elements (sanctions) on the dynamics of development of the Arctic ice fleet, consisting of icebreakers and ice-strengthened vessels, i.e. vessels of reinforced ice class.

Formation and development of the Arctic ice fleet

Along with the Polar Bear, the nuclear-powered icebreaker, capable of crossing the Arctic ice and maneuvering anywhere in the Arctic, including the North Pole, is rightly considered the symbol of the Arctic.

The first nuclear icebreaker, which marked the beginning of the modern stage of large-scale development of the Arctic, was the Lenin, built in December 1959 at the Leningrad Admiralty Association.

The creation of this icebreaker allowed developing technical and technological base for laying down in 1972 and creation for 35 years [8] of a series of six newest for that time icebreakers of the project 10520/10521 at the shipyards of the current JSC Baltiyskiy Zavod (Baltic Shipyard), which today has all the licenses required for nuclear and military shipbuilding.

The icebreakers of this project contributed to a qualitatively new format for the development of Arctic sea communications in the context of ensuring Russia's diverse presence in the Arc-

[7] Results of the year with Vladimir Putin, 19 December 2024. URL: http://www.kremlin.ru/events/president/transcripts/75909 (accessed 19 December 2024)

[8] The last (sixth) icebreaker of this series, "50 Let Pobedy", was commissioned on March 23, 2007. As of January 1, 2025, two icebreakers of Project 10521 are in operation: "50 Let Pobedy" and "Yamal" (since October 1989).

tic; thus, in August 1977, the nuclear icebreaker Arktika (in operation since 1974) became the first among surface ships to reach the North Pole in active navigation, and later other such vessels repeated this achievement, as a result of which sailing to the North Pole became a common practice for Russian icebreakers. It should be emphasized that almost all nuclear icebreakers, including the new generation vessels of Project 22220 (seven vessels to be commissioned within the current planning horizons in 2020–2030) and 10510 Lider, are Russian-built vessels. However, two nuclear-powered shallow-draft icebreakers of project 10580, Taimyr and Vaigach, stand out from this series of Russian-built nuclear-powered icebreakers. They were built in Finland at the Holström Histalahti shipyard in Helsinki, and the NPU was assembled at JSC Baltic Shipyard, with delivery to the customer in 1989 and 1990, respectively.

In the new geopolitical conditions of hybrid warfare, it is problematic for the manufacturer to carry out routine maintenance work on these vessels. For now, the service life of the propulsion machinery of these icebreakers has been extended (in 2017) until 2027 to overcome the “ice pause” when changing the generation of icebreakers from 10520 to 22220.

It should be noted that due to the delay in commissioning the last vessels of Project 22220, the operational readiness of the Taimyr and Vaigach icebreakers to overcome the ice pause will have to be ensured until 2030. There are no problems with NPU, this is JSC Baltic Shipyard.

For detailed information on the prospects of the nuclear icebreaker fleet development in the Arctic see the author’s article [2, pp. 267–284].

As for non-nuclear (steam coal and diesel-electric) icebreakers, a dangerous tendency has developed in Russian shipbuilding to build such vessels, with rare exceptions [9], abroad [10]. In the conditions of hybrid warfare, this leads to certain difficulties in the maintenance of ships by manufacturers.

[9] These are non-nuclear icebreakers "Viktor Chernomyrdin" (Project 22600 - LK-25) built by JSC "Baltic Shipyard" with completion at JSC "Admiralty Shipyards" (commissioned in November 2020). In addition, in 2008–2009, two icebreakers of Project 21900 LK-16 were commissioned at JSC "Baltic Shipyard", and three icebreakers of Project 21900M LK-16 — in 2015–2016 at Vyborg Shipyard, as well as two icebreakers of Project 21900M2 in December 2024.
However, the capacity of these icebreakers is not enough to operate all year round even in the relatively easy ice conditions of the southwest of the Kara Sea. To support the work of the Arctic Gate project in the waters of the Gulf of Ob, the Vyborg Shipyard built two icebreaking support vessels, the Aleksandr Sannikov and the Andrey Vilkitskiy, the Aker ARC 130Ar project, in June and December 2018. In addition, back in 1938–1941, four icebreakers of the I. Stalin series (since 1961 — Sibir) were built at the Leningrad and Nikolaev shipyards according to the Yermak/Krasin project (i.e. steam-powered). Later (1958), the icebreakers I. Stalin and Krasin were converted to liquid fuel, and the series of "Russian type" icebreakers ended.

[10] The first two icebreakers of the "Russian type" (steam-coal) "Ermak" and "Svyatogor" (later "Krasin") were built at the English shipyard Armstrong, Newcastle, the first one — through the efforts of Admiral S.O. Makarov in 1899, the second — in 1917, following the adoption of the first icebreaker shipbuilding program in Russia. According to the calculations of S.O. Makarov [17], to reach the North Pole, the icebreaker should have a shaft power of about 38 MW (52 thousand hp). Neither "Ermak" nor "Lenin" reached this level. The indicators of these icebreakers were 8.82 MW (12 thousand hp) and 32.4 MW (44 thousand hp), respectively. But the first conqueror of the North Pole in August 1977, the Soviet-built nuclear icebreaker Arktika, had a shaft power of 49 MW (66.2 thousand hp). Then, starting in the 1960s, several dozen non-nuclear icebreakers were built in Finland by order of the USSR, including a series of five “Moskva” type icebreakers (1960–1969) and of three more — Yermak, Admiral Makarov and Krasin (1974–1976), which are still operating in the Arctic.

At the beginning of the 21st century, this practice was also applied to ice reinforced vessels, which were built as part of the implementation of major Arctic energy projects.

In general, the practice of ordering non-nuclear vessels for Russia in the centers of world shipbuilding (especially in South Korea, Germany and Finland) in the era of globalization (from the 1990s up to the present time) was justified by the fact that during this period we had an illusion that Russia was an integral part of the global world and the global market. Therefore, ordering ships from the world's leading shipbuilders, whose competencies are confirmed by leading insurance companies, is more profitable, faster and more reliable than developing our own technologies and competencies.

This is the case not only in shipbuilding, but also in many other branches of the Russian industry; however, due to state orders and state defense orders, it was possible to maintain competencies in two basic areas of critical macro-technologies [11].

Critical technologies include such world-class technologies (macro-technologies), which a priori provide competitive advantages to the owner of the latter in the world markets and contribute to the dominance of the owner on the aggregate (geopolitical and other) atlas of the modern world.

This is nuclear energy, as well as hydro- and aerodynamics, that is, the field of underwater and aircraft. In addition to the development of nuclear icebreakers, this is nuclear-powered surface and submarine shipbuilding, including sea-based strategic nuclear forces, as well as non-nuclear carriers of maritime hypersonic weapons.

This period includes the replenishment of the Arctic ice fleet with ice-strengthened vessels of medium classes Arc6 and Arc7 (Table 1) [12]. Arc7 vessels can independently navigate in the summer-autumn navigation period in all seas of the NSR, and in the southwestern part of the Kara Sea, as well as the Barents and Pechora Seas; vessels with ice reinforcements Arc4–Arc7 — all year round. In the eastern seas of the NSR from the Vilkitskiy Strait to Cape Dezhnev, navigation of Arc7 vessels during the winter-spring navigation period is permitted only behind an icebreaker in a channel or in a convoy [19, p. 40].

[11] In the early 1990s, there were about 52 critical macro-technologies known in the world, of which about 90% were in the developed countries of the so-called G-7 group and the Soviet Union, which controlled about 6-7 such technologies. By the end of the 1990s (and still today), Russia controlled only 2 technologies in the above-mentioned areas, while the United States had 20-22, Germany — 10-12, Japan — 6-7, China already controlled 4 technologies, and Great Britain and France — only 3 each. Next was Russia (2), Italy, Norway, Sweden and Switzerland — 1 each. The remaining countries in total accounted for only 3-4 critical macro-technologies. It is clear that in that era of increasing globalization, no country had monopolistic control over any technology. [18].

[12] The modern (since 2007) Russian Maritime Register of Shipping (RMRS) distinguishes nine ice classes of vessels for navigation in non-Arctic (Ice1–Ice3) and Arctic (Arc4–Arc9) seas. The maximum ice class of the modern operating Arctic fleet is Arc7; there is no experience in building Arc8 and Arc9 vessels (high ice classes) yet. The main criterion for classifying a vessel into a certain ice class is the presence of the necessary structural reinforcements for navigation in Arctic seas independently or in a channel behind an icebreaker in ice of a certain thickness and type. Source: Russian Maritime Register of Shipping. URL: https://rs-class.org/?ysclid=lteaaz10ab528729011 (accessed 26 December 2024).

Table 1

Arctic Ice Fleet of Russia (01.01.2025)

Nuclear icebreakers pr.22220 LK-60Ya — JSC Baltic Shipyard, operator AF[1], flag of Russia — 7 units		
Denomination	In service	Arktika (X–2020); Sibir (I–2022); Ural (XI–2022); Yakutia (XII–2024)
W[2](thousand tons) — 32.7		Chukotka (plan: XII–2026); Leningrad (plan: XII–2028); Stalingrad (plan: XII–2030)
Nuclear icebreakers pr.10521 LK-55YA — JSC Baltic Shipyard, operator AF[1], flag of Russia — 2 units		
Denomination	In service	Yamal (X–1992); 50 Let Pobedy (III–2007)
W (thousand tons) — 21.0 and 22.5		
Nuclear icebreakers pr.10580 "Vyartsilya", Finland, operator AF[1], flag of Russia — 2 units		
Denomination	In service	Taimyr (VI–1989); Vaygach (VI–1990)
W (thousand tons) — 20.0 and 20.8		
Nuclear icebreaker pr.10510 "Lider" LK-120YA — SBC "Zvezda", operator AF[1], flag of Russia — 1 unit		
Denomination	In service	Rossia — laying — XI–2020; commissioning (plan) — XI–2030
W (thousand tons) — 68.6		
Shuttle tankers pr. 42K Arctic Shuttle Tanker, Arc7, SHI[5], operators SCF[3] and GNSH[4], Russian flag — 7 units		
Denomination	In service	Shturman Albanov[3], Shturman Malygin[3], Shturman Ovtsyn[3] — 2016; Mikhail Lazarev[3] — 2019
Arctic Gateway, D[6] — 42 thous.tons		Shturman Skuratov[4], Shturman Shcherbinin[4], Shturman Koshelev[4] — 2017
Non-nuclear icebreaking support vessels pr. AKER ARC 130A, VSBC[7], operator GNSh, Russian flag — 2 units		
Denomination	In service	Alexander Sannikov (VI—2018); Andrey Vilkitskiy (XII—2018)
Arctic Gateway, W — 3.4 thous.tons		
Shuttle tankers pr. P–70046, Arc6, SHI[5], operator SCF[3], flag of Russia — 3 units		
Denomination	In service	Vasiliy Dinkov (2008); Captain Gotskiy (2008); Vasiliy Guzhenko (2009)
Varandey, D[6] — 71.3 thous.tons		
Shuttle tankers pr. P-70046, Arc6, JSC Admiralty Shipyards, operator SCF[3], flag of Russia — 2 units		
Denomination	In service	Mikhail Ulyanov (2010); Kirill Lavrov (2010)
Prirazlomnoe, D[6] — 70.0 thous.tons		
LNG tanker (gas carrier), pr.Yamalmax, Arc7, DSME[8], operator SCF[3], flag of Cyprus — 1 unit		
Denomination	In service	Christophe de Margerie (I–2017)
Yamal LNG; G[9] — 172.6 thous. m[3]		
LNG tanker (gas carrier), pr.Yamalmax, Arc7, DSME[8], operator Teekay[9] (Canada), flag of BI[10] — 6 units		
Denomination	In service	Eduard Toll (XII–2017); Rudolf Samoilovich (XII–2017); Nikolay Evgenov (VI–2019)
Yamal LNG; G[9] — 172.6 thous. m[3]		Vladimir Voronin (VIII–2019); Georgiy Ushakov (X–2019); Yakov Gakkel (XI–2019)
LNG tanker (gas carrier), pr.Yamalmax, Arc7, DSME[8], operator Dynagas Ltd [11](Greece), flag of Cyprus — 4 units		
Denomination	In service	Fedor Litke (XI–2017); Georgiy Brusilov (XI–2018); Nikolay Zubov (XII–2018)
Yamal LNG; G[9] — 172.6 thous. m[3]		Boris Davydov (I–2019)
LNG tanker (gas carrier), pr.Yamalmax, Arc7, DSME[8], operator MOL (Japan), flag of Hong Kong — 3 units		
Denomination	In service	Vladimir Rusanov (III–2018); Vladimir Vize (X–2018)
Yamal LNG; G[9] — 172.6 thous. m[3]		Nikolay Urvantsev (VII–2019)
Container carriers, pr.Aker ACS 650, Arc7, AY[13] and NY[14], operator NN MMC[15], flag of Russia — 5 units		
Denomination	In service	AY: Norilskiy Nickel (II–2006); NY: Monchegorsk (VII–2008); Zapolyarny (XI–2008)
NN MMC[15], D[6] — 13.3 thous. t		Talnakh (XII–2008); Nadezhda (I–2009)
Tanker, Arc7, NY[14], operator NN MMC[15], flag of Russia — 1 unit		
Denomination	In service	Yenisei
NN MMC[15], D[6] — 13.9 thous. t		

[1] Atomflot; [2] W–displacement; [3] PJSC Sovcomflot; [4] LLC Gazprom Neft Shipping; [5] Samsung Heavy Industries, Busan, South Korea; [6] deadweight; [7] Vyborg Shipyard; [8] Daewoo Shipbuilding & Marine Engineering Company (DSME), Seoul, South Korea (since May 2023 Hanhwa Ocean); [9] Teekay with its subsidiary China LNG Shipping (Holdings) Limited (China LNG); [10] The Bahamas; [11] Dynagas Ltd with leading Chinese shipping companies Sinotrans and China LNG Shipping; [12] MOL (Mitsui O.S.K. Lines Ltd) with the participation of China Shipping Development.; [13] Aker Yards (Helsinki, Finland); [14] Wadan Shipyards MTW / Nordic Yards (Wismar, Germany); [15] Norilsk Nickel Mining and Metallurgical Company.

The Arctic ice fleet is the basis for building the Arctic communication system, connecting individual points of the regional space in order to ensure the unity and integrity of the latter. This

is a basic condition of Russia's national security from the standpoint of ensuring the country's diverse presence in the Arctic.

Features of navigation on the Northern Sea Route

Ensuring the development of the largest Arctic investment projects located on the coast of the Arctic seas contributes to the development of sea communications or commercial supply lines and transportation of finished products of these projects. This is how the maritime transport system is formed (Table 2), which is based on the axis of the NSR as a national transport highway.

Table 2

Investment projects and sea communications of the Russian Arctic

Region	Project	Marine communication
Pechora Sea	Varandey	Varandey — Kola Bay, RTC Kola
Pechora Sea	Prirazlomnoe	Prirazlomnaya platform — Kola Bay, RTC Nord
Ob Bay	Yamal LNG	Sabetta — Ura-Guba (transshipment complex)
Ob Bay	Yamal LNG	Sabetta — Bechevinskaya Bay (transshipment complex)
Ob Bay	Arctic LNG 2	Utrenny Terminal — Ura-Guba (transshipment complex)
Ob Bay	Arctic LNG 2	Utrenny Terminal — Bechevinskaya Bay (transshipment complex)
Ob Bay	Arctic Gate	Kamenny — Kola Bay, RTC Nord
Ob Bay	Norilsk Nickel	Dudinka — Murmansk — Dudinka
Yenisei Gulf	Vostok Oil	Dikson — Kola Bay, roadstead transshipment complex
Yenisei Gulf	Norilsk Nickel	Dudinka — Arkhangelsk — Dudinka
Yenisei Gulf	Severnaya Zvezda	Sever Bay — towns and villages of the Arctic coast

The Arctic marine communications, including the southern and northern routes of the NSR, pass through the waters of the Arctic Ocean and the Arctic seas of the zone of Russia's national jurisdiction in the following latitudinal intervals (Table 3).

Table 3

Latitudinal intervals and boundaries of communications (routes) of the Russian Arctic

Communications (routes)	Latitudinal intervals	Boundaries
Southern	70^0–78^0N	Bounded from the north by the parallels of the Vilkitsky Strait (780N) and Cape Karlsen (770N), the northernmost point of the Novaya Zemlya archipelago
Northern	78^0N–82^0N	Bounded from the north by the parallel above the Arctic Cape of the Severnaya Zemlya archipelago, 81^0 20'+
Pole	82^0N–85^0N	North of Rudolf Island in the Franz Josef Land archipelago, about 82^0N

Sea communications in the waters of the Russian Arctic seas are built on the basis of a set of routes (standard routes) developed taking into account the distribution and variability of the total ice area configuration. At the same time, the features of the ice cover distribution in the western and eastern parts of the NSR differ: the configurations of sea communications in the southwestern part of the Kara Sea in terms of ice coverage do not differ during the entire navigation period, therefore it is sufficient for vessels to have the minimum Arc4 ice class for navigation in the Arctic seas. In the seas of the Siberian shelf, during the winter-spring (from November 15 to May 15) navigation period, powerful fast ice is formed with backwater polynyas — oases of clean water, to which the routes of sea communications are transferred. In general, in these seas (in the

southeastern part of the Kara Sea, in the waters of the Laptev, East Siberian and Chukchi Seas) ice is present almost all year round. Therefore, only ice-strengthened vessels of Arc7 class are allowed to navigate in these waters [13].

In general, the natural conditions of the NSR seas are characterized by significant spatial and temporal variability. The most typical (standard) routes and lines of sea communications have been developed and recommended to mariners in the Guidelines [14] on the basis of the theory and practice of organizing sea ice operations and generalizing the long-term experience of ice captains and pilots. The detailed geographical, natural and ice conditions of navigation along the NSR are presented in [20, pp. 106–150].

The main sea communications (Table 1) are located in the waters of the Kara Sea. For the organization of annual navigation in the Kara Sea, the navigation periods are divided into traditional (June–October) and extended (November–May) seasons, the latter having three stages: autumn (November–December), winter (January–February) and spring (March–May).

On the test communication routes Dudinka — Murmansk — Dudinka (container transportation of converter matte of MMC Norilsk Nickel for JSC Severonikel in the forward direction and empty containers — in the direction back), navigation is carried out all year round with a pause for the spring flood of the Yenisei River.

At the same time, the extended navigation stages are performed practically by Arc7 vessels (in favorable ice conditions, as an exception — by Arc4 vessels) with obligatory icebreaker support.

In some years in summer (June–October), under favorable ice conditions, navigation of all vessels of the Arctic ice classes is carried out independently, that is, without icebreaker support. The same applies to the sea communications Gulf of Ob — Murmansk — Gulf of Ob.

In the waters of the Arctic seas, the location of standard routes, and therefore sea communications in the summer-autumn navigation period, is determined by the location of ice fields, rarefaction zones and clear water.

In the winter-spring period, the coast and islands are blocked by fast ice, so the location of standard routes is determined by the stability of fast ice polynyas for navigation and the ability of icebreakers to overcome fast ice by raids in critically important sections of the NSR.

Maps of standard routes of NSR sea communications in the summer-autumn and winter-spring navigation periods and a table of the length of these routes depending on the navigation period are presented in [20, pp. 125–126].

Planning for the Arctic ice fleet replenishment in hybrid warfare conditions

The importance, composition and scale of economic maritime activity in the Arctic of ice-strengthened vessels are determined by the prospects for the development of large energy pro-

[13] Ice class Arc7 vessels have design features that ensure independent navigation in compact first-year ice up to 1.4 m thick in winter and up to 1.7 m thick in summer. In first-year ice up to 2.0 m thick in winter and 3.2 m thick in summer, navigation of vessels of class not lower than Arc7 is permitted only in the channel behind an icebreaker.
[14] Guidelines for through navigation of vessels along the NSR. St. Petersburg, GUNIO MO RF Publ., 1995, 416 p.

jects, especially in the field of oil and gas production, since the main subject and goal of modern hybrid warfare is the dominance of corporations, countries and continents in the world markets of these most effective energy resources. Thus, energy, through the so-called “green agenda” [15] becomes an instrument of hybrid confrontation according to the formula “continent-vis-ocean”, and sanctions — the achievement of competitive superiority.

Sanctions restrictions on the oil and gas segment of Russia in the global energy market, especially since mid-2022, as well as sanctions against the tanker fleet transporting Russian oil, have indirectly affected the fulfilment of orders for ice-strengthened vessels for large Russian Arctic projects by leading South Korean companies.

In this context, it is necessary to emphasize, first of all, the technological, as well as technical and financial-economic advantages of South Korean shipbuilding; these are the “Big Three” shipbuilders of South Korea: Hyundai Heavy Industries, Ulsan, Hanwha Ocean (until May 2023 — Daewoo Shipbuilding & Marine Engineering Company), Seoul and Samsung Heavy Industries, Busan.

All Project 42K Arctic Shuttle Tankers of the Shturman Albanov series, Arc7, as well as three of the five Project R-70046 tankers of the Vasiliy Dinkov series, Arc6, were built at the Samsung Heavy Industries shipyards. Two Project R-70046 vessels, Mikhail Ulyanov and Kirill Lavrov, were built at Admiralty Shipyards using the block assembly method with the transfer of competencies, necessary equipment and tooling to Samsung Heavy Industries (Table 1).

The same applies to the gas tankers, Arc7 (Table 1), which were built at the South Korean shipyard DSME (since May 2023 — Hanhwa Ocean) in 2017–2019.

In 2008, one of the leading South Korean companies, STX Business Group, created a special European wing — STX Europe, formed on the basis of the Finnish shipyard Aker Yards [16] the largest foreign shipbuilding company in Europe.

In 2010, STX Europe and the Russian United Shipbuilding Corporation (USC) [17] bought the Finnish shipyard Hietalahti (Helsinki). On the basis of this shipyard, a joint venture, Arctech Helsinki Shipyard (AHS) [18], was created, which in 2015 completed the Aker ARC 130A project of non-

[15] The meaning of the "green agenda" is a scientifically ungrounded, but politically biased energy transition from traditional to so-called renewable (clean) energy sources — sun, wind, water. As part of this transition, it is proposed that all countries, except the "collective West", switch to low-calorie energy fuel. The benefits of such a transition are doubtful, and the harm is obvious — total deindustrialization.

[16] In November 2008, STX Business Group acquired a controlling stake in the Finnish shipyard Aker Yards, which was then renamed STX Europe. This company is headquartered in Oslo (Norway) and has about twenty subsidiaries in various countries, including 30% of Wadan Shipyards MTW/Nordic Yards (Wismar, Germany), and also has shares in Ukrainian shipbuilding companies — Chernomorsk and Nikolaevsk (former No. 200 named after 61 Communards) shipyards. So, the technology and expertise in building container ships of the Norilsk Nickel project and the Yenisei tanker (Table 1) have obvious South Korean roots.

[17] Established by the Decree of the President of the Russian Federation dated 21.03.2007 No. 394 “On the open joint-stock company “United Shipbuilding Corporation””. URL: http://www.kremlin.ru/acts/bank/25217 (accessed 09 January 2025).

[18] In the new geopolitical conditions, AHS was sanctioned in the summer of 2014, and OCK bought out STX Europe's stake in December of that year. AHS was then sold to a Cypriot company, and then (2023) — to the Canadian shipbuilding company Davie. Thus, Russia lost its most important shipbuilding asset.

nuclear icebreaking supply vessels, Arc7, according to which the company's shipyard planned to build two vessels for Gazprom Neft — Alexander Sannikov and Andrey Vilkitskiy (Table 1).

Thus, Russian shipbuilding companies essentially have neither competences nor technologies to build Arctic ice-strengthened vessels, in particular, under the Arc7 class. For example, ice-strengthened vessels built abroad in South Korea or Finnish and German shipyards with South Korean competences use the concept of double acting ship to enable the ship to move in ice both bow and stern (stern speed is higher in ice). The principle of double action is implemented by means of an Azipot steerable thruster with a capacity (on Yamalmax-sized vessels) of up to 13 MW.

The presence of a steerable thruster (ST) is the main criterion for classifying a vessel as Arc7 [19]. Russia does not have the competence to manufacture and install such STs on vessels, which is a very difficult technological problem under sanctions.

When planning the composition of the gas fleet for the Arctic LNG 2 project, Russia's largest shipping company, PJSC Sovcomflot, and Japan's Mitsui OSK Lines (MOL) signed a contract in October 2020 with the well-known South Korean shipbuilding company DSME (since May 2023 — Hanhwa Ocean) for the construction of six (three for each ship owner) Yamalmax, Arc7 gas tankers. Taking into account the capacity of the Arctic LNG 2 project (19.8 million tons), the estimated number of vessels in the gas fleet of this project (similar to Yamal LNG) is 21 units.

It was decided to place the order for the block arrangement of 15 gas tankers at the Zvezda shipyard in Bolshoy Kamen, Primorskiy Krai, taking into account the delivery of the necessary equipment from the South Korean SHI under a contract with the latter. At the same time, it was clear that Zvezda did not have the technology, competence or experience in creating either cryogenic blocks or hull structures for the Arc7 ice class, or (see above) the Azipot thrusters.

Contracts for all 15 Arc7 vessels of the SN 2366 project were concluded in the first half of 2020. The pilot hull was ordered by PJSC Sovcomflot, while the other fourteen were ordered by LLC SMART LNG, a joint venture between PJSC Sovcomflot and PJSC NOVATEK created specifically to act as the operator of these vessels.

The operation of gas tankers was supposed to be based on long-term time charter agreements of the Operators (PJSC Sovcomflot-3+1; MOL-3; LLC SMART LNG-14) with LLC Arctic LNG 2.

The fulfillment of mutual obligations of the parties under contracts related to the formation of the gas fleet of the Arctic LNG 2 project was destructively affected by the fact that the United States included the latter in the so-called SDN List) [20].

[19] When in April 2018, the LNG tanker suffered "minor damage", namely "losing" one of its three propellers, the tanker managed to make one voyage with a batch of LNG before undergoing scheduled repairs in a dry dock, but despite the announced ice class of Arc 7, it was accompanied by an icebreaker. URL: https://neftegaz.ru/news/incidental/201875-tanker-gazovoz-b-vilkitskiy-yamala-spg-poluchil-neznachitelnye-povrezhdeniya/?ysclid=m5gvvwr0r5797052873 (accessed 09 January 2025).

[20] SDN — Specially Designated Nationals and Blocked Persons List — is a registry of the Office of Foreign Assets Control of the US Department of the Treasury (OFAC). This list includes individuals, organizations and individual regimes against which the US government embargo measures are directed. The list includes residents of almost all countries in

On November 2, 2023, the gas project was included in the US blocking list [21] in order to restrict Russia's economic activity in the field of production and export of energy resources [22], namely LNG.

After Arctic LNG 2 was included in the SDN list (US sanctions) in November 2023, SHI announced in December 2023 that it would stop manufacturing equipment for 10 out of 15 [23] gas tankers under the contract with Zvezda Shipbuilding Complex. The company fully complies with the terms of the contract for five [24] tankers that were already under construction at the Russian shipyard at the end of 2023.

At the same time (December 2023), due to economic and geopolitical pressure from the US and EU countries, all foreign shareholders [25] left the Arctic LNG 2 project, declaring force majeure and refusing to provide financial support for the project and fulfill the terms of the concluded offtake contracts for LNG. This decision was also facilitated by the fact that the SDN-list also included transshipment terminals (hubs) where LNG is transferred from Arc7 ice-class LNG carriers to conventional (non-Arctic) tankers and, most importantly, where the ownership of LNG is transferred from the producing company to the shareholders. Most of LNG from the Arctic LNG 2, as in the Yamal LNG project, is contracted at the transshipment terminals in Montoire-de-Bretagne, France, and Zeebrugge, Belgium [26], and is transferred to the shareholders, and then sent to buyers and other markets. In order to avoid sanctions and reduce the length of the LNG transportation route by ice tankers in the western direction, a Russian transshipment terminal is being built near the settlement of Ura-Guba, Murmansk Oblast. A similar terminal is being built in the east in Bechevinskaya Bay, Kamchatka Peninsula.

Due to the inclusion of PJSC Sovcomflot in the SDN list (summer 2022) and the introduction of blocking sanctions against the latter's subsidiaries [27] (February 2024), which also cannot act as a

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the world. Source: What Is the OFAC Specially Designated Nationals (SDN) List? URL: https://sanctionslist.ofac.treas.gov/Home/SdnList (accessed 10 January 2025).

[21] This list includes legal entities and individuals who pose a threat to US national security. All US residents are prohibited from contacting entities on the blocking list. The same applies to non-US residents, who may be subject to secondary sanctions. Source: Specially Designated Nationals and Blocked Persons List. URL: https://ofac.treasury.gov/faqs/topic/1631 (accessed 10 January 2025). For example, after the events of the Crimean Spring in March 2014, a number of Crimean and Russian legal entities and individuals were blacklisted by the US. Source: U.S. sanctions companies, people over Russia actions in Ukraine. URL: https://www.reuters.com/article/world/us-sanctions-companies-people-over-russia-actions-in-ukraine-idUSKBN1492C2/ (accessed 10 January 2025).

[22] Taking Additional Sweeping Measures against Russia United States Department of State, 2023, November, 2. URL: https://ua.usembassy.gov/taking-additional-sweeping-measures-against-russia/ (accessed 09 January 2025).

[23] Samsung will complete five tankers that are already in operation, but will not even begin building ten more. URL: https://oilcapital.ru/news/2023-12-27/samsung-otkazalas-stroit-oborudovanie-dlya-10-spg-sudov-zvezdy-3141045?ysclid=m5nzmyloi696773322 (accessed 09 January 2025).

[24] This includes the laid down and named gas tankers Alexey Kosygin (November 2020), Sergey Witte (January 2021; launched in July 2024) and Pyotr Stolypin (September 2021).

[25] These are France's TotalEnergies, China's CNPC (China National Petroleum Company) and CNOOC (China National Offshore Oil Corporation), as well as Japan's Japan Arctic LNG with a 10% share each.

[26] Sanctions threaten to disrupt Yamal LNG contracts. Version, 2024, no. 18, p. 4. URL: https://versia.ru/shop (accessed 09 January 2025).

[27] These are the Cypriot companies Elixon Shipping, Azoria Shipping and Glorina Shipping.

customer, the manufacturer of three [28] gas tankers ready for delivery to the customer, South Korean Hanhwa Ocean, has ceased interaction with these organizations.

It should be emphasized that the Arctic LNG 2 gas tankers themselves are not on the SDN-list, but being a specific and expensive product compared to their conventional analogues, they can only be used in Arctic LNG projects.

The readiness of three gas tankers, which are being built by order of MOL, is postponed indefinitely by Hanhwa Ocean due to the sanction restrictions of the project itself. These are “Ilya Mechnikov”, “Nikolay Semenov” and “Nikolay Basov”.

Thus, the situation with the readiness of gas tankers for the Arctic LNG 2 project in the summer of 2024, despite the launch of the first line of the project, was disappointing: 6 out of 21 planned tankers were “stuck” at the Hanwha Ocean company [29], 5 were not completed at the Zvezda Shipbuilding Complex, and the construction of 10 tankers was cancelled.

Therefore, in August 2024, NOVATEK announced the suspension [30] of the Arctic LNG 2 project for at least 2 years.

Joint US and EU sanctions essentially blocked the production and export (re-export) of Arctic LNG: the 14th package of EU sanctions [31], adopted on June 24, 2024, which entered into force after a transition period of nine months (April 24, 2025), for the first time, unlike the US, introduces restrictions on supplies of Russian (Arctic) LNG.

The meaning of the restrictions imposed is to prohibit the transshipment of Russian LNG in European ports with re-export to third countries. In the worst case, this will affect about 63% of the annual production of Yamal LNG. The ban on transshipment will come into effect upon ratification of the 14th package of sanctions by all EU member states.

Conclusion

In November 2024, the US launched a new geopolitical epic for dominance of the world's maritime communications under the maxim “Make America Great Again”. At this time, articles like “Make Greenland Great Again” and “Make Arctic Great Again” appeared in the American press, from which it follows that the American territorial expansion of Greenland and Canada indicates that the new US administration is going to control the North Pole [32].

Not only the North Pole, but the sea communications of the Arctic Ocean and the Arctic seas, as well as the energy resources of the continental shelf. In this sense, it is unclear whether

[28] We are talking about three gas tankers named “Pyotr Kapitsa”, “Lev Landau” and “Zhores Alferov”.
[29] Mikhelson's tanker fleet is stuck in Korea. Version, 2024, no. 9, p. 10.URL: https://versia.ru/shop (accessed 13 January 2025).
[30] Merci, Baku! Russian gas will go to Europe via Azerbaijan. Version, 2024, no. 32, p. 6–7. URL: https://versia.ru/rossijskij-gaz-pojdyot-v-evropu-cherez-azerbajdzhan (accessed 13 January 2025).
[31] Sanctions against LNG: what is Europe’s benefit and what awaits NOVATEK. URL: https://www.rbc.ru/business/24/06/2024/667980f89a79471dc1a52d80?ysclid=m5rwispzt7520007548 (accessed 13 January 2025).
[32] "A Suitcase without a Handle": Ukraine in the New Geopolitical Reality. Arguments of the Week, 2025, no. 1, p. 6.URL: https://argumenti.ru/politics/2025/01/933669 (accessed 13 January 2025).

the Arctic shelf, including the Mendeleev and Lomonosov ridges, is an extension of the Eurasian or North American continental margin.

The question is serious — the continental shelf of the Arctic seas contains energy resources equivalent to 89.0 billion tons of fuel equivalent, 80% of which are localized in the waters of the Barents-Kara continental shelf [33].

That is, the energy resources (oil and gas) localized on the shelf of the Barents and Kara Seas are estimated at 71.2 billion tons of fuel equivalent, or 2087 EJ [34]. *This is 3.37% of the world's consumption of PER (primary energy resources) in the record year of 2023* [35].

There are three routes from the Pacific Ocean to the North Atlantic: the NSR, which runs entirely within the zone of national jurisdiction of Russia, as well as the Northwest Passage in the waters of the coastal seas of Canada and Greenland, the third route is the Panama Canal, connecting the coasts of the Atlantic, Pacific Oceans and the Gulf of Mexico. Almost 80% of the US economy is concentrated there [36].

The temptation to gain a position of global superiority in these sea communications of planetary scale is great. Of course, it is not necessary to buy the lands of Canada and Greenland, but to gain these territories while the dollar (or, more precisely, the petrodollar) still dominates the world markets means to create a margin of safety for the future, when the dollar may lose its current value.

Previously, the article emphasized that at the beginning of the 21st century the confrontation between the great powers according to the "ocean-vis-continent" formula has shifted (from the North Atlantic and the waters of the Southern Silk Road) to the Arctic. The battles of hybrid warfare are already unfolding there. So, the 'Great Game' continues.

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[33] Arctic crossword. Arguments of the Week, 2023, no. 40, p. 15. URL: https://aif.ru/gazeta/number/53215 (accessed 13 January 2025).

[34] EJ-Exo joule is equal to 10^{18} joules or 23.88 million TOE. In total, global consumption of PER in 2023 was approximately 15.8 billion TOE, or 620.0 EJ.

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