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The Russian Maritime Arctic: Region of Great Change in the 21st Century

Lawson W. Brigham

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THE RUSSIAN MARITIME ARCTIC: REGION OF GREAT CHANGE IN THE 21ST CENTURY

Lawson W. Brigham

U. S. NAVAL WAR COLLEGE

COVER
Russian *Arktika* class nuclear icebreaker, *Yamal* in service since 1992 shown with the insignia of Murmansk Shipping Company, operated since 2008 by the Russian nuclear corporation Rosatom.
Tobias Revell/Flickr

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Center on Irregular Warfare and Armed Groups

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The Russian Maritime Arctic: Region of Great Change in the 21st Century

Message from the Editors

This case study focuses on the evolution and development of the critical maritime region of the Russian Arctic out into the future. It specifically considers what the Russian state may initiate in Arctic economic projects, and what aspects of this region Russia will seek to control, in what will most certainly become one of the vital ocean corridors of the world. The case highlights what factors may constitute the outlines of further development in a region that is not only important today and is emerging as a vital resource area and transport waterway, but also one that could evolve into a zone of competition, or even conflict, during this era of great power rivalry.

The case explores important insights into how Russia may develop its Arctic maritime capabilities and use this region as a springboard to further Russian maritime power, as well as overall economic strength.

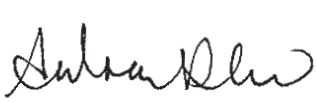
The author, Lawson W. Brigham, is a research faculty member at the International Arctic Research Center, University of Alaska Fairbanks; a Fellow at the Wilson Center's Polar Institute; and a Fellow at the U.S. Coast Guard Academy's Center for Arctic Study and Policy. He is also an accomplished Coast Guard officer, and brings these superb credentials to his analysis of the potential development of the Russian Maritime Arctic. With this background, he constructs a line of development between now and the year 2050, and traces the likely lines of influence and effort it might take to arrive at that constructed future end-state.

The author constructs a potential future scenario of this vital region, resulting in a think piece which envisions and asks how the Russian state might bring that future into being through a variety of factors and strategic positioning. If achieved, the region's development might invigorate and diversify not only the Russian economy, but the overall reach of a great power competitor in that projected 30-year span. The stakes and the implications for Russia, as well as her allies and adversaries, could be immense. As a result, the case

study highlights the emerging and growing importance of the Arctic as an area of commerce, competition, and perhaps conflict.

As a global power, Arctic country, and competitor in the northern reaches, how should the U.S. itself consider engagement and response to this potential growing influence? Professor Brigham's case study helps illuminate the scope of Russian ambition in this vital region, and in so doing, points the way to answering the questions posed by these important challenges in the years to come.

The Center on Irregular Warfare & Armed Groups is pleased to offer this case within the **Maritime Irregular Warfare Studies** as a lodestar to consideration of our own Arctic ambitions and competition, emerging policy goals, and the need for further research.



Andrea Dew
CIWAG, Co-Director

David A. Brown
CIWAG, Co-Director

MAP OF THE ARCTIC OCEAN

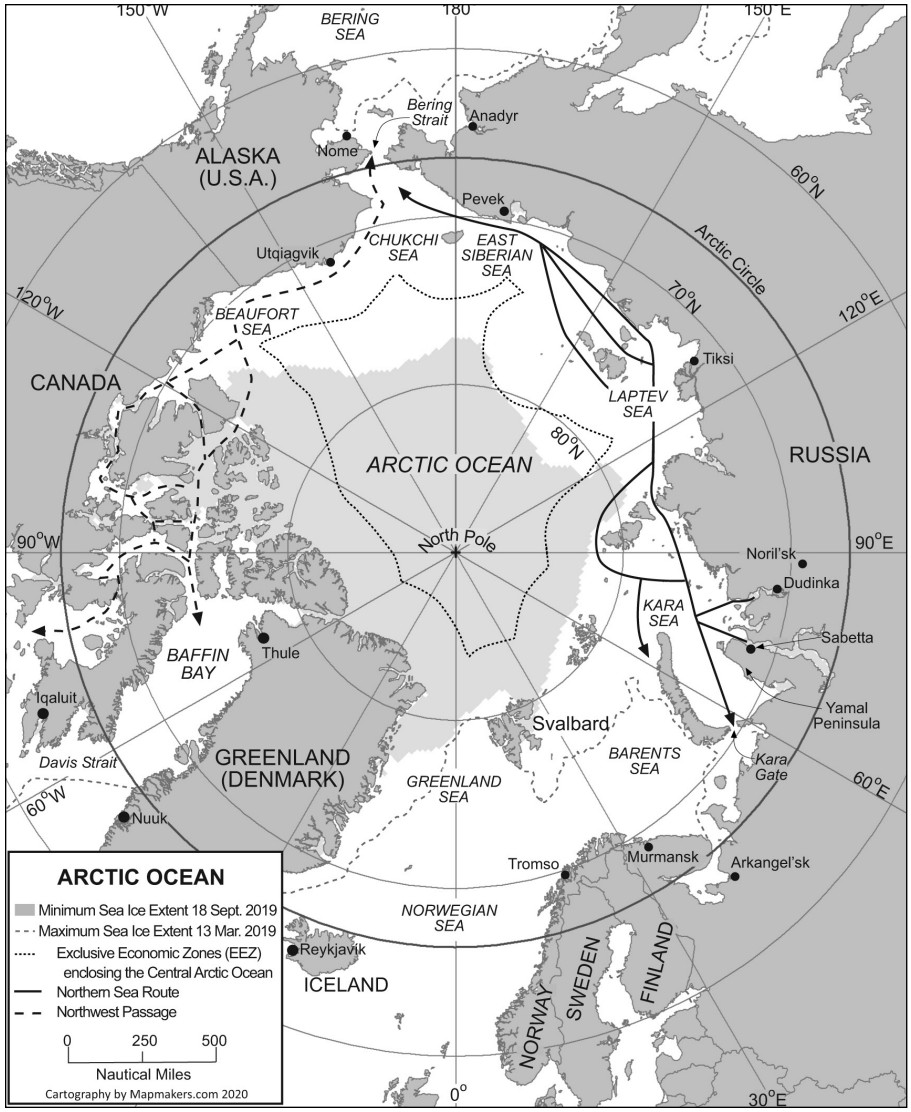


Figure Intro 1 The Arctic Ocean and key features (Author and Cartography by Mapmakers.com 2020)

The Russian Arctic

Russian nuclear icebreaker Arktika, *in service 1975–2008 and first surface ship to reach the North Pole, August 17, 1977. (Christopher Michel/Flickr)*

The Russian North and the maritime Arctic are critically important to the future of the Russian state. This vast, cold region should be viewed from three main perspectives: national security, environmental change, and economic security. Furthermore, Russia's long, open border to the Arctic Ocean is a strategic vulnerability as well as a coastline that provides essential maritime access to a remote but developing region. This region, stretching from the Russian-Norwegian border in the west to the Bering Strait in the east is notable for reasons including the following:

- a formidable military-security presence, mainly on the Kola Peninsula, but also in small, modern bases on the outlier Arctic islands spread across the northern Eurasian coast;
- a huge storehouse of Arctic natural resources, understood to be the largest such repository on Earth;

- a large but dispersed industrial base focused on development of oil, gas, and hard minerals (such as nickel, copper, palladium, platinum, and coal);
- an advanced marine transportation system (the Northern Sea Route), an Arctic national waterway developed during the Soviet era, supported by a large fleet of ice-capable commercial ships and civilian icebreakers, several nuclear-powered;
- a key Russian economic region supported and favored by the central government with infrastructure investments and tax incentives to encourage Arctic economic development;
- the largest Arctic Indigenous population among the eight Arctic states (40 groups and a population of approximately 260,000);
- a remote but large region undergoing profound environmental stress due to anthropogenic climate change: warming temperatures, thawing permafrost, and large-scale wildfires are altering the Siberian landscape, while retreating sea ice and coastal erosion are changing Arctic marine systems;
- several large, Arctic cities including Murmansk, Archangelsk, Norilsk, and Yakutsk.

A scenario in Chapter 1 looks 30 years ahead into a plausible future of this important and emerging Arctic region. Chapter 2 provides an analysis of the scenario identifying 10 influential factors or drivers of regional change. Chapter 3 is an overview of the region today, encompassing the essential background information necessary to understand the complexities of the Russian maritime Arctic. The concluding Chapter 4 is a summary of observations and includes a list of key outcomes identified by the scenarios process. Also, Chapter 4 reviews the critical aspects of today's regional development and considers areas of needed research. Discussion questions are provided at the end of each chapter. Highlighted throughout the case study are the complexity of the region and its importance to the Russian Federation. This study is a forward-looking strategic outlook and is primarily intended as a guide for students and practitioners interested in this vital geopolitical space.

Selected Critical Dates Regarding the Russian Maritime Arctic 1990–2020

* See Appendix: Chronology of Key Events, p. 66

Figure Intro 2
Selected Critical Dates 1990–2020

CHAPTER
ONE

The Russian Maritime Arctic in 2050: A Scenario

LNG icebreaking carrier Christophe de Magerie *owned and operated by the Russian shipping company Sovcomflot, shown along the Northern Sea Route. (MarineTraffic.com)*

Scenario: The year is 2050. A new Russian president, elected in 2048, has closed the Northern Sea Route to all international traffic. Also suspended is the release of marine operational data to the Arctic states under the Arctic Marine Traffic Agreement. A series of cyberattacks have shut down operations at a major commercial terminal in the port of Murmansk, disrupted the power grid in the eastern Arctic city of Pevek, and interfered with power and communications at a key monitoring facility on Wrangel Island. Powered by the shipborne nuclear generating plant *Akademik Lomonosov*, Pevek has had intermittent electricity for several weeks and was on emergency power for an entire week in March 2050.

Soon after the inauguration of the new Russian president, the United States, the United Kingdom, and European Union forces had announced that they would conduct Freedom of Navigation (FON) voyages throughout all regions of the Arctic Ocean commencing in summer 2050. No advance warning (such as 30–45 days) would be given. Russia immediately warned all nations that any voyages in its internal Arctic waters would be viewed as

a hostile act and met with strong resistance—all foreign naval vessels would be stopped from entering the Northern Sea Route water area. Canada also issued a strong message of concern for foreign naval operations in its sovereign Arctic waters without advance permission. Potential hostilities and direct confrontation have come to the Arctic region after several decades of mostly peaceful engagement at the Arctic Council and broad international cooperation. Natural resource development and trade have generally been dominant in the region during the first half of the 21st century despite increased global and regional security tensions.

General Conditions

The Russian maritime Arctic in 2050 is an important contributor to the financial health of the Russian Federation. This once-remote region has for the past three decades linked the export of Russian Arctic natural resources to global markets using a revitalized national waterway, the Northern Sea Route (NSR), to facilitate the transport of liquefied natural gas (LNG), oil, and hard minerals to markets in Europe and throughout the Pacific. Russia's northern region now contributes up to 35% of the state's GNP. Keeping the NSR fully functional with nearly year-round marine traffic is a high priority and strategic focus for the state. Although there has been an increase in international traffic, the majority of Russian- and foreign-flagged ships have been on destinational voyages—carrying goods and services into the Russian Arctic, and natural resources out to global markets—in contrast to trans-Arctic voyages—Pacific to the Atlantic sailings and vice versa. Short-term, spot charters, mostly by bulk carriers, have sailed across the Central Arctic Ocean in summer since 2035 during two-month periods of ice-free conditions and have avoided sailing the NSR and Russian Arctic coast. New container shipping routes along the NSR to replace traditional trade routes through the Suez Canal have *not* materialized as predicted by some futurists and politicians in the 2020s. However, smaller commercial carriers in niche markets and select cargoes have used the NSR during summer for trans-Arctic voyages between Bering Strait and northern Norway. Approximately 9% to 11% of the NSR's traffic tonnage in 2050 is trans-Arctic shipping.

Global climate change has impacted the Russian Arctic in three very different ways. First, Arctic sea ice has continued to retreat along the Russian maritime Arctic and throughout the Arctic Ocean, providing for greater marine

access and longer seasons of navigation. The NSR has been ice-free for four months, June through September, in its entire length since 2032. Since 2045, the NSR navigation season has remained year-round out of the Kara Sea to the west and Europe, and has averaged 10 months on a regular basis to the east into the Pacific from the Yamal Peninsula. The extended navigation season still requires the operation of advanced icebreaking carriers and icebreaker escort during the winter months; large icebreaking carriers are navigating the Bering Strait in winter. Second, regional warming has increased wildfires throughout the Russian Arctic, and thawing permafrost has continued to cause widespread infrastructure damage in cities including Murmansk, Archangelsk, Norilsk, and Pevek. Finally, the most ominous impact of climate change (driven by global mitigation and de-carbonization efforts) for Russia has been the weakening of gas and oil prices during the 2040s. Russia's "Siberian resource curse" continues mid-century.

In 2050, the Russian maritime Arctic, including the entire length of the NSR from Kara Gate to Bering Strait, is viewed internationally as "open" in a legal sense but also as a tightly managed, *national* Arctic waterway. Foreign ships use the NSR, but their voyages are closely managed, monitored, and controlled throughout their operations within the Russian exclusive economic zone (EEZ). Rosatomflot has been the lead organization since 2018 in building the marine infrastructure and icebreaking fleet to support the NSR. More frequent naval operations in longer seasons of open water, and the year-round operation of Russian nuclear icebreakers, provide a continuous (all seasons) sovereign presence unequaled in any other Arctic region. Article 234 of the United Nations Convention on the Law of the Sea (UNCLOS)—the so-called "ice-covered waters clause"—continues to be used by the Russian Federation as justification to enforce its comprehensive NSR regulations as a way to effectively control marine pollution and ship traffic in its Arctic waters.

The Russian maritime Arctic is highly secure and perhaps more closely managed than even during Soviet times. The region is viewed by the leadership in Moscow as an essential area of economic development, a critical link to global markets, and a set of domestic waterways for exclusive naval operations and commercial (domestic and foreign) traffic. During 2050, *the* major concern for Russia is the continued weakening of oil and gas

prices, as well as global demand and price fluctuations, making Russian Arctic commodities increasingly more difficult to sell on international markets. Additionally, foreign investments by France, China, and Japan in Russian Arctic projects have decreased since 2035, as future development ventures are viewed as not economically viable in the long-term. Economic development in the Russian North without new capital investment by the central government (state-owned oil and gas enterprises) and foreign investors has slowed to levels of three decades ago. The annual cargo tonnage along the NSR has been steady during the 2040s, but major increases have not been forecasted.

Arctic Marine Transportation and the Northern Sea Route

Since 2030, three major LNG facilities on the Yamal Peninsula along the Ob estuary, Arctic LNG 1, Arctic LNG 2, and Arctic LNG 3, all developed by Russia's largest independent gas producer, Novatek, have been loading product to LNG icebreaking carriers. These capable Arctic ships sail to trans-shipment ports near Murmansk and on the Kamchatka Peninsula. Funded by Novatek and fully operational by 2023 and 2027, these regional hub ports are used to transfer LNG from specialized ice-class ships to conventional carriers. Direct (nonstop) voyages from the Yamal production facilities to European ports also continue, depending on ice conditions along the western NSR and market opportunities. However, fewer LNG icebreaking carriers during 2035–45 were making long transits from the Russian Arctic to ports in China, Korea, Japan, and southeast Asia. The Kamchatka trans-shipment port has been a successful investment and an effective strategy to keep the LNG icebreaking carriers solely on Arctic voyages and to maintain high gas production rates at the three Yamal facilities. In addition, oil has been shipped out of the southern Ob River region for three decades, and coal has been shipped from the Taymyr Peninsula to India. Both enterprises have been under severe competitive pressure since 2032 because of lower global oil and coal prices. Several Arctic coal enterprises closed in 2040 due to a lack of global demand.

Back in 2018, then-President Putin had decreed that 80 million tons of cargo along the NSR annually would be reached by 2024; a total of 73 million tons was reached in 2024. Since then, the NSR averaged 90 million

tons during the 2030s, reaching a high of 135 million tons in 2038, down to 110 million tons in 2040, and averaging 98 million tons of cargo during the past decade.

A competing Arctic marine transportation system to Russian Yamal LNG, a wildcard development, has unexpectedly emerged along the Alaskan coast. Announced in October 2019 by Qilak LNG (Alaska-based), Exxon Mobil, and Lloyds Energy (Dubai-based), the joint venture was formed to ship gas from Alaska's North Slope at Point Thomson to Asian markets. Long-term contracts for this Alaskan LNG have been secured in Japan and Korea, the closest viable buyers. A gas liquefaction facility (built in Japan), located in the Arctic Ocean 12 nautical miles from the coast, came on line in 2028. A fleet of five icebreaking LNG carriers (all built in Korea), similar to those being used on the voyages along the NSR out from Yamal, call on the North Slope facility every three weeks. They have been effectively and safely operating year-round along the Alaskan coast since early 2029. Icebreaker support has been provided east of Point Barrow and during the final twenty nautical miles into the offshore facility. Only during two winter seasons, 2034 and 2041, has icebreaker escort of the LNG carriers

Russian floating nuclear power plant Akademik Lomonosov, now located in Pevek. (Rosatom)

been required in the Chukchi Sea. The North Slope LNG has been shipped aboard the ice-class carriers directly to Japanese and Korean markets since the inception of operations; trans-shipment hubs have not been utilized in this Arctic marine transportation system.

During the past two decades, shipping containers along the NSR on trans-Arctic voyages has *not* been an attractive alternative to more traditional global shipping routes. The seasonal nature of Arctic navigation, vessel size limitations, and schedule uncertainties associated with Arctic operations continue to constrain use of the Arctic Ocean for global container shipping. A proposal was put forth in 2019 by the Russian Ministry for the Development of the Far East to create a state-run container shipping company that would trans-ship containers in ice-class carriers between container hub ports in Murmansk and Kamchatka in the Pacific.

A feasibility study conducted in 2020–21 indicated that European and Asian container shipping companies might be attracted to deliver their containers to hub ports, with Russian shippers operating along the length of the NSR. However, major container shippers remained concerned about the uncertainty in the timing of cargoes and the economic viability of the route. Importantly, the Russian public and private interests would take on the risks associated with Arctic navigation. A plan was developed by 2030 for the required fleet of ice-class container ships and two major trans-shipment ports that would be co-located with the LNG trans-shipment terminals built at the end of the 2020s. However, the billions of rubles in infrastructure investments required by responsible ministries and state-run companies have materialized very slowly. President Putin was a primary supporter of making the NSR an international container shipping route between Europe and Asia, and his unanticipated retirement in 2032 created a key void in Moscow's political support for this strategic vision.

In March 2029, a successful cyberattack on the Kamchatka LNG trans-shipment facility immobilized operations for three weeks. Following this unprecedented attack (whose national origin remains unknown), progress on funding and constructing the trans-shipment terminals has been minimal. By 2050, the primary use of the NSR (and highest volume of cargo) remains the shipping of natural resources out of the Russian Arctic by carriers on destinational voyages. Some smaller container ships have been operating

for two decades to the mouths of the Siberian rivers and transferring their containers to river barges. By 2040, this highly successful linkage to the river barge system expanded to a nearly six-month season, contrasted with a short three-month season earlier in the century.

Changes in the Arctic Sea Ice Cover and the Implications

In September 2045, satellite images indicated a nearly ice-free Arctic Ocean. No old or multi-year sea ice could be observed along the Canadian, Greenlandic, and Russian coasts. This was a landmark event for the planet and the Arctic Ocean, as only annual or seasonal sea ice would remain throughout the winter. The Arctic Ocean had been seasonally ice-covered with only first-year ice in winter for the preceding five years, an environmental situation much like the seasonal transitions of ice cover observed in the Baltic Sea, the Bering Sea, and the American Great Lakes. However, the ice thicknesses in the central Arctic Ocean during winter have averaged 2.2 meters, presenting a challenge to routine winter navigation by commercial ships.

Satellite observations and in situ measurements during the 2040s have consistently shown the seasonal sea ice along the Russian Arctic coast to have thinned to less than 2 meters thick. During the (winter) ice navigation season of 2048 across the Kara Sea to the entrances of the Ob and Yenisey rivers, the ice averaged 1.3 meters in thickness, an historic minimum thickness for the region. However, coastal observations throughout the Russian Arctic have shown the thinner, first-year sea ice to be significantly more mobile during autumn, winter, and spring. In the East Siberian Sea during the winters of 2045–48, ridged and rafted sea ice was measured as 3 to 4 meters thick, which has challenged even the nuclear icebreaker escort of LNG icebreaking carriers on their eastward voyages into the Pacific from Yamal. While overall the new, seasonal, Arctic sea ice cover is more navigable in most regions and requires lower ice-class ships, the more mobile sea ice observed during mid-century has presented new and unanticipated challenges to shipping operations.

Longer ice-free periods along the NSR (four months completely ice-free during the 2030s and 2040s) and in the Central Arctic Ocean (two months beginning in 2042) have caught the attention of commercial shippers, adventurers, the cruise ship industry, and the world's navies. Sailing vessels have completed historic voyages since 2030 across the Eurasian

Arctic and along the NSR under close control of Russian authorities. In September 2032, a remarkable sailing voyage was successfully conducted across the Central Arctic Ocean, from Fram Strait between Greenland and Svalbard to the North Pole and out Bering Strait. The U.S.-registered sailing yacht *Atlantic* averaged 10 knots across the "Top of the World," a voyage under sail that would have seemed far-fetched for those who lived during the 20th century. The new reality of a profoundly changed Arctic Ocean was confirmed by the global attention given to this extraordinary polar sailing expedition. Earlier, in August 2025, an ice-class 2 polar cruise ship, the French-flagged *Le Commandant Charcot* (powered by LNG to reduce emissions) crossed the Central Arctic Ocean through the North Pole. This historic cruise ship voyage set a new and high bar for the polar cruise industry and made accessible all polar marine regions that were once closed except to nuclear submarines and advanced icebreakers.

The U.S. Navy has viewed the Arctic Ocean's newly ice-free regions with strategic interest and concern. In the early 2020s, the U.S. Navy expressed publicly the possibility of conducting "freedom of navigation" voyages in the Arctic Ocean, including along the Russia Arctic, similar to its transits in the South China Sea. In January 2029, the U.S. announced that a naval group including a new U.S. Coast Guard polar security cutter (aka polar icebreaker) would venture into the Arctic Ocean in September. The Russian Federation immediately communicated its concern that any operation sailing into its internal Arctic waters would be met with force.

A Russian naval group including the Russian naval icebreaker *Ivan Papanin* sailed from Murmansk unannounced into the East Siberian Sea for operations in August 2029. Any potential confrontation was avoided, however, as the U.S. naval force (less nuclear aircraft carrier) sailed through the Bering Strait in September and north into the Central Arctic Ocean, where it conducted operations with U.S. and U.K. nuclear submarines sent into the region. The flotilla returned south along the same track line into the North Pacific Ocean.

Similar naval operations have been conducted by Russia and the U.S. during the early 2040s, each operation benefiting from longer ice-free periods in the Central Arctic Ocean. In September 2048, naval flotillas from both nations conducted surface-ship trans-Arctic Ocean voyages with brief stops at the North Pole.

Security Operations and Applications of New Marine Technologies

During the past three decades, Russia has tightly controlled access to the entire Russian maritime Arctic, encompassing its vast EEZ across the Barents, Kara, Laptev, East Siberian, and Chukchi seas, the largest continental shelf in the world. Routine maritime enforcement of the International Maritime Organization (IMO) Polar Code and NSR regulations has been conducted in Murmansk, Pevek, and Kamchatka, as well as also unannounced underway inspections conducted by the Russian Coast Guard (a branch of the Federal Security Service or FSB). More ominously, aggressive boardings of commercial ships underway along the NSR have been conducted by Navy commandoes from Russia's Northern Fleet with full coordination and approval of the FSB. The first such boarding was performed in September 2018 near the Taymyr Peninsula aboard the cargo ship *S. Kuznetsou*, owned by the Northern Shipping Company; violations of the NSR regulations were thought to be reason for this unusual action by the Russian Navy. Similar aggressive tactics have been used aboard commercial ships in August 2022, September 2028, and in early January 2031 by one of the Russian Navy's new icebreakers. Since that time no boardings by combat teams have been conducted, but at-sea inspections of domestic and foreign-flagged vessels have continued through the 2040s by the FSB. Year-round inspections have been conducted along the entire NSR.

A new monitoring and surveillance system for tracking commercial ships, based on satellite and land-based shipboard automatic identification system (AIS) mandated by the IMO, was completed by 2030. New maritime command centers in Murmansk on the Kola Peninsula and Tiksi in the Kara Sea were also established to receive this information and data collected by a series of coastal radars in the Russian Arctic straits that can detect all smaller surface vessels transiting these waterways. Arctic unmanned aircraft (UAVs), essentially cold-weather drones, have been deployed on routine flights over the full length of the NSR since 2032. Operating with the Russian Global Navigation Satellite System (GLONASS)—and importantly not relying on GPS—these drones have also been deployed during the 2030s and 2040s on routine flights to the North Pole, with return to airbases on several Russian Arctic islands including Novaya Zemlya and

Severnya Zemlya. By 2032, Russia has completed underwater installation of fiber optic communications cables and acoustic sensors in all of its Arctic navigation straits and throughout the northern reaches of the NSR water area. A small armada of offshore vessels and cable layers had been observed by satellite each summer for a decade as they constructed this vast array of underwater facilities throughout the Russian maritime Arctic.

More operations in the Russian maritime Arctic have involved the movement of naval assets of the Northern Fleet during nine months of access to the remotest reaches of the region. In this way unique Arctic operations have been conducted and perfected, and *sovereign presence has been effectively maintained*. Naval icebreakers and civilian nuclear icebreakers operated by Rosatomflot have been instrumental in providing safe passage for these expeditions, which have increased in frequency during the last decade.

The icebreaker fleet has also been essential to the successful response to several marine accidents in the Bering Sea (2029) and the Central Arctic Ocean (2034). The Arctic Search and Rescue (SAR) Agreement of 2011 provided the basic international organizational response to these accidents. In the Bering Sea near St. Lawrence Island, an LNG icebreaking carrier was adrift and grounded during a March southbound voyage from Yamal. Russia and the U.S. worked closely to resolve the incident, refloat the ship, and have salvage tugs tow the ship to Provideniya. Thankfully, there was no environmental damage to St. Lawrence Island and the surrounding coasts. The U.S. had operational control (through the U.S. Coast Guard) for this situation, as the accident occurred in the U.S. area of responsibility under the Arctic SAR treaty.

The second accident, in October 2034, occurred in the Central Arctic Ocean and involved a cruise ship with 800 passengers attempting a summer crossing. A small fire aboard resulted in the ship losing power and drifting into ice very late in the navigation season, with the onset of sea ice refreezing. Icebreakers from Russia (the nuclear icebreaker *Arktika*), the U.S. (the U.S. Coast Guard's polar security cutter *Corwin*), and Canada (the Canadian Coast Guard's *John F. Diefenbaker*) responded and removed the passengers and crew by helicopter. The cruise ship could not be saved, as it was crushed by the advancing ice, but the response effort showed a degree of close cooperation among the Arctic states that many believed was not possible in this era.

Continental Shelf Claims, the Arctic Coast Guard Forum, and Fishing

In 2016, Russia submitted its claim under UNCLOS Article 76 to the United Nations Commission on the Limits to the Continental Shelf (CLCS). The extended continental shelf claim stretches more than 300 nautical miles beyond the Russian Arctic EEZ and includes the sea bed under the North Pole. Denmark and Canada also submitted Arctic Ocean seabed claims that have not been completely resolved by 2050. However, in 2038 the CLCS issued an advisory that the sea bed at the bottom of the North Pole would not be contained feasibly (and legally) within a single state's jurisdiction; it was recommended that Canada, Denmark, and Russia reach some form of binding agreement that recognizes the "joint and overlapping ownership" of the sea bed beneath the North Pole. For Russia, approval of its vast claim by the CLCS for a significant sea bed region north of the EEZ provides a much greater area for potential oil and gas resources and for strengthening its northern security boundary.

The Arctic Coast Guard Forum since its formation in 2017 has been an effective body at addressing practical maritime issues for emerging Arctic Ocean uses. Most proactive in using this forum have been Russia and the U.S., although all eight states have shared substantial assets for Arctic response exercises. An important agreement among the eight nations—executed by their respective coast guards and maritime administrations—concluded in 2030 focused on the sharing of Arctic marine traffic data/information on a real-time basis. The Forum's maritime experts recognized that in order to provide enhanced marine safety and environmental protection and more effectively enforce the IMO Polar Code, the Arctic coastal states would need to share their data on commercial marine traffic moving across their shared national boundaries. Data on naval and government ship operations is excluded. The Arctic Marine Traffic Information Agreement came into force on 1 January 2032, and the transfer of Arctic ship traffic data among eight Arctic states proceeded seamlessly. The Agreement has been adhered to by all parties until 2050 and has been a successful model of close cooperation among the Arctic states in 21st-century maritime affairs.

Another area of cooperation among six Arctic states, as well as select non-Arctic states (Canada, Denmark, Iceland, Norway, Russia, USA, China,

Japan, South Korea, and the European Union), has been on fishing in the Central Arctic Ocean (CAO). A legally binding, precautionary fisheries agreement was signed in 2018 and ratified in June 2021to prohibit commercial fishing for 16 years in the CAO. The CAO is a high seas area without any national jurisdiction and a "global commons". This prohibition would allow for scientific research to be conducted prior to any commercial fishing. Joint research cruises, several by the U.S. and Russia, and one joint expedition by Chinese and U.S. icebreakers, were conducted during the summers of 2028 and 2030; the agreement was extended in 2028 for another decade, taking the moratorium date to 1 July 2044. As of January 2050, no fishing has been conducted in the Central Arctic Ocean. During the same period, Russian fish stocks within its vast Arctic EEZ and its continental shelf have been improving, making Arctic commercial fishing more attractive and economically viable for the second half of the century. This resource could become strategically valuable during a period of reduced global stocks due to overfishing and increasing acidification (and warming) of the world's oceans. Investments in Russian fishing enterprises have rapidly increased during the 2040s.

Summary Beyond 2050

The Russian maritime Arctic at mid-century was until very recently (with the cyberattacks on Russian facilities) a peaceful area of the globe that is linked to global markets through the marine export of Russian Arctic natural resources, principally oil and gas. Coal was a valuable export commodity from 2019 to 2037, shipped to India and other southeast Asia markets. However, global demand has weakened commodity prices due to strong global mitigation efforts to curb the building of more coal-fired power plants and stricter controls on surface strip-mining of coal. The production and transport costs of Russian Arctic coal cannot compete on global markets in 2050. Ice-class LNG carriers, tankers, and bulk carriers continue to sail on destination voyages along the NSR, although the total annual tonnage along the Route decreased throughout the 2040s.

In 2050, the Russian maritime Arctic remains a very tightly managed and controlled set of waterways; frequent naval and law enforcement operations are held in both ice-covered and ice-free waters throughout the year,

emphasizing Russian sovereign presence within its EEZ. Advanced and highly effective surveillance and monitoring systems, both aerial and subsea, have been employed across the region since the early 2030s.

New maritime infrastructure has supported energy resource developments, but ports and systems have not been funded by the state or private industry to support the trans-Arctic shipment of containers across the NSR. The NSR has *not* evolved as a major international waterway for trans-Arctic shipping, competing with other global routes, as envisioned by many earlier in the 21st century. This is not surprising due to the many constraints of Arctic navigation in the region (including draft limitations) and the inherent economics of ship operations of the global shipping enterprise. Whereas China envisioned a "Polar Silk Road" in the Eurasian Arctic during the 2020s, greater competition during the past two decades has come from Indian Ocean maritime routes and Eurasian rail from China to Europe, both more economically viable than a polar shipping route for cargo transport within its own Belt and Road Initiative.

Looking into the future beyond this scenerio, the Russian maritime Arctic, and the Arctic Ocean in general, will face new economic and security challenges throughout the remaining half-century. A less stable globe to the south due to a warming world that is severely climate challenged has forced greater Arctic state cooperation. Although Russian oil and gas exports will likely continue to decrease, fresh water as a tradable commodity is an emerging natural resource that can be shipped out of the Russian Arctic to global markets, especially to European cities. Shortages of hard minerals such as nickel and copper, as well as rare earths, are in increasing global demand and Russian Arctic development of these commodities has expanded, offsetting other cargo losses along the NSR. Cabotage, or internal shipping in Russian Arctic coastal waters, continues as an essential economic necessity, although limited investments in marine infrastructure continue to constrain development of communities and diversified economies along the Siberian rivers. The Russian Arctic and the greater maritime Arctic region could see increasing tension at the same time the southern world is experiencing greater environmental stress and continuing regional conflict.

Discussion Questions

1. What conditions or assumptions does this scenario rely on?
2. What other national domestic developments might evolve in the Russian Arctic in the next thirty years?
3. How might international geopolitical events both in and outside the Arctic influence the future of the region?

CHAPTER
TWO

Analysis: Key Observations and Influential Factors

Shallow-draft nuclear icebreaker Taymyr, *built in Helsinki and St. Petersburg, in operation since 1989, with its sister ship* Vaygach, *(not pictured). (GRID-Arendal/Flickr, www.grida.no/resources/3635)*

The scenario presented in Chapter 1 illustrates the complexity of such a large Arctic maritime region and the array of uncertainties and wildcards that can influence its future. An analysis of a plausible future for the Russian maritime Arctic in 2050 yields 10 key points for consideration. All are influential factors or drivers of change in the region.

Controlled Maritime Space

The entire Russian maritime Arctic region is a closely managed and controlled marine space, although "open" in a legal sense (according to UNCLOS) for marine navigation. Little has changed since the Soviet era with regard to control of this vast Russian northern space. The navigation straits along the length of the NSR are considered under Russian law the internal waterways of the Russian Federation under unequivocal control. An advanced surveillance, monitoring, and patrol network is in place; one key site is a radar and satellite monitoring (military) facility on Wrangel Island. The undersea maritime space is likely heavily wired for surveillance. Polar-capable naval

and civilian agency vessels are readily available for response, enforcement, and effective on-scene (sovereign) presence in both ice-free and ice-covered waters. It is highly probable any freedom of navigation (FON) voyages would be met by rapid response and maritime force.

The Northern Sea Route and Trade

The NSR should not be viewed as a new global marine route for the trans-Arctic movement of containers. The NSR will not replace the Suez or Panama canals as a global container shipping route of choice; the NSR could become a seasonal, supplemental route to the Suez Canal route for select niche market commodities. The focus of the NSR is on facilitating the movement of natural resources out of the Russian Arctic, not on trans-Arctic voyages as an international corridor. It is plausible that future (select niche market) commercial ship voyages could be made in summer across the Central Arctic Ocean without using the NSR. However, even under this scenario, the NSR would likely not be seriously impacted, since the destinational voyages along the Russian Arctic coast would continue to make up a majority of traffic tonnages.

Economic Importance of the Russian Arctic

What cannot be underestimated is the importance of the Russian Arctic to the future financial health of the entire nation. The extraordinary natural resource base in the Arctic is directly linked to the Russian Federation's future GNP. Fully functioning marine systems (the key system being the NSR, an Arctic national waterway) support these *resource development - economic health dependencies*.

Natural Resource Development and Security

The focus of the Russian maritime Arctic for the three decades preceding 2050 has been on two national strategies: facilitating the movement of Russian Arctic natural resources, particularly energy riches, out of the region to global markets; and providing a more secure northern/Arctic border for the Russian Federation. These Russian national interests are emphasized in the "Basic Principles of Russian Federation State Policy in the Arctic to 2035," approved by President Putin in March 2020.

Cyberwarfare and Undersea Operations

Security of this remote but expansive region can feasibly be challenged by the use of cyberwarfare and the utilization of airborne and undersea drone technologies. Disrupting and shutting down maritime operations have been successful early in the 21st century (for example, within the global container shipping industry), and such operations could be effective in this Arctic region. High-endurance, autonomous, underwater drones could prove effective in the shallow, ice-covered continental shelves around the Arctic Ocean basin. Countermeasures are surely being developed and employed.

Central Government Financing

Russian Arctic development in all facets is highly dependent on government financing and subsidizing schemes provided to state-owned enterprises and private companies, including tax incentives. How long this critical support to the Russian North can continue will be dependent on the overall financial health of the entire country. President Putin's direct support of this development and subsidies has been crucial.

Foreign Involvement in the Russian Maritime Arctic

There are key challenges for both future foreign ship operations along the NSR and international investing in the Russian maritime Arctic. Foreign-flagged ships along the NSR encounter systematic control, additional regulations beyond international norms, and a fee system for services. Russia's uncertain legal system, ministerial/agency bureaucracy (with its complex procedures and requirements), opaque import and export rules, and international sanctions all provide significant limitations and constraints to foreign investors. Key foreign investments to watch will be for energy development projects and port/maritime infrastructure needs along the NSR; large investments from China, Japan, Korea, France, and others are important wildcard factors.

International Affairs

Russia is a key and influential state in international Arctic affairs, including its work as a member of the Arctic Council, the Arctic Coast Guard Forum, and the International Arctic Science Committee. Russia's active involvement

in the International Maritime Organization, World Meteorological Organization, and International Hydrographic Organization will continue. National economic and security interests are the principal coupled factors in its approaches to both Arctic maritime operations and to international engagement affecting expanded Arctic Ocean marine use.

Uncertainty of the Putin Regime and Beyond

The uncertain future and stability of the post-Putin regime make futures work on the Russian Arctic challenging at best. However, his tenure can now be continued to 2036 (vice 2024) with the June 2020 changes to the Constitution of the Russian Federation. As history has shown, the transition of power and the future of Russia's political and state institutions are difficult to foresee. President Putin has provided unwavering support to development of the Russian Arctic during his long tenure, and this support is very likely to continue. It is plausible to argue that Russia's resource-based economy will persist and that Russian Arctic energy resources will remain significant contributors to the national economy to mid-century (and beyond), despite the increasing pressures on global commodities markets.

Global Climate Change Impacts

Russia is faced with a major conundrum regarding the Arctic and global climate changes. These changes have highly influential impacts on the physical environment of the Russian maritime Arctic, the Siberian landscape, and the development of Arctic natural resources, especially oil and gas. The profound retreat of Arctic sea ice with a warming planet creates greater marine access throughout the Arctic Ocean and along the Russian Arctic coast. Longer seasons of navigation are highly plausible on the NSR; there also shorter ice-free seasons in the Central Arctic Ocean at mid-century. However, permafrost thawing has huge (negative) implications for coastal infrastructure and land access during summer; higher terrestrial temperatures and increasing forest fires have severe implications. On a global scale, international efforts to mitigate future greenhouse gas emissions will create uncertainties in markets for oil and gas. These uncertainties and commodity price volatilities will plausibly weaken demand for Russian Arctic energy resources at mid-century and perhaps sooner. This is among the most serious economic issues confronting the future of the Russian Federation.

Discussion Questions

1. Discuss these potential influential factors and major drivers of change.
2. What is a more significant driver of marine use in the region, climate change or natural resource development? Explain.
3. What are the reasons for the long-term loss of population in Russia's northern cities, and how might economic issues and demographic trends influence development of the Russian Arctic?
4. How might China or other regional powers respond to Russia's efforts to exert more control over the NSR?
5. Discuss how international investors in the development of Yamal LNG (i.e., France, China, Japan, and South Korea) might influence the economic outcomes of the Russian Arctic.

Russian Arctic Strategy to 2035

On 5 March 2020 Russia released a new strategic document for the Arctic titled *Foundations of the Russian Federation in the Arctic for the Period up to 2035*. The decree signed by President Putin states at the outset that this is a strategic planning document to "ensure the national security" and "defend the national interests" of the Russian Federation (RF). The document follows a similar strategy released in 2008 and additional development plans released in 2013 and 2014. In the final implementation section of the documents it notes the RF President is responsible for overseeing its implementation; the State Commission for Arctic Development coordinates the Arctic activities of the federal bodies and monitors the implementation of these Arctic State Policies. The primary RF national interests in the Arctic are as follows:

- Ensuring the sovereignty and territorial integrity of the RF;
- Preserving the Arctic as a territory of peace, stability, and mutually beneficial partnership;
- Guaranteeing high living standards and well-being for the Arctic population of the RF;
- Developing the Russian Arctic as a strategic resource base, and using it sustainably to accelerate the economic growth of the RF;
- Developing the Northern Sea Route as the RF's globally competitive national transportation corridor; and,
- Protecting the Arctic environment, preserving the native lands, and protecting the traditional way of life of the Indigenous people in the Russian Arctic.

The strategy identifies a broad set of national security threats including population decline in the Russia Arctic and insufficient development of terrestrial infrastructure (social, information, transportation, communications, and aviation equipment) in the region. Additional primary threats include a slow pace of geological exploration of minerals, the lack of state support mechanisms for business projects (such as tax incentives or subsidies), and a failure to meet established deadlines for infrastructure development (including construction of icebreakers) along the NSR. Noted is the inability of the current environmental monitoring network to adequately respond to environmental challenges. The primary challenges to the RF's national security focus on the actions of foreign states and international organizations: attempts by foreign states to revise international treaties governing economic and other Arctic activities and establish national regulatory frameworks; the "unsettled" international legal delimitation of Arctic maritime areas (the continental shelf areas of the Central Arctic Ocean); foreign state and international organization actions to obstruct the RF's legitimate economic or other Arctic activities; Arctic military buildup by foreign states; and "discrediting" the RF's Arctic activities.

Key sections are devoted to themes that correlate with the RF's national interests: social development; economic development; infrastructure development; science and technology; protecting the environment and ensuring environmental security; development of international cooperation; protecting the population and territories; providing public safety; providing military security; and defending and safeguarding the RF state borders. For military security the strategy calls for increasing the general combat capabilities of the RF, improving the "integrated control over air, surface, and underwater activities" in the Russian Arctic, and modernizing the military infrastructure facilities (an ongoing activity on the Russian Arctic islands). For international cooperation the strategy calls for the Arctic Council to be the leading regional "association" (the Arctic Council is normally referred to as an intergovernmental forum) for coordination of international Arctic activities, and lists "guaranteeing Russian presence on the Svalbard archipelago" according to the provisions of the 1920 Treaty of Spitzbergen. (There is strong disagreement over Norwegian fisheries protection zone around a Svalbard.) RF interests also include maintaining cooperation with other Arctic states in the delimitation process of the continental shelf in the Central Arctic Ocean (UNCLOS Article 76), contributing to efforts at enhancing the search and rescue network in the Arctic Ocean, and engaging with Arctic and non-Arctic states in mutually beneficial economic cooperation in the Russian Arctic (likely allowing for a broad array of foreign investments in Russian Arctic projects).

How to measure the implementation of such a strategy gains mention in Section V with a lengthy list of "performance indicators." The social, economic and security indicators for the RF Arctic include: life expectancy at birth; an index of migration growth; the unemployment rate (using International Labor Organization methods); medium wage for organizations operating in RF Arctic; number of jobs at new enterprises; broadband access to the Internet for households; RF Arctic share of the nation's total Gross Domestic Product (GDP); RF Arctic share of the value-added high tech and knowledge-based sectors of the nation's GDP; RF Arctic share in the total fixed capital investments of the nation; RF Arctic share of domestic investment in research and development and investment of organizations in technological innovations; RF Arctic share in the nation's investments in fixed capital designated for protection and sustainable use of natural resources; RF Arctic share of the total national of production crude oil and natural gas; the volume of LNG production in the RF Arctic; the volume of cargo shipping in NSR waters including transit (trans-Arctic) traffic; and share of modern weapons, military, and special equipment in the total quantity of such equipment in the RF Arctic (a nod to outdated military facilities and weapons in the Arctic from the former USSR). Taking an integrated view of these indicators should provide the RF with measures of economic and social development that have not been easily available in the past.

Summary: Overall the new strategy presents Russia's comprehensive ambitions in its vast Arctic region. Development of Arctic natural resources ("strategic resource base") and their export to global markets holds a central place in these ambitions. However, fulfilling these economic goals requires a more prosperous, healthy workforce; growth in the RF Arctic population is needed and incentives will be necessary to attract other Russians to relocate to the North. Infrastructure requirements (such as seaports, spill response, railroads, airports, subsea fiber-optic communication cables, and satellite monitoring) and development of the NSR as a domestic and international waterway have prominence in the strategy. Although environmental protection challenges are integral elements of the strategy, global climate change is mentioned once, related to infrastructure challenges (the impacts of permafrost melting). The changing environment and measures to protect water and natural areas to enhance climate resiliency are included, but climate change issues are not addressed at a level of importance to their likely critical level of future influence and impacts. The strategy importantly balances Russia's multiple interests in strengthening Arctic cooperation ("preserving the Arctic as a territory of peace, stability, and mutually beneficial partnership") and enhancing Arctic military security to counter challenges to its sovereignty and national integrity. A number of these strategic issues and interests should be reflected in Russia's Chairmanship of the Arctic Council during 2021–2023.

SOURCE: *Foundations of the Russian Federation State Policy in the Arctic for the Period up to 2035*. Signed by the president of the Russian Federation on 5 March 2020, The Kremlin, Moscow. Translation by A. Davis and R. Vest, Russia Maritime Studies Institute, U.S. Naval War College, Newport, RI, 14 pages.

Figure 2.1 Russian Arctic Strategy to 2035

CHAPTER
THREE

The Region Today

The ice-free port of Murmansk, on the Kola Peninsula, northwest Russia (Atle Staalesen, Barents Observer)

Geography and the Environment

The Russian maritime Arctic, the entire northern border of the Russian Federation, stretches more than 160 degrees across the top of Eurasia from the Norwegian-Russian border west of the Kola Peninsula to Bering Strait, which separates the Russian Far East (and Chukotka) from Alaska. This long Arctic coastline also borders on the largest continental shelf on Earth, which extends nearly to the 200-nautical mile Exclusive Economic Zone (EEZ) boundary.[1] The dominant geography of this immense marine space includes a series of archipelagoes and large islands spaced along the coast, from the prominent islands of Novaya Zemlya (separating the Barents and Kara seas) in the west to Wrangel Island in the east. Notable are the navigation straits created by this geography, each of which has been closed off by straight baselines and declared to be the internal waters of the Russian Federation since the Soviet era.[2]

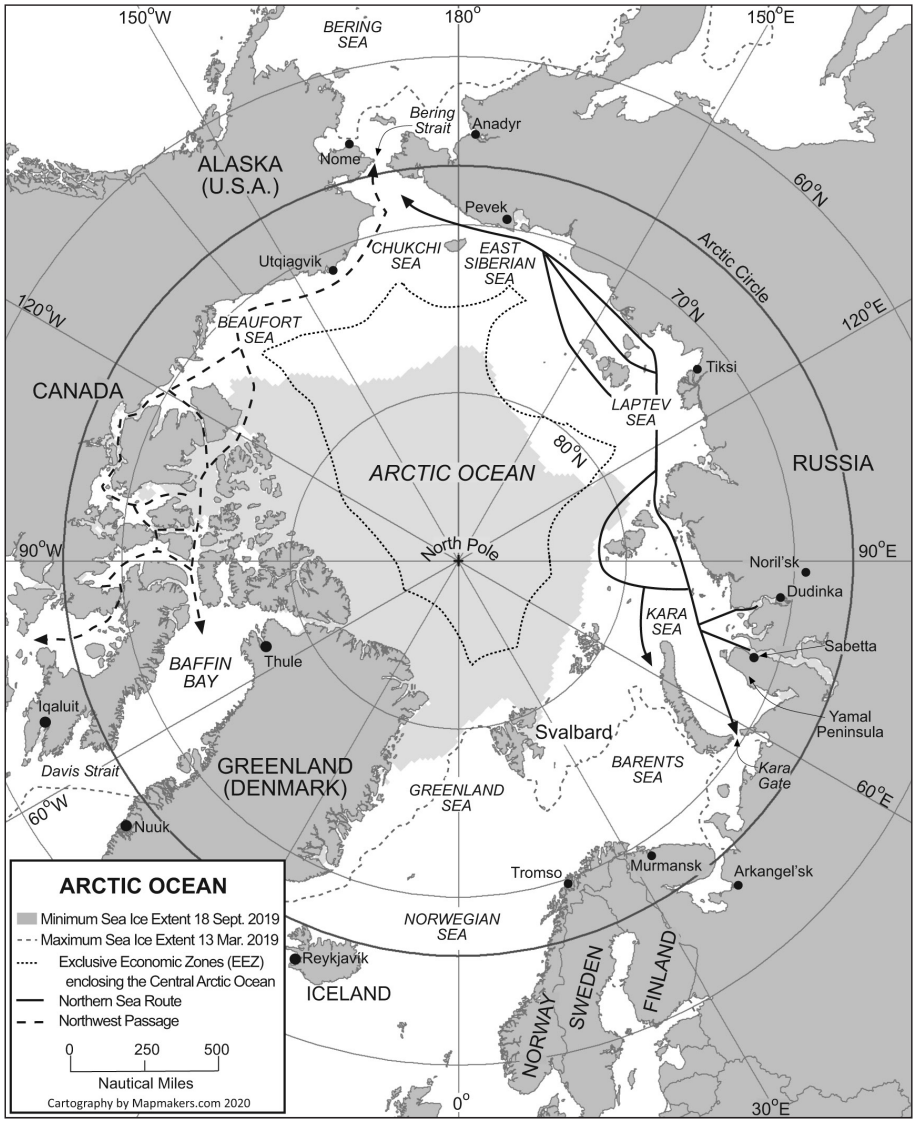


Figure 3.1 The Arctic Ocean bounded by the eight Arctic states (Author and Cartography by Mapmakers.com 2020)

Figure 3.1 shows the spatial arrangement of the eight Arctic states and illustrates the dominance of the Russian Arctic over more than 45% of the space. Perhaps more telling is the vast size of the Russian Arctic EEZ when projected out 200 nautical miles from its northern island groups. This shallow-water region (most of it 500 meters or less in depth) of the Russian

maritime Arctic contains two navigation straits through the New Siberian Islands (Sannikov and Dmitry Laptev straits) with waters as shallow as 13 and 6.7 meters.[3] Figure 3.1 also indicates the EEZs of the five Arctic Ocean coastal states that together enclose the international waters of the Central Arctic Ocean. Contrasted with the more open geography of the Russian maritime Arctic, the Canadian Arctic is a more complex set of islands and archipelagoes that define the many navigational straits composing the Northwest Passage.

Figure 3.1 also shows the maximum and minimum extents of Arctic sea ice for 2019. The maximum extent on 13 March 2019 indicates sea ice in the Bering Sea, Baffin Bay, the entire Canadian Arctic, and along the Russian maritime Arctic from Bering Strait to Kara Gate; conspicuously, the Barents Sea and the port of Murmansk are largely ice-free. The minimum extent of sea ice on 18 September 2019 shows a large area of the Arctic Ocean remaining ice-covered; importantly on this date, the entire length of the Northern Sea Route (NSR) is ice-free.[4]

Figure 3.2 represents a more detailed map of the Russian maritime Arctic, showing multiple shipping routes, all more than 2200 nautical miles long, that are alternatives along the NSR from Kara Gate in the west to Bering Strait in the east. Two key boundaries are shown: the Norway-Russia maritime boundary in the Barents Sea and the Russia-United States maritime boundary in the Bering Sea and extending north into Chukchi Sea. The large region defined in Russian law as the NSR water area is indicated and notably *does not* include any of the Barents Sea.[5] A unique feature of this region of the Russian Federation are the major Siberian rivers that flow northward from the interior of Russia to the Arctic Ocean; six key rivers are shown (west to east): Pechora, Ob, Yenisey, Lena, Indigirka, and Kolyma. The Ob and Yenisey rivers and gulfs currently provide important access to major natural resource developments in western Siberia, including the new port of Sabetta on the Ob Gulf that supports the export of liquefied natural gas (LNG) aboard a fleet of icebreaking LNG carriers.[6] The port of Dudinka on the Yenisey River provides support (via rail) to the industrial complex at Norilsk (Nornickel), which is the world's largest producer of nickel and palladium as well as a major producer of copper and platinum.[7] All of the major Siberian rivers are ice-bound, and several support ice road

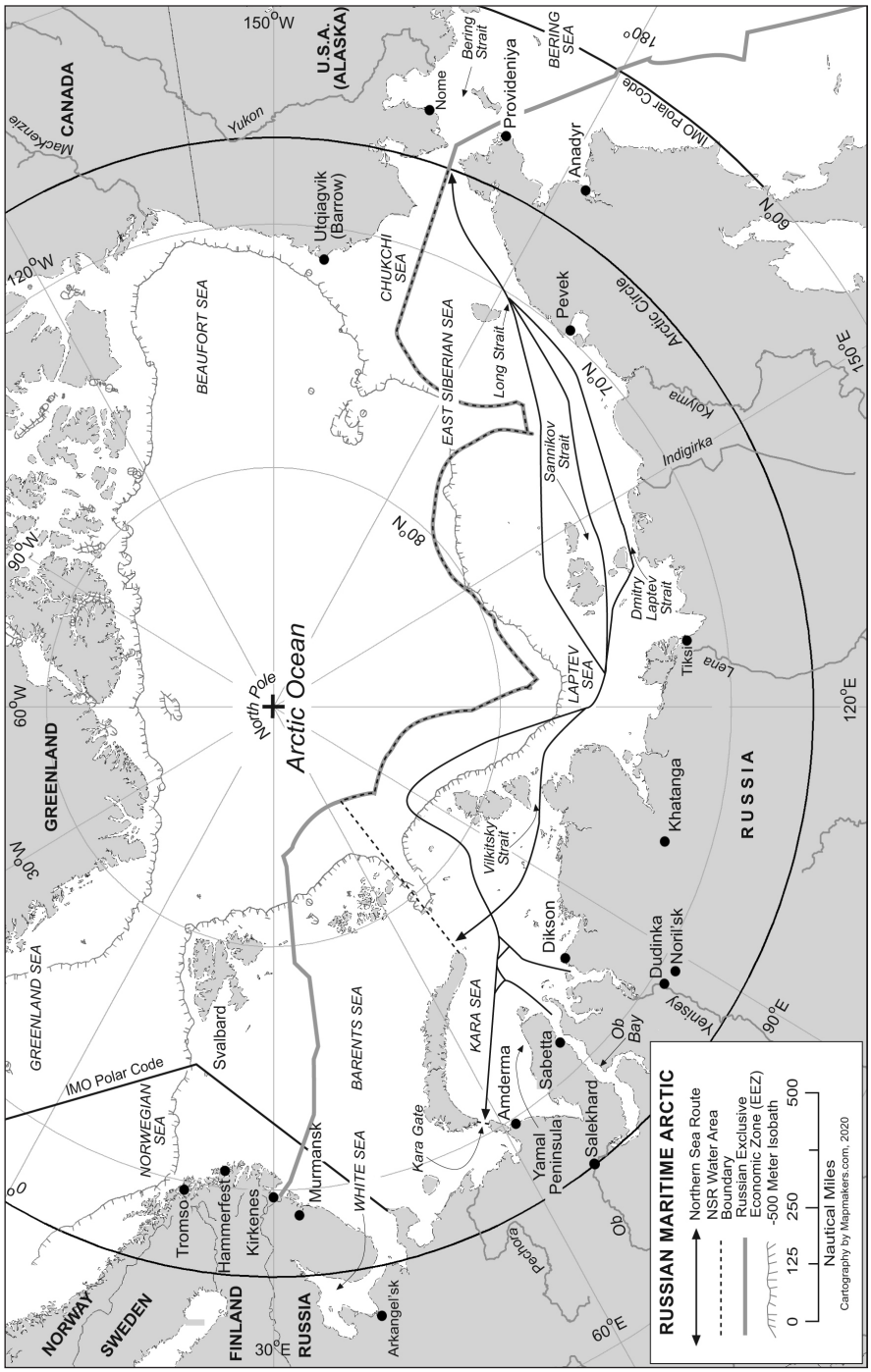


Figure 3.2 The Russian Maritime Arctic indicating the vast exclusive economic zone, and NSR water area (Author and Cartography by Mapmakers.com 2020)

transportation (by truck) during the winter months. During summer, barge traffic provides an important connection for much of the interior of the Russian Federation to the Arctic Ocean. As the Arctic Ocean's ice cover continues to retreat and allows greater marine access for longer navigation seasons, these connections will likely become more influential in the economic development of more southern areas of the Russian Arctic.

Murmansk on the Kola Penninsula and Arkhangelsk on the White Sea are major cities and key ports in the western maritime Arctic with 2018 populations of 757,000 and 1,166,000 respectively; however, both cities have experienced significant population losses since 1990 and the end of the Soviet Union (-36.5% for Murmansk and -26.0% for Arkhangelsk).[8] Murmansk and the industrial city of Norilsk (built on continuous permafrost) are the only cities above the Arctic Circle with populations of more than 100,000 (Norilsk and the surrounding region has 175,000 to 180,000 inhabitants)[9]; the remaining ports along the lengthy NSR coast are relatively small cities and towns. Notably, Murmansk and its year-round ice-free harbor is the major hub port for the NSR and homeport of the Russian nuclear icebreaker fleet operated by Rosatomflot.

The Russian maritime Arctic remains one of the coldest places on Earth. The entire region is above the Arctic Circle and has over 2,000 nautical miles of coast facing an ice-covered Arctic Ocean. The terrestrial regions east of the Barents Sea are covered by continuous permafrost whose thawing is impacting marine infrastructure (including ports), Arctic community infrastructure, and pipeline integrity. However, the dominating environmental feature for this discourse is Arctic sea ice and how its presence or absence impacts marine operations along the length of the NSR.

The Arctic Ocean sea ice cover has been undergoing a profound change, as observed during the past four and a half decades of satellite monitoring.[10] The ice has been retreating in extent, thinning in thickness, and changing in character from multi-year ice (ice that has survived a melt season) to first-year or seasonal ice.[11] Simulations of Arctic sea ice from climate models indicate that plausibly on or before mid-century, the summer Arctic Ocean will be entirely ice-free.[12] This will be a historic event of global significance. All the multi-year ice will disappear from the Central Arctic Ocean for a

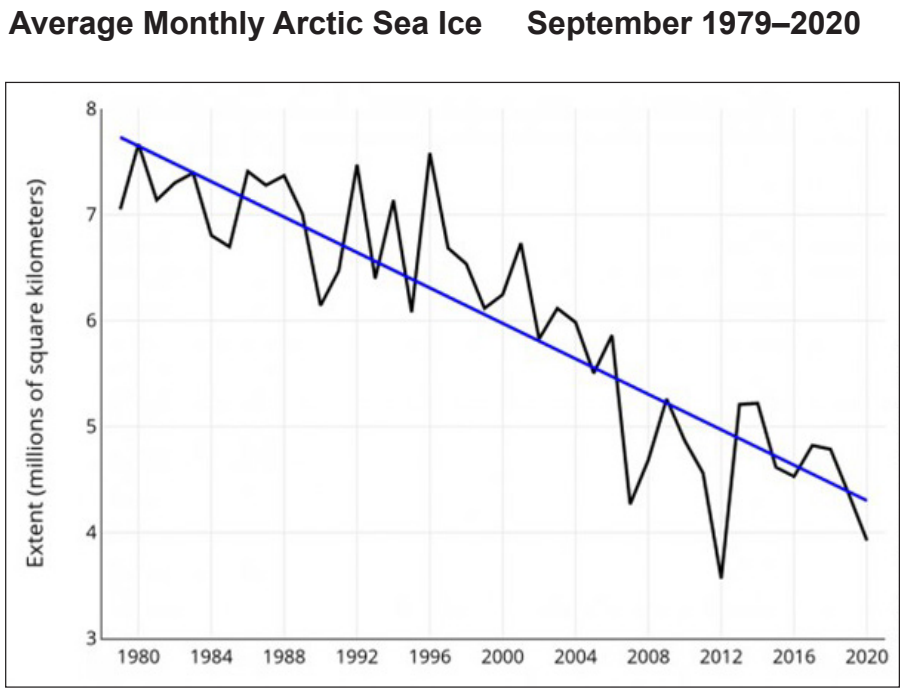


Figure 3.3 Summer Minimum Extent of Arctic Sea Ice
(National Snow and Ice Data Center, University of Colorado, Boulder)

(short) period of time, and the sea ice forming in subsequent months will be seasonal or first-year ice, which generally is more navigable. These trends have significant implications for the Russian maritime Arctic and the operation of the NSR. There will be fewer incursions of multi-year ice (which is more difficult to break and make safe ship passage) along the NSR in the decades to come, and then a complete absence of ice that survives the melt season. While the NSR will very likely continue to be partially or fully ice-covered for six to seven months annually by 2050, all of the sea ice will be seasonal and more navigable by advanced icebreaking carriers and ice-breakers.[13] There will be greater marine access throughout the Arctic Ocean and, in particular, with the Russian maritime Arctic. However, sea ice variability in the Russian Arctic coastal seas will likely remain high. A more mobile, dynamic, seasonal ice cover will not necessarily provide an "easier," more navigable waterway for marine operations.

The geography of this immense marine space and an extreme cold region environment are fundamental characteristics inextricably linked to the

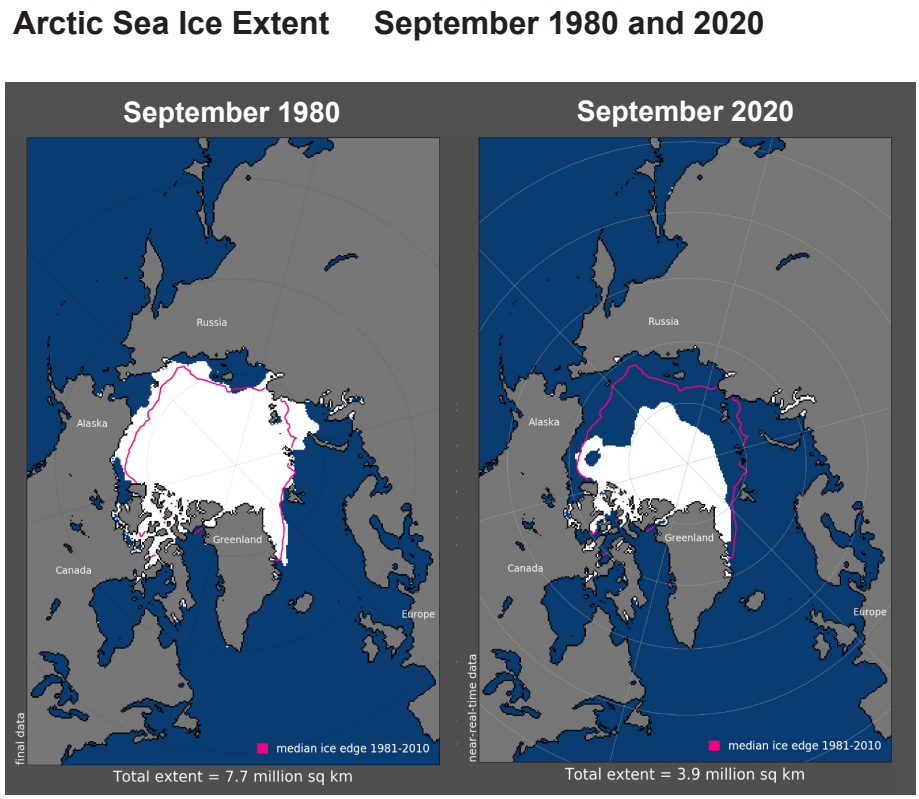


Figure 3.4 40-year loss of Arctic sea ice 1980–2020 indicating the largest retreat along the Eurasian Arctic coast. (National Snow and Ice Data Center, University of Colorado, Boulder)

future of the Russian marine Arctic. These factors heavily influence natural resource development, commercial ship and naval operations, warfighting capability, human existence in the Russian North, and more, and are integral to the scenarios creation process.

Governance and Boundaries

As is the case for most coastal states, governance of the Russian maritime Arctic is derived from the 1982 United Nations Convention on the Law of the Sea (UNCLOS) as the overarching legal framework.[14] The Soviet Union signed the Convention on 10 December 1982 and the Russian Federation acceded to UNCLOS on 12 March 1997; a 12-nautical mile territorial sea and 200-nautical mile EEZ were declared under UNCLOS by the Soviet Union to enhance its national security and gain sovereign control of its fisheries and (likely vast) seabed resources. Russia and four

other Arctic Ocean coastal states (Canada, Demark, Norway, and the United States) reaffirmed their support for UNCLOS and its applicability in the Arctic Ocean during an Arctic Ocean conference hosted by Denmark and Greenland on 27–29 May 2008 in Ilulisatt, Greenland.[15] This high-level political meeting produced the 2008 Ilulisatt Declaration, which states: "This framework [meaning law of the sea and UNCLOS] provides a solid foundation for responsible management by the five coastal states and other users of this Ocean...."[16] The Declaration further states: "We therefore see no need to develop a new comprehensive international legal regime to govern the Arctic Ocean."

Russia has notably focused special attention on UNCLOS articles 234 and 76 and how they apply to the Arctic Ocean.[17] Article 234 provides the coastal state with powers to regulate foreign shipping in order to prevent, reduce, and control marine pollution in the Arctic Ocean. A coastal state has the right to adopt and enforce nondiscriminatory pollution prevention, reduction, and control laws within the waters of the EEZ (including

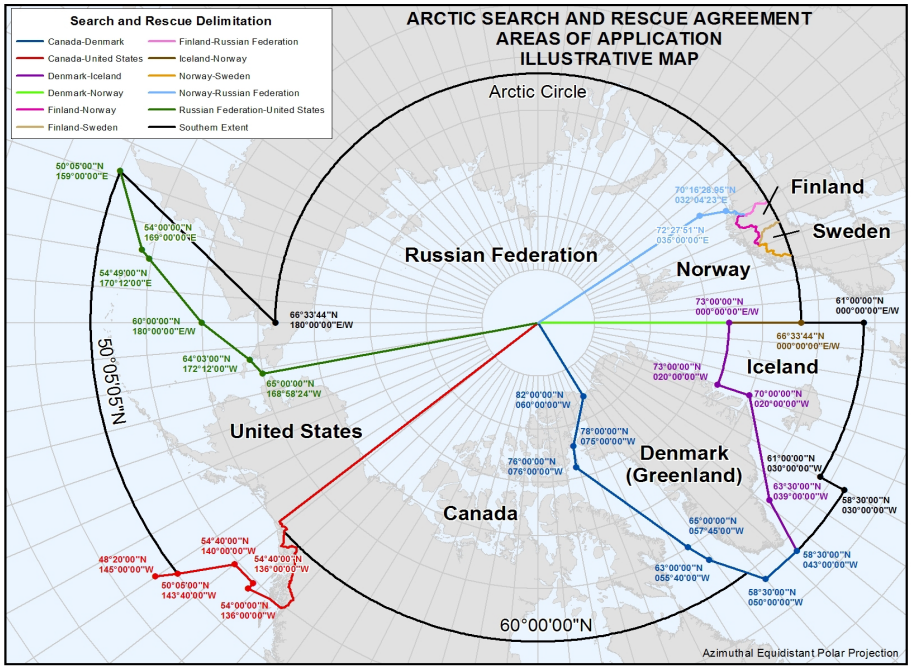
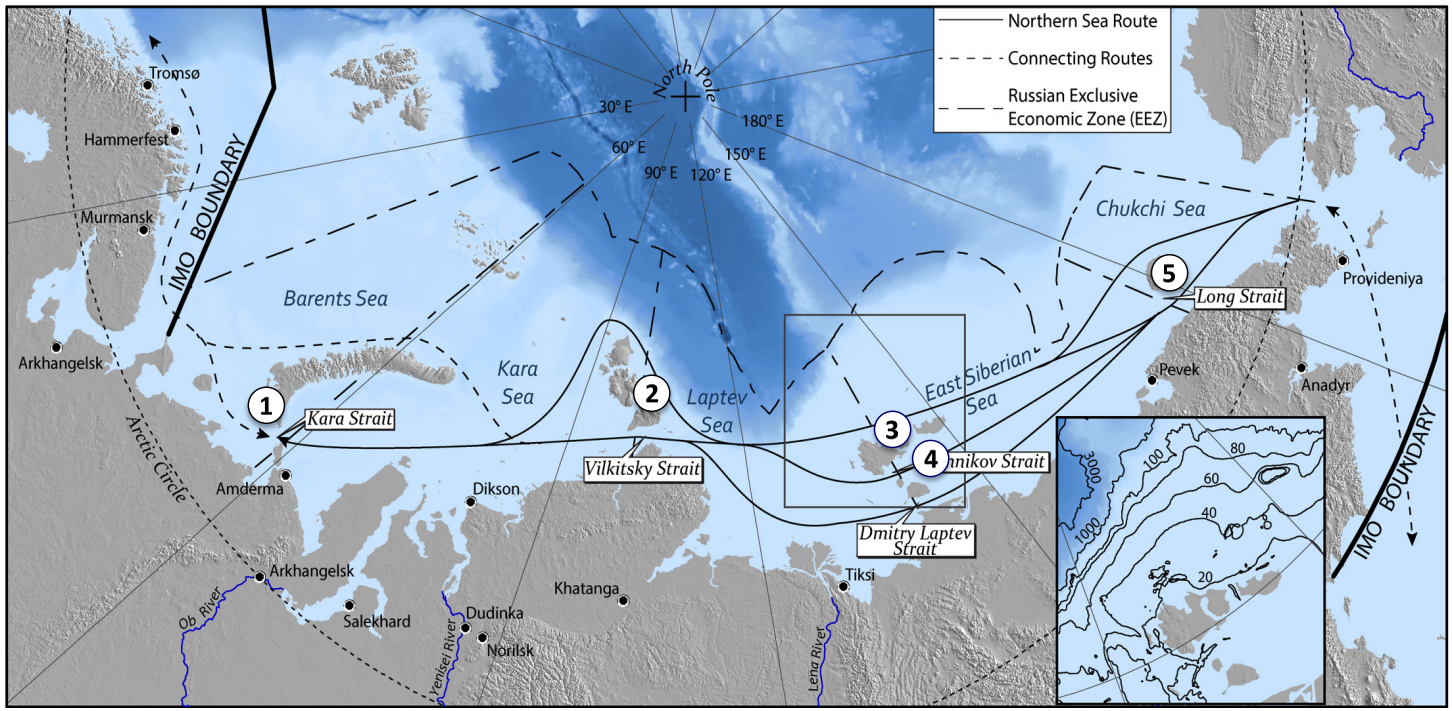


Figure 3.5 Arctic Search and Rescue Agreement (U.S. Department of State)



Key Straits & Depths:

1. ***Kara Gate (Strait) (10-40 m)***
2. ***Vilkitsky Strait (100-200 m)***
3. ***Sannikov Strait (13 m)***
4. ***Dmitry Laptev Strait (6.7 m)***
5. ***Long Strait (33 m)***

Characteristics & Constraints:

- ***Continental Shelf and Shallow Depths***
- ***Broad Exclusive Economic Zone (EEZ)***
- ***Offshore Arctic Islands***
- ***IMO Polar Code Boundary in the Barents & Bering Seas***

Figure 3.6 Russian Arctic Sea Routes and Characteristics (Stephenson, Brigham et al., 2014, Polar Geography)

straits) that are *ice-covered for most of the year*. Both Russia and Canada have implemented special rules and regulations in their Arctic waters using UNCLOS Article 234 as a key legal basis for their shipping regimes.[18] The application of Article 234 to Arctic coastal state waters has raised a number of key issues, including the required coverage of sea ice that may present a navigation hazard ("most of the year" or perhaps less ice in an era of profound sea ice retreat) and the unilateral right of the coastal state to implement ship construction, equipment, and mariner training standards.

UNCLOS Article 76 allows the coastal state to extend its jurisdictional continental shelf beyond the 200-nautical-mile limit of the EEZ and gain sovereignty rights over the seabed (not the water column), including exclusive rights of exploring and exploiting nonliving seabed resources and sedentary species. (Note: Coastal state fishing rights are limited to the EEZ.) The maximum extension can be out to 350 nautical miles, depending on certain geological conditions.[19] Coastal states must submit their detailed marine geo-scientific data to the Commission on the Limits of the Continental Shelf (CLCS), located in New York at the United Nations. In 2001, Russia became the first Arctic state to submit its extended continental shelf claim to the CLCS.[20] Russia argued in its submission that two Arctic Ocean seabed features, the Lomonosov Ridge and the Alpha-Mendeleev Ridge, were natural extensions to its Arctic continental shelf. The CLCS recommended that this claim required additional geological data. In August 2015, Russia officially resubmitted its Arctic shelf application and the CLCS is continuing its review.[21] Notably, the submitted claims of Denmark and Canada overlap the Russia's claim at the North Pole and in other areas; future negotiations among three parties will be required to sort out the complex geological data behind the claims.

The Northern Sea Route, Russia's national Arctic waterway, has historically been defined in federal law as the set of marine routes from Kara Gate (strait south of Novaya Zemlya) in the west to the Bering Strait in the east. It has never included the Barents Sea (see Figure 3.2). A definition of the Northeast Passage (NEP) better defines ship voyages and marine routes from northwest Europe (around North Cape, Norway), along the northern coast of Eurasia, and through the Bering Strait into the Pacific Ocean.[22]

Russia introduced a new legal regime for the NSR with Federal Law 132-FZ of 28 July 2012 (known by many as the Russian NSR Law).[23] The

new NSR water area is a large marine space encompassing the internal seas, straits, territorial sea, contiguous zone (out 24 nautical miles from the baseline), and most of the Arctic EEZ of the Russian Federation. Figure 3.2 identifies the NSR water area, bounded in the west by both Kara Gate and a longitudinal line from the northern tip of Novaya Zemlya to the EEZ boundary; the eastern end is in the Bering Strait at the Arctic Circle. Figure 3.2 illustrates plausible routes taken by ships along the NSR, including routes in the navigation straits through the northern Arctic islands, and the 500-meter isobath. UNCLOS Article 234 is applied within the NSR water area exercising regulatory control of shipping with the implementation of special regulations by the administration of the NSR, including mandatory pilotage and fees for icebreaker escort and support.

The USSR Council of Ministers on 15 January 1985 established by decree a comprehensive system of straight baselines enclosing its many bays, estuaries, and, importantly, navigation straits along its Arctic coast.[24] Arguing the "historic" nature of these waters (including, for example, the White Sea and Ob Gulf), the landward side of these straight baselines became the internal waters of the Soviet Union; these baselines also determined where the 12-nautical-mile territorial sea would be measured. The key NSR navigation straits through the Arctic islands and archipelagoes that remain enclosed by straight baselines include, moving west to east: Kara Gate, Vilkitsky Strait, Sannikov Strait, and Dmitry Laptev Strait (see Figure 3.2).[25] The legal status of these "navigation straits" remains contentious, in particular the right of innocent passage and other possible restrictions.

Two key boundary agreements with Norway and the United States establish the eastern and western reaches of the Russian maritime Arctic. After nine years of negotiation, the United States and the Soviet Union signed an agreement on 1 June 1990 for a maritime boundary in the Bering Sea and north into the Chukchi Sea.[26] The agreement was ratified by the U.S. Senate on 16 September 1991, but due to criticism of the treaty, the Russian State Duma has continued to postpone ratification.[27] After four decades of negotiating, Norway and Russia signed (15 September 2010) an agreement on a demarcation line in the Barents Sea. The agreement came into force in July 2011, resolving disputed areas and overlapping claims under UNCLOS, and providing new opportunities for cooperation and potential joint offshore development.[28]

Marine Transportation and Economic Development

Throughout its history, the NSR has been about creating an effective waterway to gain access to the Russian Arctic and its vast natural resources. During the Soviet era, the NSR was used for two main purposes: resupplying ports, communities, and defense establishments during summer along the length of the northern coast; and establishing a regular marine transportation system between Murmansk and Dudinka on the Yensiey River. Raw hard minerals such as nickel and copper ores were produced in the industrial complex at Norilsk, carried by rail to the port of Dudinka, and taken by sea to smelters on the Kola Peninsula. The finished products were primarily used to support the Soviet defense industry. Strategically, these critical natural resources remained independent of global commodity supplies and pricing. During the 21st century, the NSR has been an essential waterway to support resupply, naval operations, and above all, facilitate the marine export of natural resources to global markets.

Today, Nornickel (formerly Norilsk Nickel) is one of the world's largest metal producers.[29] Finished metals are shipped out of Dudinka using a fleet of five advanced icebreaking carriers that are small container ships; the ships are Finnish-designed and were built in Finnish and German shipyards.

Icebreaking container ship Norilsk Nickel *that routinely sails from the port of Dudinka carrying finished metals of the company Nornickel. (Aker Arctic)*

The *Norilsk*-class ships sail year-round to Murmansk, normally without icebreaker escort, and several ships have carried their cargoes nonstop to European ports.[30] During summer navigation seasons since 2012, Norilsk ships have carried products on voyages eastbound through the Bering Strait and to Asian markets.[31]

The largest natural resource development projects in the entire Arctic today are located in the Ob Gulf on the western shore of the Yamal Peninsula. A new LNG plant and the port of Sabetta have been constructed, and a fleet of icebreaking LNG carriers are carrying Yamal gas out of Sabetta to markets in Europe and Asia via the NSR.[32] At the southern end of the Ob Gulf, a second Arctic port complex, Novy Port, has been built as an oil export terminal.[33] Icebreaking tankers and escort icebreakers have been able to maintain year-round shipments westward to Murmansk and, in summer, east into the Pacific Ocean and Asian ports.

The new Arctic transportation system with its hub at Sabetta was developed with Russian and international marine operators, investors, and stakeholders. Finland's Aker Arctic Technology designed the LNG icebreaking carriers, and 15 ships of the initial fleet were built at South Korea's Daewoo Shipbuilding and Marine Engineering. The first ship in the fleet, *Christophe de Margerie*, is owned by Sovcomflot, Russia's largest shipping company; ownership of the additional 14 ships includes Japan's Mitsui O.S.K. Lines (MOL), China LNG Shipping. Sinotrans of Singapore, and the global shippers Teekey LNG Partners and Dynagas.[34]

A range of international companies assisted in dredging the waterway and constructing a new port and LNG facility. The Joint Stock Company Yamal LNG enjoyed broad domestic and foreign investment: Novatek (50.1%); French oil and gas company Total (20%); China National Petroleum Corporation (20%); and China's Silk Road Fund (9.9%).[35] For the ongoing development of a second LNG facility (LNG 2) on the eastern shore of the Ob Gulf, Novatek, Total, and China National Petroleum Corporation have been joined by a Japanese Arctic LNG consortium (Mitsui and Japan Oil, Gas, and Metals National Corporation).[36] These significant and historic foreign investments in the Russian Arctic illustrate more integration of the region with the global economy. However, how long these international investments will last is a key uncertainty.

Arctic shipping data for the NSR was challenging to obtain during the Soviet era, but information on the number of voyages and total annual tonnages became available in the 1990s. During Soviet times, an annual maximum of 6.6 million tons of cargo was reached in 1987 along the NSR, consisting of cargo carried by 331 ships in a remarkable 1,306 voyages.[37] However, given the financial burdens of the early years of the Russian Federation (with very low federal funding for the Russian Arctic), the total annual NSR tonnage declined by 2002 to 1.6 million tons carried by 47 ships on 170 voyages[38]; apart from several Finnish-flag icebreaking tankers servicing Arctic ports, there were very few foreign ships along the NSR. In 2010 and 2015 the annual cargo tonnages were 2.5 and 5.3 million tons respectively. With the increases of LNG carriers and tankers sailing out of the Ob Gulf, the NSR has experienced exponential growth in annual cargoes, from 10.7 million tons in 2017 to 19.7 million tons in 2018 and 31.5 million tons in 2019.[39] The vast majority of these recent cargoes were carried by ships on destinational voyages; only 27 ships sailed on full trans-Arctic voyages along the NSR (with 491,342 tons of cargo). In his March 2018 state of the nation address, President Putin decreed that the annual total cargo on the NSR should be 80 million tons by 2024, an ambitious but potentially achievable goal, given the completion of the LNG 2 facility and anticipated increases in oil and coal exports.[40]

A new Russian federal law dated 11 December 2018 (number 525) outlined a revamped management structure for the NSR. In this law (signed by President Putin on 28 December) the state nuclear power agency, Rosatom Corporation, became the management authority for the NSR and the lead government agency involved in development of the Russian maritime Arctic.[41] This is a significant and controversial shift in authority from the Ministry of Transport (and its own NSR administration) to Rosatom. Rosatom's Northern Sea Route Directorate will manage the state's nuclear icebreaker fleet (which it has done since 2008) and plan the region's infrastructure development. The Ministry of Transport will remain involved in the development of NSR regulations, represent Russia in international maritime affairs (such as at IMO), and other advanced port control and navigation safety issues, but the Ministry's overall role in the future of the NSR's development has been greatly diminished.

A centerpiece of this new management approach is the nuclear icebreaking fleet: four nuclear icebreakers and one nuclear icebreaking carrier currently

Nuclear Icebreaker *50 Let Pobedy*

The Russian nuclear icebreaker *50 Let Pobedy* (*50 Years of Victory*) was built at the Baltic Shipyard in St. Petersburg and launched 29 December 1993. However, due to the severe financial situation in Russia following the collapse of the USSR, the ship was not completed and operational until 23 March 2007. *50 Let Pobedy* is the sixth and final of the *Arktika*-class icebreakers operated since 1975 by the Soviet Union and Russian Federation; the *Yamal*, operational since 1992, is the only other *Arktika*-class ship in service. The nuclear icebreakers are civilian, government-owned ships operated by Rosatomflot, an organization within Rosatom, the State Atomic Energy Corporation. The nuclear icebreakers have a steam turbine electric power plant: the nuclear reactors produce hot water and steam, which drive steam turbines; the turbines are connected to generators that produce electricity fed to electric motors attached to the three shafts and propellers. Thus, the engineering plants are large and complex, and these ships are expensive to construct. However, they provide nearly unlimited access and sustained Arctic operations.

SHIP CHARACTERISTICS

- Length: 159.6 m; Beam: 30 m; Draft:11.08 m; Displacement/tonnage: 25,840 tons.
- Propulsive power: 58 megawatts (75,000 shaft horsepower distributed to three shafts).
- Full open water speed: 19.5 knots; Maximum speed: 22 knots.

CONSTRUCTION DETAILS

- Twin OK-900A pressure water reactors, each producing 171 megawatts of power; refueling is estimated to be every four to five years.
- Ice Class PC1, highest in the international system (ship is capable of year-round operations in all polar waters) and LL-1, highest in the Russian system.
- Double-hulled ship with ballast water between the hulls; ship is divided into 10 watertight compartments (for damage control and survivability).
- Single rudder and three fixed propellers, each with four 7-ton blades.

The Russian nuclear icebreaker 50 Let Pobedy *("50 Years of Victory") at the North Pole (Christoper Michel/Flickr)*

- Steel hull plating is 46 mm thick; a stainless steel "ice belt" of 5-7 mm is installed where ice meets the hull around the entire waterline.
- Flight deck and hanger for two helicopters.

ICEBREAKING CAPABILITY AND FEATURES

- Capable of breaking 2.8-meter thick level sea ice at a continuous speed of 3 knots.
- Modified bow is "spoon-shaped," reportedly to improve icebreaking through thick ice.
- An installed "air bubbler system" (water jets below the waterline) reduces friction of ice and snow along the hull during icebreaking.
- Installed internal ballast tanks are forward, aft, and athwartships; and a pumping system moves ballast water rapidly between tanks to induce rolling and pitching of the ship if it becomes stuck in the ice.
- Ship can break ice going ahead and astern.
- A "towing notch" is fitted on the stern where the bow of a ship being escorted can be coupled to the icebreaker with cables and towed or dragged through difficult ice.

COMPLEMENT

- Total 108: 51 officers and 58 other ranks (all Russian merchant mariners).
- Total guests/passengers (for polar tourist voyages): 128 in 64 cabins.

SOURCES: Observations of the author and R. K. Headland (Scott Polar Research Institute, Cambridge University); reference material from Rosatomflot and Murmansk Shipping Company.

Figure 3.7 Russian nuclear icebreaker 50 Let Pobedy

operational, with ongoing construction of new nuclear icebreakers and plans for even larger icebreakers of the Leader class.[42] (See Figure 3.8.) Although many of the most advanced icebreaking carriers now operating on the NSR can sail without icebreaker escort for an estimated six months, the nuclear icebreaker fleet will be escorting ships in convoy to potentially extend the navigation season to 10 to 12 months. The marine managers within Rosatom remain convinced that the icebreaker convoy system using nuclear icebreakers, a legacy of the Soviet era, is an effective model for the NSR's future.

The seasonality of navigation along the NSR means it is highly unlikely that it can be a regular and reliable trans-Arctic trade route between the Atlantic and Pacific oceans for container shipping. However, Russian shipping experts have noted that the NSR could become a "seasonal supplement" to the marine traffic through the Suez and Panama canals.[43] Even this more positive view may underestimate the serious challenges for the NSR becoming an ocean-to-ocean global trade route, however. Key constraints include the vagaries of Arctic weather and sea ice along the Route; "just-in-time" cargo strategies by global container shippers; the lack of viable ports along the NSR for multiple cargo transfers; shallow depth in several NSR navigation straits; higher marine insurance rates; icebreaker fees for escort; higher ship construction costs for polar-class commercial ships; and slower ship speeds in icebreaker convoys. A recent proposal to develop trans-shipment container ports on either end of the NSR could overcome several of these constraints.[44] Importantly for this proposed state-run operation, Russia would assume much of the risk associated with navigation along the NSR, using Russian-flag container ships escorted by nuclear and non-nuclear icebreakers. The economic and feasibility analyses of this trans-shipment option are ongoing, and it is unknown if government subsidies of such a large venture can be anticipated. It is plausible that some trans-Arctic traffic along the NSR will emerge in seasonal niche markets, perhaps for short-term charters of bulk carriers taking advantage of longer summer seasons of access.

The future of the NSR is highly uncertain, with multiple drivers influencing the way ahead. However, two key factors will influence, and perhaps constrain, maritime commerce flows along the NSR: the basic economics of the global shipping enterprise; and global demand and commodities prices.

It is likely a majority of NSR marine traffic will continue to sail on destinational voyages vice trans-Arctic navigation. Independently operated icebreaking

Russian Nuclear Icebreakers - Current and Planned

Name	Commissioned	Length (m/ft)	Draft (m/ft)	Power (MW/hp)	Reactors	Notes
50 Let Pobedy	2007	159.6/523.6	11/36	54/72,415	2	Service life extended to 2039
Yamal	1992	1148/485.6	11/36	54/72,415	2	Service life extended to 2030
Taymyr	1989	150.2/492.8	8/26.2	36/48,277	1	Service life extended to 2027
Vaygach	1990	151.8/498	8/26.2	36/48,277	1	Service life extended to 2026
Arktika	2020	173.3/568.6	10.5/34.4	60/80,461	2	Operational in late 2020
Sibir	2021 est.	173.3/568.6	10.5/34.4	60/80,461	2	Under construction
Ural	2022 est.	173.3/568.6	10.5/34.4	60/80,461	2	Under construction
IB60-4	2025 est.	173.3/568.6	10.5/34.4	60/80,461	2	Planned
IB60-5	2027est.	173.3/568.6	10.5/34.4	60/80,461	2	Planned
Leader 1	2027 est.	209/685.7	13/42.7	120/160,922	2	First leader class funded
Leader 2	2031 est.	209/685.7	13/42.7	120/160,922	2	Planned
Leader 3	2033 est.	209/685.7	13/42.7	120/160,922	2	Planned
Russian Nuclear Icebreaking Cargo Carrier						
Sevorput	1988	260.3/854	10.65/34.9	34.9/39,453	1	Operational along the NSR
Floating Nuclear Power Plant						
Akademik Lomonosov	2018	144.4/474	5.6/18	70/ 93,834	2	Towed to Pevek; 7 planned

Figure 3.8 Current and Planned Russian Nuclear Ships and Vessels (Data from Rosatom)

carriers, such as the LNG carriers sailing out of the Ob Gulf today, will be the norm; icebreaker-assisted convoys of commercial ships will be used to the extend the navigation season in the eastern NSR (from the Ob Gulf to the Pacific Ocean). Longer navigation seasons are highly plausible with icebreaker support to commercial ships, but it is uncertain if the NSR can be maintained year-round throughout its length for regular, economically viable voyaging.

One important facilitator of a viable future for the NSR will be Russia's continued investment in marine infrastructure including ports; response capability; hydrography and charting; aids to navigation; icebreakers; communications; and monitoring and surveillance. Implementation and enforcement of the IMO Polar Code in the Russian maritime Arctic will be an additional factor in the use of international shipping in the region. Despite the many uncertainties, natural resource development will remain the key stimulus for increasing marine activity throughout the Russian Arctic.

National Security and the Arctic Maritime Frontier

It is clear the Russian maritime Arctic is a vast space with changing accessibility in response to a warming planet, as well as a region of expanding resource development and marine traffic. The complexities and uncertainties of this changing Arctic region present a range of national security challenges and opportunities for the Russian Federation, including the following:

- Common defense of its Arctic citizens, natural resource wealth, civil assets, military facilities, and overall infrastructure;
- Maintenance of a visible, year-round, sovereign presence in its Arctic waters and a robust capability to move naval assets across the northern coast of Eurasia (from Atlantic to Pacific oceans) using a fleet of nuclear and non-nuclear powered icebreakers;
- Maintenance of year-round access to the Arctic Ocean and Atlantic Ocean for the Russian Navy, especially for its submarine force, including strategic nuclear capability;
- Protection of a maritime space to conduct large-scale naval and air exercises inside its Arctic EEZ and in international waters; and
- Utilization of a unique and large coastal space for the conduct of a broad range of weapons tests and research in largely remote and unpopulated areas.

Notably, the Kola Peninsula in northwest European Russia, a region north of the Arctic Circle, is one of the most militarized regions of the Russian Federation[45] (and one of the most concentrated military areas on Earth). Bases of the strategic air force and navy are located throughout this area and the White Sea; the headquarters of Russia's largest naval force, the Northern Fleet, is located in the port of Severomorsk on the Murmansk Fjord.[46] The strategic importance of the Kola Peninsula cannot be over-emphasized. Its coastal waters are ice-free year-round, allowing naval assets direct access to the Arctic and Atlantic oceans. Its ice-free port of Murmansk is a critical commercial hub with maritime links to Europe, and serves as the major gateway to the NSR in the east.

One of the opportunities presented by ice-free and longer summer seasons along the NSR has been the recent deployment of naval ships that are not

ice-capable. During August and September 2013 a naval task force of 10 warships and support vessels sailed from Severomorsk across the Barents, Kara, and Laptev seas to Kotelny Island in the New Siberian Islands. Included in the force was the nuclear powered cruiser *Pyotr Veliky (Peter the Great)*. The mission was to assist in rebuilding a small naval base on Kotelny Island.[47] A key feature of this operation was the employment of four (civilian) nuclear icebreakers (*Yamal*, *Taymyr*, *Vaygach*, and *50 Let Pobedy*) to escort the task group through several stretches of thick ice. This operation is clear evidence of the use of the nuclear icebreaker fleet, in this case the *entire* four-ship fleet (operated by Rosatom, the civilian nuclear power state agency), as a national asset in support of Russia's Arctic security interests.

Another naval force of note sailed from Severomorsk east into the Kara Sea off the Taymyr Peninsula during August and September 2019.[48] The flotilla was composed of the anti-submarine ship *Vice Admiral Kulakov*, two landing ships, one tanker, and a rescue tug. Its mission was to practice defense of the region's economic activity and exercise marine response such as salvage and rescue operations. The Russian Navy has also deployed its hydrographic ships to several Arctic island groups in summer over the past decade to survey their navigation straits.

Maintaining a military presence in Russia's most northerly Arctic territories has been a funding challenge since the end of the Soviet Union. Most remote (Arctic) bases were abandoned in the early 1990s. Two military outposts have been recently rebuilt with large runways: one on Alexandra Island in Franz Josef Land, now Russia's most northernmost military base, and one on Kotelny Island.[49] Both are limited, but permanent, facilities designed to provide sovereign presence and act as monitoring outposts. Further, both have modern runways that can support Russian air assets to project military power, further securing Russia's strategic presence in the maritime Arctic. A third significant military presence in the Russian Arctic was established in September 2019 on Novaya Zemlya. A new S-4000 anti-aircraft missile system and a combat team of operators were placed on the archipelago to protect a large area of airspace in the eastern Barents Sea.[50] These small military bases reinforce Russia's territorial claims in the Arctic and provide much-needed infrastructure to support monitoring of marine operations and shipping along the NSR.

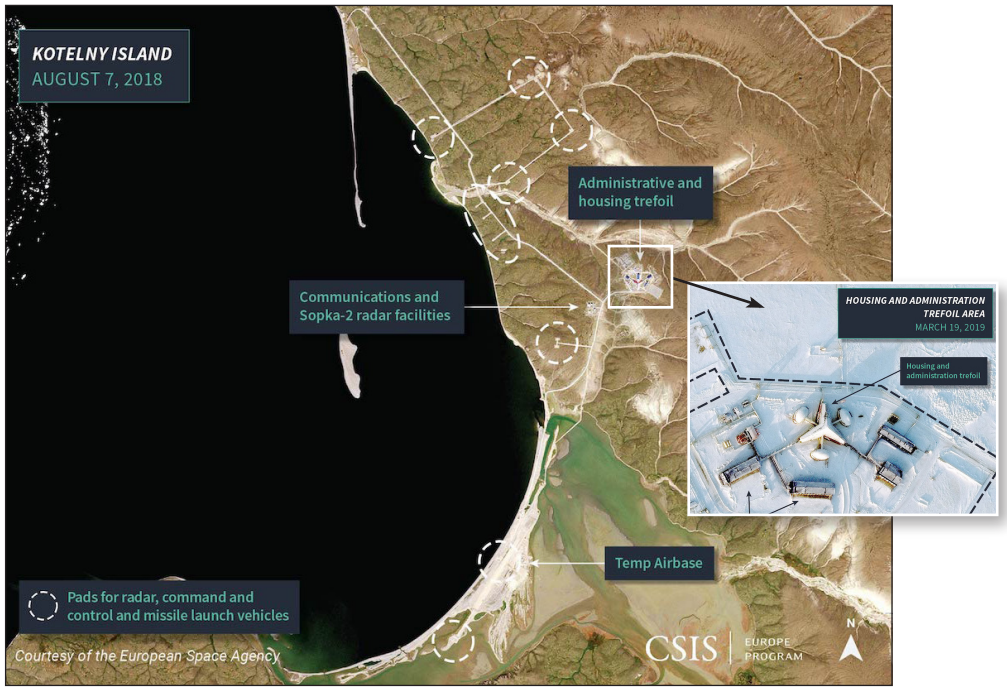


Figure 3.9 Kotelny Island with arctic base shown. (Satelite photo European Space Agency, Center for Strategic and International Studies)

In summary, national security issues in the Arctic will continue to receive high-priority attention and funding in the Russian Federation. With greater seasonal marine access, there are very likely to be increases in naval vessel and task force operations in the NSR water area, supplying bases, moving naval combatants along the NSR, and conducting advanced cold-regions exercises in ice-free and ice-covered waters. It also remains highly likely that any freedom of navigation operations by foreign navies and coast guards (in summer) near and within the NSR navigation straits, and any perceived territorial challenges, will be met by rapid and serious responses using naval and air force assets.

Investments in new surveillance and monitoring systems, focusing on long-range radars and satellite systems (one such monitoring facility and military base is located on Wrangel Island), should enhance Russia's early warning networks over the Arctic Ocean. Operational testing of new systems such as hypersonic weapons and cold-weather drones (unmanned aircraft) in the maritime Arctic will likely continue a path to modernizing the military's capability in the extreme Arctic environment. The overall challenge will be to balance

Russia's investments in strategic military infrastructure with its broad ambitions and economic plans to develop its Arctic natural resource wealth.

International Engagement in Arctic and Maritime Affairs

The Russian Federation has advanced its national Arctic and maritime interests by emphasizing cooperation in three key international organizations. At the International Maritime Organization (IMO), Russia was an active participant for more than two decades, using its extensive polar expertise in the development of the International Code for Ships Operating in the Polar Waters (Polar Code), fully in force on 1 July 2018.[51] Significantly, a Russian-flagged tanker, *Shturman Albanov*, became the world's first ship certified in compliance with the IMO Polar Code on 22 December 2016.[52] This proactive approach by the Russian Maritime Register of Shipping is a positive indicator for the future implementation and hopeful enforcement of the Polar Code throughout the Russian maritime Arctic. At the International Hydrographic Organization (IHO), Russia is a founding state member of its Arctic Regional Hydrographic Commission, devoted to stimulating hydrographc activity and developing new charts for the Arctic.[53] And, in March 2011, the World Meteorological Organization (WMO), in concert with IMO and IHO, announced that Russia, Norway, and Canada had accepted lead roles in the expansion of the World-Wide Navigational Warning System into Arctic waters, taking responsibility for establishing five new WMO METAREAS (IMO NAVAREAS) in the Arctic and for coordination of the transmission of meteorological and navigation hazard information to mariners on international voyages. The new Arctic areas became operational in June 2011.[54]

Since the establishment of the Arctic Council by the Ottawa Declaration (19 September 1996), Russia has worked with seven other Arctic state members on the Council's two main foci of sustainable development and environmental protection.[55] Russia was the Arctic Council Chair during 2004–06 and hosted the 5th Ministerial Meeting in Salekhard in October 2006; Russia now holds the chair for 2021–2023. Russian experts have been active in the Council's working groups dealing with emergency response, protection of the Arctic marine environment, Arctic contaminants, and Arctic climate change. Russian scientists, government experts, and institutions have contributed to many of the Council's assessments and reports, notably

the Arctic Climate Impact Assessment (ACIA) released in November 2004 and the Arctic Marine Shipping Assessment (AMSA) released in April 2009. AMSA's report and recommendations, which provide a policy framework for marine safety and environmental protection in the Arctic Ocean, were approved by the eight Arctic state ministers including Foreign Minister Lavrov of the Russian Federation.[56]

Three treaties have been negotiated by the Arctic states with Russia (and the United States) playing lead roles: the Agreement on Cooperation on Aeonautical and Maritime Search and Rescue in the Arctic, signed in Nuuk, Greenland on 2 May 2011; the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, signed in Kiruna, Sweden on 15 May 2013; and the Agreement on Enhancing International Arctic Scientific Cooperation, signed in Fairbanks, Alaska, on 11 May 2017.[57] During these efforts, the eight Arctic states used the Arctic Council structure to facilitate stakeholder engagement in the negotiation process to include Arctic Indigenous peoples, non-Arctic states, and other institutional observers. Each of these binding agreements include practical outcomes of direct relevance to marine safety, environmental protection, and scientific research in the Russian maritime Arctic. Also relevant to cooperation in the maritime Arctic is the Arctic Coast Guard Forum, established in 2015 by the coast guards and maritime agencies of the Arctic states as an independent organization (not bound by treaty).[58] Russia is represented in the Forum by the Coast Guard Department of the Federal Security Service and contributes to its work to strengthen cooperation and coordination, collaborate with the Arctic Council, and facilitate safe and secure Arctic maritime activity.

Russia's recent Arctic multilateral engagement can be illustrated by two activities, one diplomatic and another involving international Arctic science. On 3 October 2018, the five Arctic Ocean coastal states—Russia, the United States, Norway, Canada, and Denmark—along with China, Japan, South Korea, Iceland, and the European Union, signed an agreement to prevent unregulated commercial fishing in the high seas of the Central Arctic Ocean.[59] This historic agreement was ratified by the 10 parties in June 2021. Most recently Russia has been closely involved in the planning for the international Arctic drift expedition MOSAIC (Multidisciplinary Drifting Observatory for the Study of Arctic Climate), the largest scientific expedition ever conducted in the Central Arctic Ocean.[60] An international

consortium of polar research institutions led by Germany's Alfred Wegener Institute for Polar and Marine Research, Russia's Arctic and Antarctic Research Institute (in St. Petersburg), and the University of Colorado designed the expedition; the German research icebreaker *Polarstern* was frozen into Arctic sea ice in September 2019, commencing a one-year drift in the Central Arctic Ocean that was completed in October 2020. Icebreakers and research vessels from Russia and Germany supported the expedition.

Discussion Questions

Geography and the Environment

1. Many in the media and in the Arctic community itself speak to an "ice-free" Arctic Ocean. What do they mean when they use this terminology regarding Arctic sea ice in the Arctic Ocean?
2. Five Arctic Ocean coastal states enclose or bound the high seas of the Central Arctic Ocean. What are the implications for marine access?
3. What would be the impact if the Barents Sea was included in the legal definition of the NSR?
4. Two navigation straits through the New Siberian Islands have maximum water depths of 13 and 6.7 meters. What ships might be capable of navigating safely through these waters, and what are the implications for international marine traffic across the NSR?

Governance and Boundaries

5. Why do the United States and other nations argue that Russia's straight baselines across the NSR major straits (and declaration of internal waters) do not conform to international law?
6. UNCLOS Article 234 requires the regions under national jurisdiction to be ice-covered for "most of the year." What are the implications when the sea ice retreats enough so that the region is ice-covered only half the year?
7. Russia's Duma has never ratified the US-USSR 1990 maritime boundary agreement in the Bering and Chukchi seas. What would be the implications if Russia decided to disregard this boundary in all its future maritime operations in the region?

8. How should the United States respond to Russian challenges to innocent passage of ships through the Northern Sea Route straits and other restrictive regulations within Arctic waters defined by the NSR water area?

Marine Transportation and Economic Development

9. What are the constraints for trans-Arctic shipping on the NSR and across the Russian maritime Arctic?
10. What factors are important in establishing the length of the ice navigation season along the NSR?
11. Discuss the elements of maritime infrastructure required to make the NSR a safe, secure, and efficient national waterway.
12. How vulnerable is the continued development of oil and gas in the Russian Arctic to international commodity prices and long-term climate change developments?
13. What are the implications of an extended ice navigation season and large commercial ship (for example, LNG icebreaking carriers) voyages in winter through the Bering Strait region?
14. What are the strategies that the Russian Federation can pursue to make the NSR a more competitive trans-Arctic shipping route?

National Security and the Arctic Maritime Frontier

15. Discuss the geographic and environmental vulnerabilities that impact national security in the Russian Arctic.
16. What are the types of monitoring and surveillance systems (oceans, air, and space) that can be effectively employed throughout the Russian maritime Arctic?
17. How does the new Russian Arctic strategy to 2035 balance economic development with requirements for military security?
18. Russia has recently launched a new armed icebreaker for the Navy, the *Ivan Papanin*. What are the implications of Russia potentially building more ice-capable surface combatants for operation in Arctic waters?

19. What are the plausible outcomes of United States and United Kingdom navies deciding to conduct Freedom of Navigation operations within the Russian maritime Arctic?
20. Discuss Russia's desire to increase defensive measures at the Kola Peninsula, and any connected security implications that may cause Russia to shift military resources from other areas.

International Engagement in Arctic and Maritime Affairs

21. How might the eight Arctic states work together to implement and enforce the mandatory IMO Polar Code?
22. Discuss what Russia's contributions might be in response to a maritime disaster under the international Arctic Search and Rescue Treaty.
23. Discuss the implications of Russia signing the agreement to prevent unregulated commercial fishing in the Central Arctic Ocean.
24. The Russian Coast Guard, as a department in the FSB, is a member of the Arctic Coast Guard Forum. How can Russia enhance cooperation among the Arctic coast guards in enforcement issues?
25. Russia became chair of the Arctic Council from 2021–2023. Discuss the challenges Russia's leadership faces within the Arctic Council.

Notes

1. L.W. Brigham. "Arctic Ocean," in *The Oxford Encyclopedia of Maritime History, Vol. 1*, ed. J.B. Hattendorf (Oxford, U.K.: Oxford University Press, 2007), 135-43. A discussion of the general geography and characteristics of the Arctic Ocean appears on pp. 135-137.
2. *Ibid.*, p. 141. Straight baselines across the major straits of the Soviet maritime Arctic were established on January 5,1985.
3. S.R. Stephenson, L.W. Brigham, and L.C. Smith, "Marine Accessibility Along Russia's Northern Sea Route," *Polar Geography* 37, no. 2 (2014): 111-133; see pp. 113 and 119.
4. The seasonal minimum sea ice extent for summer 2019 (indicated on Figure 3.1) was derived from satellite observations. On September 18, 2019 the entire Russian maritime Arctic, including the Barents, Kara, Laptev, East Siberian and Chukchi seas, was ice-free; the Northeast Passage from Norway to the Bering Strait was ice-free for a modest period of time.
5. The definitions for the Northern Sea Route and the NSR water area, both in federal law, do not include the Barents Sea. The islands of Novaya Zemlya essentially separate the Barents Sea from the waters of the Northern Sea Route to the east.
6. Novatek, the largest independent gas producer in Russia (9% of Russian gas), is developing Yamal gas and has built the port of Sabetta on the Ob Gulf. See "Project Yamal LNG," Novatek, 2019, https://www.novatek.ru/en/business/yamal-lng/.
7. Nornickel (formerly Norilsk Nickel), industrial complex at Norilsk, www.nornickel.com.
8. L. Jungsberg, E. Turunen, T. Heleniak, S. Wang, J. Ramage, and J. Roto, "Atlas of Population, Society, and Economy in the Arctic." Nordregio Working Paper 2019:3, September 18, 2019, Stockholm, Sweden: 21-22.
9. In 2020 the population of Norilsk was approximately 175,000.
10. Satellite microwave sensors have observed the Arctic sea ice cover since the 1970s; the National Snow and Ice Data Center in Boulder, Colorado, continues to observe the profound changes in Arctic sea ice.
11. ACIA, "Impacts of a Warming Arctic: Arctic Climate Impact Assessment," ACIA Overview Report (Cambridge, U.K.: Cambridge University Press, 2004): 82-83.
12. Recent research using climate model simulations of Arctic sea ice reveal that the Arctic Ocean will likely be ice-free in September before 2050 in all scenarios; after this date in September the remaining annual cover will be seasonal, first-year sea ice. For a scientific paper that describes these Arctic sea ice futures, see: D. Notz and SIMIP Community, "Arctic Sea Ice in CMIP6," *Geophysical Research Letters* April 17, 2020, https://doi.org/10.1029/2019GL086749.
13. Based on recent research, all of the sea ice along the NSR will likely be seasonal, first-year ice sometime before 2050. The absence of multi-year sea ice will make the region more navigable, particularly in ice-covered seas in autumn, winter, and spring. However, the sea ice cover will be more mobile and dynamic, potentially creating local areas that may be more difficult to navigate.
14. B. Ellis and L. Brigham, "Arctic Marine Shipping Assessment 2009 Report," Arctic Council: 50. Available at http://hdl.handle.net/11374/54.
15. W.E. Butler, "The Legal Regime of Soviet Arctic Marine Areas," in *The Soviet Maritime Arctic*, ed. L. Brigham (London: Belhaven Press, 1991), 215-18.
16. "2008 Ilulissat Declaration: Adopted in Ilulissat, Greenland on May 28, 2008," NATO Multimedia Library, https://natolibguides.info/arcticsecurity/documents.
17. "Article 76, Definition of Continental Shelf" and "Article 234, Ice-Covered Waters," *United Nations Convention on the Law of the Sea* (1982), United Nations Oceans & Law of the Sea, https://www.un.org/depts/los/convention_agreements/convention_overview_convention.htm.
18. UNCLOS, Article 234.
19. UNCLOS, Article 76.
20. "Commission on the Limits of the Continental Shelf (CLCS): Outer Limits of the Continental Shelf Beyond 200 Nautical Miles from the Baselines—Submissions to the Commission: Submission by the Russian Federation," June 30, 2009, Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, United Nations, https://www.un.org/depts/los/clcs_new/submissions_files/submission_rus.htm.
21. "Commission on the Limits of the Continental Shelf (CLCS): Outer Limits of the Continental Shelf Beyond 200 Nautical Miles from the Baselines—Submissions to the Commission: Partial Revised Submission by the Russian Federation,"

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24. Butler, "The Legal Regime of Soviet Arctic Marine Areas," 217.
25. *Ibid.*, 217–219.
26. "Agreement with the Union of Soviet Socialist Republics on the Maritime Bounday," Treat Doc. 101-22 (Washington, D.C.: Government Printing Office, 1990), https://www.state.gov/wp-content/uploads/2020/02/US_Russia_1990.pdf.
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28. "Treaty Between the Kingdom of Norway and the Russian Federation Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean," English translation, www.regjeringen.no/globalassets/upload/ud/vedlegg/folkerett/avtale_engelsk.pdf. Also see L.W. Brigham, "Russia Opens Its Maritime Arctic," Proceedings, May (2011): 50-51.
29. www.nornickel.com.
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32. L.W. Brigham, "Russia Developing New Arctic LNG Marine Routes," Proceedings, January (2019): 94.
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34. Information on the design of the LNG icebreaking carriers (15-ship fleet) can be found on the Finnish Arctic ship designer Aker Arctic's site: https://akerarctic.fi/en/reference/yamalmax/.
35. For Novatek Yamal LNG Project's (LNG 1) overall strategy, infrastructure, and investors, see: "Project Yamal LNG," Novatek, https://www.novatek.ru/en/business/yamal-lng/.
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temperatures throughout the entire region are also moderated by the warmer waters.

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51. An International Maritime Organization Outside Working Group on developing a Polar Code was established in 1993 with Russian Arctic mariners as members of the group. The mandatory IMO Polar Code entered into force for new ships on January 1, 2017; existing ships came under the Code on January 1, 2018; and the training requirements for the Polar Code became mandatory on July 1, 2018. See: https://www.imo.org/en/OurWork/Safety/Pages/polar-code.aspx; also see: L.W. Brigham, "The Developing International Maritime Organization Polar Code," Arctic Yearbook 2014: 496-99.

52. "RS Issues the First Polar Ship Certificate," press release, Russian Maritime Register of Shipping, December 27, 2016, http://www.ship.gr/news6/russianmar10u.htm.

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55. Russia signed the Ottawa Declaration with seven other Arctic states on September 19, 1996, establishing the Arctic Council. The Arctic Council Charter can be found at: https://arctic-council.org/about/.

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57. Russia was a co-chair of the negotiations of the three Arctic treaties with the United States; Norway was a third co-chair of the oil spill preparedness and response treaty. These binding agreements were negotiated by the diplomats of the eight Arctic states under the auspices of the Arctic Council structure.

58. Iceland was chair of the Arctic Coast Guard Forum, 2019-2021, followed by the Russian Federation. The chair of the Arctic Council also chairs the Arctic Coast Guard Forum; see www.arcticcoastguardforum.com/.

59. See the Central Arctic Ocean Fisheries Agreement: https://www.dfo-mpo.gc.ca/interntaional/arctic-arctque-eng.htm.

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Conclusions

LNG icebreaking carrier Christophe de Magerie, *owned and operated by the Russian shipping company Sovcomflot. (Aker Arctic)*

Apparent throughout this discussion has been the vastness, complex geography, and extreme cold environment of this once remote Arctic region that was tightly controlled and effectively closed during the Soviet Union era. It is not evident, however, that the Russian maritime Arctic is more open and less controlled today by the state, despite the expanding marine links carrying Russian Arctic natural resources to global markets.

Illustrations of Future Change

The creation process of a scenario, or plausible future, of the Russian maritime Arctic in 2050 serves to illustrate the complexity of drivers of change and uncertainties that can influence the future of this developing region. Several key outcomes are identified by this strategic thinking process:

- There is a clear emergence of a more integrated, operationally efficient, and safe Northern Sea Route operation with improving marine infrastructure. Strategic plans will likely call for a 12-month

navigation season to be attained along the length of the NSR with nuclear icebreaker support (the key rationale for large investments in a modern nuclear icebreaker fleet). Operations will provide for the expanded escort of commercial ships and continued movement of naval assets (in summer) along the NSR.

- National security and economic development are the dominant state interests in the region.[61] Arctic resource development and resource connections to global markets are critical to Russia's long-term financial health.
- The retreat of Arctic sea ice is providing for greater marine access and longer seasons of navigation along the NSR.[62] However, in contrast, terrestrial access will continue to be more challenging in many regions, with the ongoing thawing of permafrost making infrastructure construction in the Arctic coastal zone more difficult and costly.
- The long, remote Russian Arctic coast and its widely spaced marine infrastructure are potentially vulnerable to electronic (cyber) warfare and the possible incursion of advanced vehicles (for example, UAVs and drones). However, a recent buildup of monitoring and surveillance systems (including fiber optic cables in the EEZ) will tighten control of the region in all seasons and plausibly mitigate future infiltrations.
- The Russian maritime Arctic could become a region of conflict if other nations were to contest the NSR navigation straits with freedom of navigation operations and contest the highly regulated waters of the Russian Arctic EEZ and NSR water area.
- President Putin has been particularly bullish and supportive of economic development in the Russian Arctic, approving federal funds for marine infrastructure including icebreakers and broad tax incentives to select energy companies. The fundamental question is how this support plays out after President Putin's retirement, which may not be until 2036, or even earlier.
- Russia has been an influential and engaged state within the Arctic Council and in international organizations (for example, the International Maritime Organization, the International Hydographic

Organization, and the Arctic Coast Guard Forum) dealing with maritime and Arctic affairs.

- Global energy markets and uncertainties in future oil and gas prices, coupled with mitigation efforts to reduce greenhouse gas emissions, will likely constrain future Russian Arctic hydrocarbon developments.
- There are many uncertainties and potential unknown consequences of climate change impacts throughout the Russian Federation and especially in its large Arctic region. Historic high summer temperatures, permafrost thawing, increased seasonal river flooding, and increases in widespread (Siberian) wildfires are four regional impacts observed today that will likely continue in the decades ahead.[63]
- A majority of future ships along the NSR most likely will be on destinational voyages. Use of the NSR and Northeast Passage for trans-Arctic voyaging will plausibly be seasonal, limited, and supplemental to other global trade routes such as the Suez Canal.[64] There remains great uncertainty as to how the Northeast Passage (including the NSR) will be used for future trans-Arctic (ocean to ocean) voyaging.
- Pursuit of long-term geopolitical stability in the Arctic would be one plausible strategy that supports Russia's quest to develop its northern resource wealth.

Areas for Future Research

The Russian Arctic is a unique and complex region influenced by climate change, global economics, and strategic geopolitics. Due to its immense size, geographical tools of synthesis and analysis will be applied to gain a better understanding of the linkages between environmental change and economic development. There is no doubt that climate change will have significant regional and global implications, placing added importance on satellite monitoring of this vast Arctic region. Interdisciplinary research will be key with a focus on holistic and integrated approaches to handle the complexity of factors. Potential areas of further research include the following:

- Analyses of the changes in marine access due to Arctic sea ice retreat and the impacts on commercial navigation, naval operations, and

the length of the navigation season; such research will be supplemented by nongovernmental monitoring of marine traffic using advanced automatic identification system data;

- The Russia-China relationship in the Arctic regarding long-term resource contracts and infrastructure investments, and China's commercial use of the NSR;
- The economic impacts of global climate change mitigation and adaptation efforts on the future of Russian Arctic hydrocarbon developments;
- The extreme environmental changes ongoing throughout the Russian Arctic and their global implications, especially the release of methane from thawing permafrost;
- Integrated studies on the impacts on, mitigation strategies employed, and future of the Russian Arctic Indigenous peoples;
- The future of seabed claims under UNCLOS Article 76 in the Central Arctic Ocean, especially the claims of Canada, Denmark, and Russia that overlap at the North Pole.

Final Thoughts

How Russia performs in the 21st-century global economy will depend in part on its development of Arctic natural resources and the safe, effective use of its maritime Arctic. Operating as a National Arctic Waterway, the NSR will continue to facilitate the shipping of Russia's natural resources out of the region to global markets. However, global economic forces (for example, long-term volatile commodities pricing and climate change mitigation measures) will strongly influence an uncertain economic future for the region. The unique high-latitude geography of the Russian Federation will continue to focus the state's importance of the Russian Arctic to national defense and its geopolitical roles in the Arctic and the world at large.

Discussion Questions

1. What are the significant climate change impacts on development of the Russian Arctic?
2. How long will the state investments, incentives, and strategic focus on developing the Russian Arctic be sustained?
3. What are plausible futures for the Russia-China relationship in the Arctic?
4. What are plausible futures for Russia-U.S. cooperation in the Arctic?
5. How might Arctic disagreements disrupt the economic development in the region and the uses of the Arctic Ocean for marine traffic?
6. Can the NSR today be considered "open" for trans-Arctic international maritime traffic by foreign-flag commercial ships as a global trade route?
7. Discuss the many factors and uncertainties that make the future of the Russian maritime Arctic so complex and challenging to peer into.

Notes

61. "Vladimir Putin Approved Basic Principles of State Policy in the Arctic: The President signed the Executive Order 'Basic Principles of Russian Federation State Policy in the Arctic to 2035,'" President of Russia, March 5, 2020, http://en.kremlin.ru/acts/news/62947.
62. Ellis and Brigham, "Arctic Marine Shipping Assessment," 25-35.
63. "Heat in Siberia," European State of the Climate 2020, Copernicus Climate Change Service, https://climate.copernicus.eu/esotc/2020/heat-siberia.
64. L.W. Brigham, "The Changing Maritime Arctic and New Marine Operations," in *Governance of Arctic Shipping: Balancing Rights and Interests of Arctic States and User States*, ed. R.C. Beckman, T. Henriksen, K. Dalaker Kraabel, E.J. Molenaar, and J.A. Roach (Leiden, The Netherlands: Brill Nijhoff. Leiden, 2017): 1-23.

Appendix: Chronology of Key Events Regarding the Russian Maritime Arctic, 1990–2020

Sources: *Arctic Today*; *The Independent Barents Observer*; *Moscow Times*; press releases from Sovcomflot, Rosatom, Rosneft and Novatek; Arctic State Agreements (2013, 2015, and 2017); Russian federal laws; and doctrines and strategies of the Russian Federation.

May 1993–November 1999

International Northern Sea Route Programme led by the Fridtjof Nansen Institute (Norway), Ship & Ocean Foundation (Japan), and the Central Marine Research and Design Institute (Russia).

August 1997

First foreign-flag merchant ship transit of the full Northern Sea Route by the Finnish tanker *Uikku*.

July 2001

President Putin approves the Marine Doctrine of the Russian Federation to 2020, which highlights the significance of the Arctic to the Russian Navy and the importance of the NSR to regional development.

December 2002

Annual traffic and total tonnage along the NSR reach a low of 47 ships (on 170 voyages) carrying 1.6 million tons of cargo.

December 2002–April 2006

Arctic Operational Platform (ARCOP) EU-funded project on the marine transportation of oil and gas along the western NSR to Europe.

May 2003

A new energy strategy for Russia up to 2020 is approved and notes the strategic importance oil and gas in the Barents Sea, Kara Sea, and Yamal Peninsula.

April 2006

New icebreaking container vessel, *Norilsk Nickel*, is delivered to the Nornickel metallurgical company, the first of a five-ship fleet of independently operated (without icebreaker escort) icebreaking ships sailing between Dudinka and Murmansk.

June 2008

A new offshore (year-round) oil terminal at Varandey in the Pechora Sea begins operation and is serviced by three icebreaking shuttle tankers that sail to Murmansk.

September 2008

President Medvedev approves the *Foundations of the State Policy of the Russian Federation in the Arctic to 2020 and Beyond*, outlining Russian national Arctic interests.

April 2009

Release of the Arctic Council's *Arctic Marine Shipping Assessment* (Tromso, Norway), an Arctic state framework for Arctic marine safety and environmental protection.

July 2010

The floating nuclear power plant *Akademik Lomonosov* is launched in St. Petersburg; not until August and September 2019 was the vessel towed along the NSR to the port of Pevek (the plant produced power for the city in December 2019).

May 2011

Arctic state *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic* signed in Nuuk, Greenland.

August 2011

Exxon Mobil and Rosneft agree to joint operations and oil drilling on the continental shelf of the Kara Sea.

July 2012

Russian Federal Law 132-FZ defining the Northern Sea Route water area enacted.

November–December 2012

Pioneering early winter voyage of the LNG carrier *Ob River* from Hammerfest, Norway to Tobata, Japan and first LNG shipment across the Russian maritime Arctic (and NSR).

February 2013

President Putin approves the Strategy for the *Development of the Arctic Zone* of the Russian Federation focusing on development, environmental challenges, and national security in the Russian Arctic.

May 2013

Arctic state *Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic* signed in Kiruna, Sweden.

July–August 2013

Construction begins on the new port facility of Sabetta in Ob Gulf.

September 2013

The Greenpeace ship *Arctic Sunrise* is forcibly boarded by the Federal Security Service and towed to Murmansk after activists boarded Gazprom's Prirazlomnoya drilling platform in the Pechora Sea (and after sailing into the Kara Sea).

December 2013

Oil production begins at the offshore platform Prirazlomnaya in the Pechora Sea; oil is carried by icebreaking shuttle tanker to Murmansk.

August 2015

Russia resubmits its claim to the Arctic outer continental shelf to the Commission on the Limits of the Continental Shelf in accordance with UNCLOS Article 76.

May 2016

President Putin opens a new oil terminal in Novy Port at the southern end of the Ob Gulf; first summer oil is carried by tankers to European customers.

June 2016

Launching at the Baltic Shipyard of the polar icebreaker *Arktika*, the world's most powerful icebreaker, and first of a class of five ships.

May 2017

Arctic state *Agreement on Enhancing International Scientific Cooperation in the Arctic* signed in Fairbanks, Alaska.

October 2017

Novatek announces plans for an LNG trans-shipment terminal in Kamchatka; icebreaking LNG carriers would transfer LNG to conventional carriers.

December 2017

First shipment of LNG out of Sabetta on the Yamal Peninsula aboard the icebreaking LNG carrier *Christophe de Margarie* (172,600 cubic meters of gas), marking a new era for the NSR.

January 2018

China releases its Arctic policy white paper that includes mention of joint opportunities to build a "Polar Silk Road," a component of China's Belt & Road Initiative.

March 2018

President Putin issues his national priorities for the next six years, including a decree for the NSR to achieve an annual cargo of 80 million tons by 2024.

July 2018

The IMO International Code for Ships Operating in Polar Waters comes fully into force with inclusion of polar mariner training and experience requirements.

October 2018

The five Arctic Ocean coastal states (Canada, Denmark, Norway, Russia, and the United States) together with China, the European Union, Iceland, Japan, and South Korea sign the Agreement to Prevent Unregulated High Seas Fishing in the Central Arctic Ocean.

December 2018

President Putin signs a new law outlining the broad authority of Rosatom to manage and develop infrastructure for the NSR.

June 2019

Two Japanese investors, Mitsui and Japan Oil, Gas, & Metals National Corporation, sign as partners with Novatek (and others) to develop the LNG 2 facility on the eastern shore of the Ob Bay.

September 2019

Novatek and Sovcomflot announce a joint venture to develop a fleet of 17 icebreaking LNG carriers to be built in Russia and delivered 2023–2026.

October 2019

Launching in St. Petersburg of the Russian Navy "combat" icebreaker *Ivan Papanin* to be commissioned in 2022 or 2023 for patrols in Arctic waters.

December 2019

Annual tonnage along the NSR reaches 31.5 million tons; Rosatom announces that a new NSR management center for Arctic shipping will be located in Murmansk and operational in 2020.

January 2020

Prime Minister Medvedev signed a resolution allocating 127 billion rubles for construction of the first mega-icebreaker of the *Leader* nuclear class.

January 2020

New Prime Minister Mishustin announces legislation for a new tax regime and incentives for the Russian Arctic to stimulate oil, gas, and minerals development.

March 2020

President Putin signs a decree, *Foundations of the Russian Federation State Policy in the Arctic for the Period up to 2035*, a new Arctic strategy that outlines Russia's national priorities in the Arctic.

Further Reading

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Study Guide

Discussion Questions — *from the text*

CHAPTER ONE

1. What conditions or assumptions does this scenario rely on?
2. What other national domestic developments might evolve in the Russian Arctic in the next 30 years?
3. How might international geopolitical events both in and outside the Arctic influence the future of the region?

CHAPTER TWO

1. Discuss these potential influential factors and major drivers of change.
2. What is a more significant driver of marine use in the region, climate change or natural resource development? Explain.
3. What are the reasons for the long-term loss of population in Russia's northern cities, and how might economic issues, and demographic trends influence development of the Russian Arctic?
4. How might China or other regional powers respond to Russia's efforts to exert more control over the NSR?
5. Discuss how international investors in the development of Yamal LNG (i.e., France, China, Japan, and South Korea) might influence the economic outcomes of the Russian Arctic.

CHAPTER THREE

Geography and the Environment

1. Many in the media and in the Arctic community itself, speak to an "ice-free" Arctic Ocean. What do they mean when they use this terminology regarding Arctic sea ice in the Arctic Ocean?

2. Five Arctic Ocean coastal states enclose or bound high seas of the Central Arctic Ocean. What are the implications for marine access?
3. What would be the impact if all of the Barents Sea was included in the legal definition of the NSR?
4. Two navigation straits through the New Siberian Islands have maximum water depths of 13 and 6.7 meters. What ships might be capable of navigating safely through these waters, and what are the implications for international marine traffic across the NSR?

Governance and Boundaries

5. Why do the United States and other nations argue that Russia's straight baselines across the NSR major straits (and declaration of internal waters) do not conform to international law?
6. UNCLOS Article 234 requires the regions under national jurisdiction to be ice-covered for "most of the year." What are the implications when the sea ice retreats enough so that the region is ice-covered only half the year?
7. Russia's Duma has never ratified the US-USSR 1990 maritime boundary agreement in the Bering and Chukchi seas. What would be the implications if Russia decided to disregard this boundary in all its future maritime operations in the region?
8. How should the United States respond to Russian challenges to innocent passage of ships through the Northern Sea Route straits and other restrictive regulations within Arctic waters defined by the NSR water area?

Marine Transportation and Economic Development

9. What are the constraints for trans-Arctic shipping on the NSR and across the Russian maritime Arctic?
10. What factors are important in establishing the length of the ice navigation season along the NSR?
11. Discuss the elements of maritime infrastructure required to make the NSR a safe, secure, and efficient national waterway.
12. How vulnerable is the continued development of oil and gas in the Russian Arctic to international commodity prices and long-term climate change developments?

13. What are the implications of an extended ice navigation season and large commercial ship (for example, LNG icebreaking carriers) voyages in winter through the Bering Strait region?
14. What are the strategies that the Russian Federation can pursue to make the NSR a more competitive trans-Arctic shipping route?

National Security and the Arctic Maritime Frontier

15. Discuss the geographic and environmental vulnerabilities that impact national security in the Russian Arctic.
16. What are the types of monitoring and surveillance systems (oceans, air, and space) that can be effectively employed throughout the Russian maritime Arctic?
17. How does the new Russian Arctic strategy to 2035 balance economic development with requirements for military security?
18. Russia has recently launched a new armed icebreaker for the Navy, the *Ivan Papanin*. What are the implications of Russia potentially building more ice-capable surface combatants for operation in Arctic waters?
19. What are the plausible outcomes of United States and United Kingdom navies deciding to conduct Freedom of Navigation operations within the Russian maritime Arctic?
20. Discuss Russia's desire to increase defensive measures at the Kola Peninsula, and any connected security implications that may cause Russia to shift military resources from other areas.

International Engagement in Arctic and Maritime Affairs

21. How might the eight Arctic states work together to implement and enforce the mandatory IMO Polar Code?
22. Discuss what Russia's contributions might be in response to a maritime disaster under the international Arctic Search and Rescue Treaty.
23. Discuss the implications of Russia signing the agreement to prevent unregulated commercial fishing in the Central Arctic Ocean.

24. The Russian Coast Guard, as a department in the FSB, is a member of the Arctic Coast Guard Forum. How can Russia enhance cooperation among the Arctic coast guards in enforcement issues?
25. Russia became chair of the Arctic Council from 2021–2023. Discuss the challenges Russia's leadership faces within the Arctic Council.

CHAPTER FOUR

1. What are the significant climate change impacts on development of the Russian Arctic?
2. How long will the state investments, incentives, and strategic focus on developing the Russian Arctic be sustained?
3. What are plausible futures for the Russia-China relationship in the Arctic?
4. What are plausible futures for Russia-U.S. cooperation in the Arctic?
5. How might Arctic disagreements disrupt the economic development in the region and the uses of the Arctic Ocean for marine traffic?
6. Can the NSR today be considered "open" for trans-Arctic international maritime traffic by foreign-flag commercial ships as a global trade route?
7. Discuss the many factors and uncertainties which make the future of the Russian maritime Arctic so complex and challenging to peer into.

About the Author

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