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Arctic Security Is Not About Preparing for War, But About Preparing for the Future

Luke Coffey, Daniel Kochis, and James Di Pane

As other nations devote resources and assets in the Arctic region to secure their national interests, America cannot afford to fall behind. America's very real interests in the Arctic region will only increase in the years to come. The melting of some of the Arctic ice during the summer months each year is creating security challenges, but also new opportunities for economic development. Reduced ice will mean new shipping lanes, increased tourism, and further natural resource exploration. This increase in economic activity will also mean a larger military presence by more actors than ever before. As the U.S. prepares for future security challenges in the Arctic region it must continue to invest in necessary military and security capabilities, deepen its bilateral relations with friendly Arctic countries, focus NATO's attention on the Arctic, and continue to highlight Russia and China's malign role in the region.

America's very real interests in the Arctic region will only increase in the years to come. As other nations devote resources and assets in the region to secure their national interests, America cannot afford to fall behind. The U.S. must champion an agenda that advances the U.S. national interest and devotes the required national resources to the Arctic region.

The melting of some of the Arctic ice during the summer months each year is creating security challenges, but also new opportunities for economic development. Reduced ice will mean new shipping lanes, increased tourism, and further natural resource exploration. This increase in economic activity will also mean a larger military presence by more actors than ever before. This is not because of a heightened threat of conflict in the region—on the contrary, things are relatively calm.

However, many capabilities needed in the Arctic, such as those for search and rescue, can be provided more immediately and, at least for now, more

effectively, by the military, especially the Coast Guard. The U.S. must be able to exert and defend its national sovereignty in the region, while at the same time respecting the national sovereignty of others. As the U.S. prepares for future security challenges in the Arctic region it must continue to invest in necessary military and security capabilities for the region, deepen its bilateral relations with friendly Arctic countries, focus the North Atlantic Treaty Organization's (NATO's) attention on the Arctic, and continue to highlight Russia and China's malign role in the region.

The High North

The Arctic region, commonly referred to as the High North, is becoming more contested than ever before. The Arctic encompasses the lands and territorial waters of eight countries on three continents.[1] Unlike the Antarctic, the Arctic has no land mass covering its pole (the North Pole), just ocean and ice. The region is home to some of the roughest terrain and harshest weather on the planet.

The region is also one of the least-populated areas in the world, with sparse nomadic communities and few large cities and towns. Settlements are often very remote, with tiny populations, and lack basic transportation infrastructure. When including islands, Alaska has 33,904 miles of shoreline, but no deepwater port above the Arctic Circle. In Greenland, no two population centers are connected by a road. Norway's Ny Ålesund, located on the Svalbard archipelago, is the world's northern-most permanently inhabited place with 35 inhabitants. Although official population figures are non-existent, the Nordic Council of Ministers estimates the Arctic's population at four million,[2] making it about the size of Los Angeles. Approximately half of the Arctic population lives in Russia.

The region is rich in minerals, wildlife, fish, and other natural resources. According to some estimates, up to 13 percent of the world's undiscovered oil reserves and almost one-third of the world's undiscovered natural gas reserves are located in the Arctic.[3] However, the region currently only has an economic output of approximately $450 billion per year, making its economic size roughly the same as Maryland's.[4]

U.S. Arctic Security Interests. The U.S. became an Arctic power on October 18, 1867, at the ceremony transferring ownership of Alaska from Russia to the United States. At the time, the purchase was ridiculed and known as "Seward's Folly"—named after then–Secretary of State William Seward. However, with a stroke of a pen, Seward ended Russian influence in North America, gave the United States direct access to the

northern Pacific Ocean, and added territory nearly twice the size of Texas for about 2 cents an acre along with 33,000 miles of coastline. In his retirement Seward was asked what his greatest achievement was. He answered: "The purchase of Alaska. But it will take another generation to find it out."[5]

So far, the Trump Administration's Arctic policy has been a mixed bag. On the positive side, the Trump Administration has ended the diplomatic sanctions that the Obama Administration applied against Iceland over the issue of whaling.[6] Secretary of State Mike Pompeo's visit to Iceland was the first Cabinet-level visit since 2008 and did much to improve bilateral relations with an important Arctic and NATO ally.[7] Vice President Mike Pence's visit solidified America's commitment to improving relations with Iceland. Secretary Mike Pompeo and his predecessor Secretary Rex Tillerson both attended the Arctic Council Ministerial meeting—continuing a trend first started under the Obama Administration.

Also on the positive side, there has been a renewed focus on China's role in the Arctic and Secretary Pompeo made this issue his focal point at the recent Arctic Council Ministerial meeting. There has also been increased funding for the U.S. Coast Guard's Polar Security Cutter program. After years of putting it on the back burner, the Trump Administration recently announced that the U.S. will maintain a part-time diplomatic presence in Greenland.

However, there have been some shortcomings: The unwillingness of the U.S. to agree to a joint statement during the 2019 Arctic Council Ministerial strained U.S. engagement in the region. The position of Special Representative for the Arctic has been left unfilled by the Trump Administration, leaving the U.S. as the only Arctic power without a Special Representative or Arctic Ambassador. At times there seems to be a lack of cross-government strategic thinking about America's role in the Arctic. For example, the 2017 National Security Strategy, running a total of 68 pages, mentions the word "Arctic" only once, in passing.

Today, the U.S. has four primary security interests in the Arctic region:

1. **Ensuring the territorial defense of the United States.** This is particularly true, as it pertains to the growing ballistic missile threat. In this regard the U.S. relationship with Canada is essential. This is also why it is important for the U.S. to deepen its relations with Iceland and Greenland—both serving essentially as the forward-operating bases of the North American continent.

2. **Enforcing U.S. sovereignty in the region.** In the Arctic, sovereignty equals security and stability. Respecting the national sovereignty of other countries in the Arctic, while maintaining the ability to enforce one's own sovereignty, will ensure that the chances of armed conflict in the region remain low. This is why investment in the U.S. Coast Guard is vital to America's Arctic security interest.

3. **Meeting treaty obligations in the Arctic region through NATO.** Five of the world's eight Arctic countries belong to NATO. Another two, Finland and Sweden, have a very close relationship with NATO. However, NATO has no agreed common position or policy on its role in the Arctic region. This needs to change.

4. **Ensuring the free flow of shipping and other economic activities in the region.** Economic freedom leads to prosperity and security. With melting ice creating new economic and shipping opportunities in the region, it is in America's interests that shipping lanes remain open in line with international norms.

U.S. Strategic Challenges in the Arctic. While the military threat in the Arctic remains low, U.S. policymakers cannot ignore Russia's recent activities to militarize the Arctic region or China's increasing role in the region. Both directly affect America's ability to meet the four aforementioned security interests.

The Russian (Polar) Bear. Russia has a long history in the Arctic. In the early 18th century, Russia sent a number of large expeditions to explore and map the Siberian coastline at crippling cost to the treasury.

The explorers, scientists, and adventurers who partook in the Kamchatka expeditions, known as the Great Northern Expeditions, numbered in the thousands. Even by today's standards, these are still probably the largest scientific expedition in history.

Almost 300 years later, Russia is still staking new claims in the Arctic. In 2007, Artur Chilingarov, then a member of the Russian Duma, led a submarine expedition to the North Pole and planted a Russian flag on the seabed. Later he declared: "The Arctic is Russian."[8]

Today, Russia is motivated to play an active role in the Arctic region for three reasons:

1. **Low-risk promotion of Russian nationalism.** Because nationalism is on the rise in Russia, President Vladimir Putin's Arctic strategy is

popular among the population. For Putin, the Arctic is an area that allows Russia to flex its muscles without incurring any significant geopolitical risk.

2. **The economic potential of the region.** Russia is also eager to promote its economic interests in the region. Half of the world's Arctic territory and half of the Arctic region's population is located in Russia. It is well-known that the Arctic is home to large stockpiles of proven, yet unexploited, oil and gas reserves. The majority of these reserves is thought to be located in Russia. In particular, Russia hopes that the Northern Sea Route (NSR) will become one of the world's most important shipping lanes.

3. **Russia's security in the region.** Russia has invested heavily in militarizing its Arctic region. While the Arctic region remains peaceful, Russia's recent steps to militarize the region, coupled with its bellicose behavior toward its neighbors, makes the Arctic a security concern.

It is worth closely examining Russia's recent steps to militarize its presence in the Arctic region. In March 2017, a decree signed by Putin gave the Federal Security Service (FSB), which controls law enforcement along the NSR, additional powers to confiscate land "in areas with special objects for land use, and in the border areas."[9] Russia's Arctic territory is within this FSB-controlled border zone. The FSB and its subordinate coast guard have added patrol vessels and built up Arctic bases, including a new coast guard base in Murmansk that opened in December 2018.[10]

The Russian national guard, which reports to President Putin,[11] is also taking on an increased role in the Arctic and is now charged with protecting infrastructure sites that are deemed to be of strategic importance, including a new liquefied natural gas (LNG) export terminal at Sabetta that opened in December 2017.[12] The first shipment of LNG from the Sabetta terminal to China via the NSR took place in July 2018.[13] The national guard was also reportedly tasked with security at a floating nuclear power plant, the *Akademik Lomonosov*, which sailed from Murmask on August 23, was towed across the NSR, and arrived at the town of Pevek on September 14.[14] Russia hopes to export similar floating nuclear power plants in the future.[15]

The Arctic, in particular the Kola Peninsula, factors heavily into Russia's basing, procurement, and military structuring. As a recent report summarized:

TEXT BOX 1

The Northern Sea Route

The Northern Sea Route (NSR) runs from the Barents Sea to the Bering Strait, connecting European and Asian markets. There are some who suggest that the NSR could become a viable alternative—even a rival—to the Suez Canal because it cuts transit time and distance from Europe to East Asia considerably. In some cases this is true. Using the NSR certainly makes a trip between northern European ports and northern Asian ports shorter than using the Suez Canal route. It must be pointed out that this is not the case for southern European ports like Genoa, Trieste, or Barcelona.

However, a word of caution is needed. Last year, only 18 million tons of goods were shipped along the route. By comparison, more than 983 million tons[1] of goods transited the Suez Canal during the same period. Of the 18 million tons of goods shipped along the NSR, only 491,000 tons made the full journey from Europe to Asia.[2] This is four-hundredths of 1 percent of the total volume shipped through Suez. In 2018, only 27 ships transited the whole route of the NSR (down from 28 transits in 2017). During the same period, more than 18,000 ships passed through the Suez Canal.[3]

In May 2018, a presidential degree from Vladimir Putin set a target of 80 million tons shipped across the NSR by 2024[4]— still well below the amount of goods that passes through the Suez Canal. A 2016 report from the Copenhagen Business School found that the "results from the quantitative study on the feasibility of liner shipping across the NSR indicate that Arctic liner shipping may become economically feasible around 2040, if the ice cover continues to diminish at the present rate."

In March 2019, Russian media reported that the government was implementing stringent navigation rules for the entire length of the NSR outside Russian territorial waters. Under these rules, foreign navies, for instance, would be required to "post a request with Russian authorities to pass through the *Sevmorput* [NSR] 45 days in advance, providing detailed technical information about the ship, its crew and destination."[5] The Department of Defense's June 2019 "Arctic Strategy" notes this change as a risk to U.S. National Security Interests, stating: "Russia regulates maritime operations in the NSR, contrary to international law, and has reportedly threatened to use force against vessels that fail to abide by Russian regulations."[6] So far only the French navy has challenged Russian claims, by conducting a Freedom of Navigation operation in 2018.[7]

The shipping lanes are a considerable distance from search-and-rescue facilities, so safety is a major concern. When ships use the NSR, they often rely on support from Russia, especially in the form of icebreakers, which increases shipping costs.

Considering the additional risks and costs associated with using the NSR, it remains to be seen if such a small difference in distance compared with the Suez route is really worth the investment. Right now the numbers suggest that it is not.

1. Jon Shumake, "Suez Canal Has Record-Setting 2018," *American Shipper*, February 21, 2019, https://www.americanshipper.com/news/suez-canal-has-record-setting-2018?autonumber=73415&origin=relatedarticles (accessed October 7, 2019).
2. Malte Humpert, "Russia's Northern Sea Route Sees Record Cargo Volume in 2018," *Artic Today*, February 20, 2019, https://www.arctictoday.com/russias-northern-sea-route-sees-record-cargo-volume-in-2018/ (accessed October 7, 2019).
3. Ibid.
4. Atle Staalesen, "It's an Order from the Kremlin: Shipping on Northern Sea Route to Reach 80 Million Tons by 2024," *The Barents Observer*, May 15, 2018, https://thebarentsobserver.com/en/arctic/2018/05/its-order-kremlin-shipping-northern-sea-route-increase-80-million-tons-2024 (accessed June 20, 2019).
5. Pavel Felgenhauer, "Russia Claims Total Military Superiority in the Arctic," *Eurasia Daily Monitor*, Vol. 16, No. 36 (March 14, 2019), https://jamestown.org/program/russia-claims-total-military-superiority-in-the-arctic/ (accessed June 20, 2019).
6. U.S. Department of Defense, "Arctic Strategy," *Report to Congress*, June 2019, p. 6, https://media.defense.gov/2019/jun/06/2002141657/-1/-1/1/2019-dod-arctic-strategy.pdf (accessed October 28, 2019).
7. Bruce Jones, "French Navy Vessel Becomes First NATO-Flagged Naval Ship to Sail Russia's Northern Sea Route," *Jane's 360*, October 11, 2018, https://www.janes.com/article/83754/french-navy-vessel-becomes-first-nato-flagged-naval-ship-to-sail-russia-s-northern-sea-route (accessed October 7, 2019).

> Russia's military leadership accords absolute priority to perimeter defence of the Kola Peninsula, to ensure the survivability of second-strike nuclear assets. The Kola Peninsula and its surrounding areas are considered of strategic importance for Russian national security. Perimeter defence around Kola and the extension of the "Bastion" defence concept are designed to give Russia defence in depth.[16]

The continued importance of the Bastion concept for Russia underlines the primacy of the Arctic-based Northern Fleet, which accounts for two-thirds of the Russian navy. An Arctic command was established in 2015 to coordinate all Russian military activities in the Arctic region.[17] An Arctic brigade was formed in 2015, although plans for a second brigade have thus far failed to materialize.[18] A naval deepwater division, based in Gadzhiyevo in the Murmansk region and directly subordinate to the Minister of Defense, was established in January 2018.[19] Russian forces in the Arctic have gained important recent experience, as "Russian troops have now been training in Arctic conditions for more than four years, and many troops from the Arctic Brigade have received live combat experience in Syria."[20] Since Russian air assault units are intended to serve as spearhead forces for the Arctic brigade,[21] the "majority of air-assault units in Russia have to undergo Arctic training."[22]

Russia is also investing in military bases in the Arctic. Its base on Alexandra Land, commissioned in 2017, can house 150 soldiers autonomously for up to 18 months.[23] In addition, Soviet-era facilities have been re-opened. The airfield on Kotelny Island, for example, was reactivated in 2013 for the first time in 20 years and "will be manned by 250 personnel and equipped with air defense missiles."[24] In September 2018, the Northern Fleet announced construction plans for a new military complex to house a 100-soldier garrison and anti-aircraft units at Tiksi, which is likely now complete.[25] Also in 2018, Russia opened an Arctic airfield at Nagurskoye that is equipped with a 2,500-meter landing strip, which can accommodate a range of Russian fighter jets and surveillance aircraft.[26]

In fact, air power in the Arctic is increasingly important to Russia; an Arctic air squadron managed by the Northern Fleet will soon be deployed to Monchegorsk on the Kola Peninsula, roughly 62 miles from the Finnish and Norwegian borders.[27] In 2018, according to the Russian Ministry of Defense, "Russian Tu-142 Bear and Il-38 May maritime patrol and anti-submarine warfare aircraft, as well as Su-24MR Fencer tactical reconnaissance jets, flew more than 100 sorties in total above the Arctic circle."[28] In total, Russia has 14 operational airfields in the region along with 16 deepwater

MAP 1

Key Russian Military Installations in and Near the Arctic

1. Vladivostok—Home of Russia's Pacific Fleet
2. Matua, Kuril Islands
3. Provideniya
4. Anadyr/Ugolny
5. Mys Shmidta (Cape Schmidt)
6. Wrangel Island Base
7. Pevek
8. Temp-Kotelny Island
9. Severny Klever (Northern Clover)-Kotelny Island
10. Tiksi
11. Khatanga
12. Sredny Ostrov (Middle Island)
13. Graham Bell Island
14. Nagurskoye
15. Arctic Shamrock/Trefoil
16. Alykel
17. Yamal-Sabetta Port
18. Nadym
19. Salekhard
20. Vorkuta-Sovetskiy Air Base
21. Amderma
22. Naryan-Mar
23. Rogachevo-Novaya Zemlya
24. Gadzhiyevo—Main Submarine Base for Russia's Northern Fleet
25. Severomorsk, Home of Russia's Northern Fleet
26. Vidyayevo
27. Sputnik Base Pechenga
28. Zapadnaya Litsa
29. Chernyakhovsk Air Base
30. Alakurtti Air Base
31. Olenya Air Base
32. Belomorsk Naval Base
33. Gremikha Naval Base
34. Arkhangelsk—Home of North Arctic Command

SOURCE: Heritage Foundation research.

ports.[29] The investments in these new military facilities have cold-weather combat in mind. Major General Igor Kozhin, head of the Russian Naval Air Force, claimed that Russia had successfully tested a new airstrip cover that is effective in "temperatures down to minus 30 centigrades."[30]

Russia undertook regular air patrols in the Arctic in 2019.[31] As an example, the Russian Ministry of Defense announced that in January 2019, two Tu-160 bombers flew for 15 hours in international airspace over the Arctic.[32] Over the course of one week in April 2019, Russian fighter and bomber jets flew near the coast of Norway twice. In one instance, two TU-60 bombers and a MiG-31 flew 13 hours over the Barents, Norwegian, and North Seas. British and Danish jets scrambled to meet the Russian aircraft.[33]

Russian Arctic flights are often aggressive. In March 2017, nine Russian bombers simulated an attack on the U.S.-funded, Norwegian-run radar installation at Vardø, Norway, above the Arctic Circle.[34] In May 2017, 12 Russian aircraft simulated an attack against NATO naval forces taking part in the Eastern Atlantic Area (EASTLANT) 17 exercise near Tromsø, Norway, and later that month, Russian aircraft targeted aircraft from 12 nations, including the U.S., that took part in the Arctic Challenge 2017 exercise near Bodø.[35] In April 2018, Maritime Patrol Aircraft from Russia's Pacific Fleet for the first time exercised locating and bombing enemy submarines in the Arctic, while fighter jets exercised repelling an air invasion in the Arctic region.[36]

The 45th Air Force and Air Defense Army of the Northern Fleet was formed in December 2015, and Russia reportedly has placed radar and S-300 missiles on the Arctic bases at Franz Joseph Land, New Siberian Islands, Novaya Zemlya, and Severnaya Zemlya.[37] In 2017, Russia activated a new radar complex on Wrangel Island.[38] Russia plans to lay a nearly 8,000-mile fiber optic cable across its Arctic coast, linking military installations along the way from the Kola Peninsula through Vladivostok.[39] In November 2018, Russia announced rocket firings in the Norwegian Sea that were between 20 nautical miles and 40 nautical miles from the Norwegian coast. The test firings, with little advance notice, were designed to send a message as they took place in an area through which NATO ships were sailing during the Trident Juncture exercise.[40] Russia has reportedly deployed Murmansk-BN long-range radio jammers to Severomorsk, the Kola Peninsula, and in Kamchatka, as well as Krasukha-2 and Krasukha-4 electronic warfare systems to bases at Novaya Zemlya, Severnaya Zemlya, the New Siberian Islands, and Chukotka.[41]

In December, Russia's Joint Strategic Command overseeing every Arctic military unit was upgraded to an "independent military administrative unit, equal in status to a military district."[42] Russia is developing equipment

optimized for Arctic conditions, such as the Mi-38 helicopter and three new nuclear icebreakers, to add to the 40 icebreakers already in service, six of which are nuclear.[43] Former U.S. Coast Guard Commandant Admiral Paul Zukunft has expressed concern that "Russia is probably going to launch two icebreaking corvettes with cruise missiles on them over the course of the next several years."[44] In July 2019, Russia tested two Tor-M2DT anti-aircraft missile systems designed for operating in the Arctic at Novaya Zemlya.[45]

In July 2017, Russia released a new naval doctrine citing the alleged "ambition of a range of states, and foremost the United States of America and its allies, to dominate the high seas, including in the Arctic, and to press for overwhelming superiority of their naval forces."[46] In May 2017, Russia announced that its build-up of the Northern Fleet's nuclear capacity is intended "to phase 'NATO out of [the] Arctic.'"[47] The Northern fleet however, faces limitations; a recent report notes that

> the majority of its assets are not Arctic-specific, operating beyond the region and in other strategic directions. This situation is worsened by the Northern Fleet's general lack of ice-class surface vessels and its heavy reliance on Rosatomflot civilian icebreakers to ensure passage along the NSR and transit in ice conditions east of the Barents Sea and Novaya Zemlya.[48]

Russia's Northern Fleet has focused on building newly refitted submarines, including a newly converted *Belgorod* nuclear-powered submarine that was expected to launch in April 2019[49] and to enter active duty in 2020.[50] The *Belgorod* is expected to carry six Poseidon drones, also known as nuclear torpedoes, and will carry out "covert missions."[51] The submarine will have a smaller mini-sub potentially capable of tampering with or destroying undersea telecommunications cables.[52] According to Russian media reports, the *Belgorod* "will be engaged in studying the bottom of the Russian Arctic shelf, searching for minerals at great depths, and also laying underwater communications."[53] A similar submarine, the *Khabarovsk*, is under construction and could enter active duty as early as 2022.[54]

As an Arctic power, Russia's military presence in the region is to be expected. However, it should be viewed with some caution due to Russia's pattern of aggression. In March, General Curtis Scaparrotti—Commander of the U.S. European Command (EUCOM) and NATO Supreme Allied Commander for Europe—testified, "Although the chances of military conflict in the Arctic are low in the near-term, Russia is increasing its qualitative advantage in Arctic operations, and its military bases will serve to reinforce Russia's position with the threat of force."[55]

China's Increasing Role

With the focus on China's dubious and aggressive claims of sovereignty in the South China Sea, its massive infrastructure investments in Central Asia and Africa, and the trade war with the U.S., it is easy to overlook another aspect of Beijing's foreign policy: the Arctic.

In the simplest terms, China sees the Arctic region as another place in which to advance its economic interests and expand its diplomatic influence. As a non-Arctic country, China is mindful that its Arctic ambitions in international Arctic institutions are naturally limited—and this has not stopped Beijing from increasing its economic presence in the region.

China's Arctic strategy published last year offers a useful glimpse into how Beijing views its role in the region.[56] Running 5,500 words in the English translation, the strategy is littered with all the Arctic-related buzzwords, such as "common interests of all countries," "law-based governance," "climate change," and "sustainable development." The irony is not lost on observers of the South China Sea where China has shunned international norms to claim sovereignty, or the fact that China is the world's largest emitter of greenhouse gases.

Even though China's closest point to the Arctic Circle is more than 800 nautical miles away, Beijing refers to itself as a "near Arctic State"[57]—a term made up by Beijing and not found in the lexicon of Arctic discourse. In fact, extending Beijing's logic to other countries would mean that Belarus, Estonia, Germany, Ireland, Kazakhstan, Latvia, Lithuania, the Netherlands, Poland, and the United Kingdom are also "near Arctic" states. These are hardly the countries that one imagines when thinking about the Arctic. As Secretary Pompeo has said: "There are Arctic states, and non-Arctic states. No third category exists. China claiming otherwise entitles them to exactly nothing."[58]

A country that prides itself of on its rich and long history, China is a relative newcomer to the Arctic region. China's Arctic strategy admits that it "started to participate in addressing the Arctic affairs" only in 1925 when the Republic of China signed and ratified the Svalbard Treaty[59] (formally known as the Spitzbergen Treaty).

China is motivated in be an Arctic actor for five primary reasons:

1. **New shipping routes.** China is unique in modern times in that it is a continental power almost entirely dependent on the sea for food and energy.[60] New sea lanes in the Arctic have the potential to play an important role when it comes to diversifying China's import dependencies.

MAP 2

China's Dubious "Near Arctic State" Claim

SOURCE: Heritage Foundation research.

SR220 heritage.org

2. **Economic influence.** China sees itself as a global power, and the Arctic is just another region in which to engage. China hopes to complement its Belt and Road Initiative (BRI)—a vast trading network being constructed by China on the Eurasian landmass and beyond—by investing in and constructing major infrastructure projects along the emerging sea lanes in the Arctic.

3. **Scientific research.** Whether it is for China's sea-based nuclear deterrent, natural resource extraction, or commercial shipping, research on polar high-altitude atmospheric physics, glacial oceans, bio-ecology, and meteorological geology is important for China's strategic interests. As a signatory of the Svalbard Treaty, China is allowed to conduct scientific research on Svalbard and has done so since 2004 at its Arctic Yellow River Station located in Ny Ålesund. China has a total of eight scientific research stations in the Arctic.[61]

4. **Laying the groundwork for future military activity in the region.** Currently, China's military involvement in the Arctic is limited. The People's Liberation Army Navy has never sailed into Arctic waters. However,

the director of the Norwegian Intelligence Service, Lieutenant General Morten Haga Lunde, stated recently that "[i]n the long term, we must be prepared for a clearer Chinese presence also in our neighboring areas."[62] The Pentagon recently warned "that China could use its civilian research presence in the Arctic to strengthen its military presence, including by deploying submarines to the region as a deterrent against nuclear attacks."[63]

5. **Access to minerals, fishing, and other natural resources.** China also sees the Arctic region as a way to satisfy it growing energy and food demands. China is a significant investor in Russia's Yamal LNG project. Beijing received the first shipment of Yamal LNG in July 2018, and it will import 3 million tons of Yamal LNG every year beginning in 2019.[64] The dietary needs of China's growing population can partially be met by increased fishing in the Arctic region.[65]

For now, however, China's primary motivation in the Arctic today is economic. In its Arctic strategy, China also coined the term "polar silk road." As the strategy document states:

> China hopes to work with all parties to build a "Polar Silk Road" through developing the Arctic shipping routes. It encourages its enterprises to participate in the infrastructure construction for these routes and conduct commercial trial voyages in accordance with the law to pave the way for their commercial and regularized operation. China attaches great importance to navigation security in the Arctic shipping routes. It has actively conducted studies on these routes and continuously strengthened hydrographic surveys with the aim to improving the navigation, security and logistical capacities in the Arctic. China abides by the International Code for Ships Operating in Polar Waters (Polar Code), and supports the International Maritime Organization in playing an active role in formulating navigational rules for the Arctic. China calls for stronger international cooperation on infrastructure construction and operation of the Arctic routes.[66]

The goal of the polar silk road is to compliment China's BRI by investing in and constructing major infrastructure projects along the emerging sea lanes in the Arctic.[67]

So it is no surprise that the Chinese have taken great interest in the NSR. In 2012, the Ukrainian-built Chinese icebreaker *Xue Long* ("Snow Dragon") became the first Chinese vessel to sail across the North Sea Route to the Barents Sea and has since carried out nine Arctic expeditions. China is also in the process of building its first nuclear-powered icebreaker. According to a

media report, when finished, the new icebreaker will displace 30,000 tons of water[68]—a massive vessel bigger than the sole aircraft carrier used by Italy.[69]

It is not just shipping that excited China in the Arctic. Like it does across the countries spanning the BRI, China is funding and building major infrastructure projects, especially in Russia, to improve transportation and energy production. Of course, this is all first and foremost for the benefit of Beijing.

China is also becoming more involved in NATO's backyard, with an eye on investing in Greenland and Iceland. Although it must be pointed out that in the case of Greenland, China's role is often greatly exaggerated. China has a license for only one mine in Greenland. General Nice Resources, a Hong Kong–based company, has the rights to an iron ore mine in Greenland, but has not done anything there. Another Chinese company called Shenghe has a 12.5 percent stake in Greenland Mineral and Energy's rare-earth element program, but it is not mining anything right now.[70] In fact, in all of Greenland only two mines are producing anything at all and neither are turning a profit: a ruby mine run by a Norwegian company and an anorthosite mine run by a Canadian company.

The Chinese embassy in Reykjavik can accommodate a staff of up to 500 people, underscoring the importance that China places on its presence in Iceland. The U.S. embassy in Reykjavik has about 70 people. In 2013, tiny Iceland, with a population of slightly more than 330,000 people (the population size of a small Chinese town), became the first European country to sign a free trade agreement (FTA) with China. However, Iceland has so far refused to formally join China's BRI.[71]

But even with its self-professed and exaggerated role in the Arctic, China does have legitimate interests in the region. After all, China is a global trading nation with the world's second-largest economy. It holds a permanent seat on the U.N. Security Council.

So far, China's motivation in the Arctic seems to be more about economics and less about security. But considering the massive debt that China has left in Sri Lanka, Djibouti, and elsewhere, it is only normal to question China's motivations in the Arctic.

The Trump Administration has used every available opportunity on the international stage to raise awareness of Chinese ambition in the Arctic. During a recent trip to Iceland, Vice President Mike Pence made Chinese economic activity in the Arctic one of the focal points of his visit.[72] During the 2019 Arctic Council Ministerial meeting, Secretary Pompeo devoted a sizable amount of his speech to highlighting the threat that China poses to U.S. interests in the region, saying, "The United States and Arctic nations welcome transparent Chinese investment that reflect economic interests, not national security ambitions."[73]

For the most part, China wants to increase access and influence in the Arctic region for economic reasons and it is through this lens that U.S. policymakers should approach Chinese activity in the Arctic region.

U.S. Security Capabilities in the Arctic

Operating militarily in the Arctic region is no easy feat. Since the distances are vast, the terrain is harsh, and the weather is extreme, achieving situational awareness in the Arctic region is a challenge in itself. For example, high-frequency radio signals are degraded in the Arctic region due to magnetic and solar phenomena.[74] The Global Positioning System (GPS), on which both civilian and military authorities rely heavily, is degraded due to poor satellite geometry.[75] Navigation charts of some of Alaska's shipping lanes have not been properly surveyed since Captain James Cook sailed through in 1778.[76]

While the Arctic region remains peaceful, Russia's recent steps to militarize the region, coupled with its bellicose behavior toward its neighbors, makes the Arctic a security concern. The Department of Defense has three primary objectives in the Arctic: (1) protecting the homeland, (2) competing to ensure a favorable balance of power in the key regions of Europe and the Indo–Pacific, and (3) ensuring that common domains, such as sea routes, remain free and open. These objectives are also intertwined, in the sense that progress in one can benefit the others as well.[77] As a potential vector of attack on the U.S. homeland by sea or air, maintaining situational awareness and the ability to operate in the Arctic are strategic imperatives for the United States.

Additionally, despite a great deal of cooperation among the Arctic nations and a desire to keep interactions cooperative, a return to great power competition raises the potential for conflict in the Arctic as well. The Defense Department's "desired end-state for the Arctic is a secure and stable region where U.S. national interests are safeguarded, the U.S. homeland is defended, and nations work cooperatively to address shared challenges."[78] There are three primary lines of effort for the Arctic: (1) building awareness, (2) enhancing operations, and (3) strengthening the rules-based order.[79]

The U.S. can build Arctic domain awareness by improving communications and intelligence, surveillance, and reconnaissance capabilities; increasing meteorological understanding and improving weather forecasting; and supporting the Coast Guard's homeland security missions. The unpredictable weather of the Arctic makes operating in that environment challenging. More predictive forecasts would enable better operations.[80] Enhancing operational situational awareness is another important aspect. The U.S., for instance, is operating P-8 Poseidons—naval surveillance planes

capable of targeting enemy ships and submarines—in the so-called GIUK-N gap, in part to track Russian submarine activity.[81] The GIUK-N gap is a naval choke point in the northern Atlantic Ocean consisting of waters between Greenland, Iceland, the U.K., and Norway.

Enhancing Arctic operations requires exposing U.S. forces to the harsh conditions of operating in the region. The Defense Department plans to achieve this through frequent exercises and deployments, training in cold weather, maintaining access, supporting infrastructure, and working with federal departments and agencies in the Arctic.[82] Exercises like Arctic Edge, which provide special operations soldiers an opportunity to test equipment, are an example of this new effort.[83] The Navy has also sent ships up above the Arctic Circle recently to practice operations in the high latitudes.[84] The Navy has tested torpedoes under the Arctic ice as well.[85] The more that U.S. forces have to operate in these conditions, the better they will be able to project influence there.

The final aspect is strengthening the rules-based order. This includes working with allies to ensure that the Arctic remains cooperative and stable. "Freedom of the seas" is a related priority, as maritime traffic is increasing and the Arctic has choke points that must remain open. To achieve these priorities Navy Secretary Richard Spencer showed interest in a strategic port, in addition to increasing Freedom of Navigation Operations (FONOPS).[86] He has also called for U.S. transiting of the Northwest Passage.[87] The Senate's National Defense Authorization Act (NDAA) bill includes a provision to identify sites for a possible strategic port in the Arctic, which would be capable of handling the Navy's and Coast Guard's ships.[88] The legislation points to increasing great power competition and access to resources and sea routes in the Arctic as main justifications for the utility of a strategic port, which would help to enable naval power projection.[89]

The Pentagon publishes an annual Unified Command Plan (UCP) that assigns responsibilities to each U.S. military combatant command for oversight of operations in its area of responsibility (AOR). The current UCP identifies six regional combatant commands (African Command, Central Command, EUCOM, Northern Command (NORTHCOM), Pacific Command (PACOM), and Southern Command), and three functional combatant commands (Special Operations Command, Strategic Command (STRATCOM), and Transportation Command).

On August 18, 2017, President Trump directed that a fourth functional command, U.S. Cyber Command, be elevated to the status of a combatant command. It had previously been a subordinate command under STRATCOM.[90] The UCP artificially divides responsibility for the Arctic between EUCOM

and NORTHCOM. The 2011 UCP removed the Arctic from PACOM's AOR. EUCOM's Arctic AOR extends from Greenland across Europe and Russia to the tip of the Chukotka Peninsula in Russia's far east; NORTHCOM is responsible for the Arctic across Alaska and Canada. The Joint Chiefs of Staff should revise the UCP to designate EUCOM as the lead combatant command for Arctic operations. Designating a lead combatant command will assist in coordinating among combatant commands where interests and AOR in the Arctic overlap.

Furthermore, EUCOM's long-standing and robust relationships with NATO and bilateral ties with the five European Arctic nations make it a natural choice. Continued cooperation with these allies in the form of exercises, intelligence sharing, joint training, and situational awareness is crucial to securing the Arctic and protecting U.S. interests and sovereignty there. Moreover, Russia, whose recent militarization of the Arctic is a challenge for both the U.S. and NATO, falls within EUCOM's AOR. EUCOM's decades of experience dealing with Russia, in terms of both former cooperation and active deterrence, make it an ideal selection.

America's Arctic Forward-Operating Bases

The U.S. ability to meet national security objectives in the Arctic is made possible (and easier) by the close collaboration with partner nations in the region. Luckily for the U.S., six of the other seven Arctic countries are either treaty allies through NATO (Canada, Denmark, Iceland, and Norway) or very close partners, such as non-NATO Finland and Sweden.

Considering that five of the world's Arctic countries are in NATO, one would expect that the Alliance would place a strong focus on the region. This has not been the case. NATO has no agreed common position or policy on its role in the Arctic region. The recent London Declaration does not mention the word "Arctic," nor does the Alliance's most recent Strategic Concept published in 2010.

NATO has been internally divided on the role that the Alliance should play in the High North. Norway is the leading voice inside the Alliance for promoting NATO's role in the Arctic. It is the only country in the world that has its permanent military headquarters above the Arctic Circle, and it has invested extensively in Arctic defense capabilities.

Canada has likewise invested heavily in Arctic defense capabilities. However, unlike Norway, Canada has stymied past efforts by NATO to take on a larger role in the region. Generally speaking, Canada is concerned that an Alliance role in the Arctic would afford non-Arctic NATO countries influence in an area where they otherwise would have none.

As a sovereign nation state, Canada has a prerogative to determine what role, if any, NATO should play in Canada's Arctic region. However, as a collective security alliance, NATO cannot ignore the Arctic altogether, and the Alliance should not remain divided on the issue.

Luckily, the omission of any meaningful Arctic policy in NATO has not stopped practical cooperation in the Arctic. Norway hosted NATO's Exercise Trident Juncture 2018. This massive exercise consisted of 50,000 troops from 30 NATO and partner countries. It also involved 250 aircraft, 65 vessels, and around 10,000 vehicles.[91] It was NATO's largest training exercise since 2002, and the largest exercise of any kind in Norway in almost 40 years. As part of the exercise, the U.S.S. *Harry S. Truman* became the first U.S. aircraft carrier to operate in the Arctic Ocean since the fall of the Soviet Union.[92]

U.S.–Canadian cooperation is also important for U.S. security objectives in the region. The Defense Department's 2019 Arctic Strategy summarizes one crucial component of this cooperation:

> Effective surveillance of the northern air and maritime approaches to North America is foundational to homeland defense aerospace warning, aerospace control, maritime warning, and missile defense. Cooperation with Canada through the North American Aerospace Defense Command (NORAD) is key to the defense of the northern approaches. To detect and track potential airborne threats, including Russian long-range bombers and cruise missiles, the United States and Canada rely on radar systems such as the aging North Warning System, a network of aerospace surveillance radars in northern Canada and Alaska.[93]

A creation of the Cold War to monitor man-made objects in space and to warn of incoming missiles, aircraft, or space vehicles, maritime warning was added to NORAD's mission in 2006.[94] In December 2012, the U.S. and Canada signed the Tri Command Framework for Arctic Cooperation, the goal of which is "to promote enhanced military cooperation in the Arctic and identify specific areas of potential Tri Command (Canadian Joint Operations Command, United States Northern Command and NORAD) cooperation in the preparation for, and conduct of, safety, security and defence operations."[95]

The U.S. Department of Defense and the Canadian Department of National Defence are jointly studying modernization of sensors in Alaska as well as in the more than 50 sites in Canada.[96] The current NORAD radar system does not effectively track low-flying cruise missiles.[97] The U.S. and Canada enjoy a strong military-to-military working relationship,

including at any given time approximately 700 members of the Canadian Armed Forces serving in the U.S., and 1,000 American soldiers serving in Canada in exchange programs.[98] Likewise, the U.S. Coast Guard maintains a strong partnership with its Canadian counterpart. The U.S. and Canada also "engage in numerous joint exercises, such as the under-ice amphibious exercise ICEX, and NORAD's annual Vigilant Shield, which focuses on homeland defense."[99]

However, there are three islands that are vital to the defense of the United States. Due to their geographical locations Greenland, Iceland, and Svalbard are essentially the forward-operating bases of the North American continent. Without close U.S. engagement with each, the security of the United States is degraded.

Greenland (Denmark). By the fact of having sovereignty over Greenland, Denmark is a major Arctic power. The U.S.–Danish relationship is built on its shared membership in NATO and shared interest in the Arctic region.

However, one of the most important aspects of the U.S.–Danish defense relationship is the access that the U.S. enjoys to Greenland. Greenland recently made the news when President Trump suggested that he wanted to buy the island.[100] When Danish Prime Minister Mette Frederiksen, who depends on the two Greenlandic members of parliament to prop up her fragile minority government, called the notion "absurd,"[101] President Trump abruptly cancelled a long planned state visit to Copenhagen.

Even so, Danish officials say privately that they consider this incident "water under the bridge."[102] This view has been proven by the fact that just weeks after this incident, the Danish government announced it was deploying forces in support of the U.S. in Syria. This proves that the unfortunate Greenland purchase debate had no lasting negative impact on the bilateral relationship.

Greenland is an autonomous constituent country of the Kingdom of Denmark. Greenland was granted home rule in 1979 and self-government in 2009.[103] It has competency over most policy areas, with the big exceptions of foreign affairs, defense, and monetary policy—all of which are still controlled by Copenhagen.

Greenland is part of North America, and a critical part of America's national security architecture. In 1946, the Truman Administration tried, unsuccessfully, to buy the entire island from Denmark for $100 million.[104] The U.S. was, however, granted long-term access to important military sites.

Today, the main U.S. military presence is at Thule Air Base in the north of the island.[105] Thule also serves as a crucial early warning radar and satellite tracking station for the protection of the U.S. homeland.

While the U.S.–Greenland relationship is good, a current point of major friction is the awarding of the Thule Base Maintenance Contract (BMC) and the shipping contract for Thule Air Base. For decades, both contracts were awarded exclusively to Greenlandic or Danish companies. This changed in 2014, when the U.S. Department of Defense awarded the contract to a U.S. company for the first time since the 1950s. This move apparently saved U.S. taxpayers hundreds of millions of dollars but left relations with Nuuk problematic ever since.

In 2017, the shipping contract was awarded to an American company for the first time. (It had previously gone to Greenland's national sea carrier, Royal Arctic Lines.) Even though the bid from Royal Arctic Lines was lower than others, the U.S. Department of Defense used the 1904 Cargo Preference Act to justify awarding the contract to a U.S. company. Complicating the matter further, there is a perception among Greenlandic officials that the processes that led to the U.S. decision to award these two contracts to U.S. companies was not well communicated.[106]

After years of the U.S. putting a diplomatic presence in Greenland on the back burner, the Trump Administration recently announced that the U.S. will maintain a part-time diplomatic presence there. While this is a good first step, over time this should become an enduring and permanent presence.

An expanded U.S. diplomatic presence would demonstrate that the U.S. takes Greenland at a level of seriousness proportionate to its role in America's security. It would also give the U.S. government a depth of situational awareness that is not possible without a consulate.

Iceland. A NATO ally in the northern Atlantic Ocean, Iceland sits on the very frontier of the North American landmass, is the westernmost nation in Europe, and is a mere 186 miles from Greenland. In 1951, the U.S. and Iceland signed a bilateral defense agreement. According to the agreement: "The United States on behalf of the North Atlantic Treaty Organization and in accordance with its responsibilities under the North Atlantic Treaty will make arrangements regarding the defense of Iceland."[107] The U.S., then, remains bound to defend Iceland, not only by NATO's Article V, but also by a bilateral agreement—a testament to Iceland's importance to U.S. security.[108]

Today, Iceland still plays an important role in transatlantic security, especially when viewed in light of recent Russian behavior in continental Europe, and given both Russian and Chinese interests in Arctic and North Atlantic waters. Iceland's relevance to U.S. policy is also largely derived from its location at the edge of the Arctic Circle. The U.S. military built Naval Air Station Keflavik in southwest Iceland during World War II and, with the exception of 1946 to 1951, operated a multi-service base there until 2006.

In June 2016, the U.S. and Iceland signed a joint declaration, which among other things, reaffirmed the nations' continued commitment to "close cooperation on defense and security matters, both bilaterally and as part of the North Atlantic Treaty Organization."[109]

In 2016, the Navy requested funds to upgrade facilities at Keflavik Air Station to enable operations of P-8 Poseidon aircraft in the region. The P-8, with a combat radius of 1,200 nautical miles, is capable of flying missions over the entirety of the GIUK gap, which has seen an increase in Russian submarine activity. In 2017, the U.S. allocated over $21 million to upgrade facilities at Keflavik Air Station.[110] American investments in Keflavik have continued, with the U.S. planning to spend $57 million on Keflavik in 2020.[111] The U.S. military has steadily increased the number of days it operates out of Keflavik, from just 20 days in 2014, to 152 days in 2017,[112] and 209 days in 2018.[113] The U.S. reportedly plans to begin housing two fighter jets squadrons accounting for between 18 planes and 24 planes on a rotational basis at Keflavik.[114] In August, a B-2 Stealth Bomber landed in Iceland for the first time on a refueling stop. EUCOM stated that the "purpose of the flight was to conduct theater familiarization for aircrew members and to demonstrate U.S. commitment to allies and partners through the global employment of our military forces."[115]

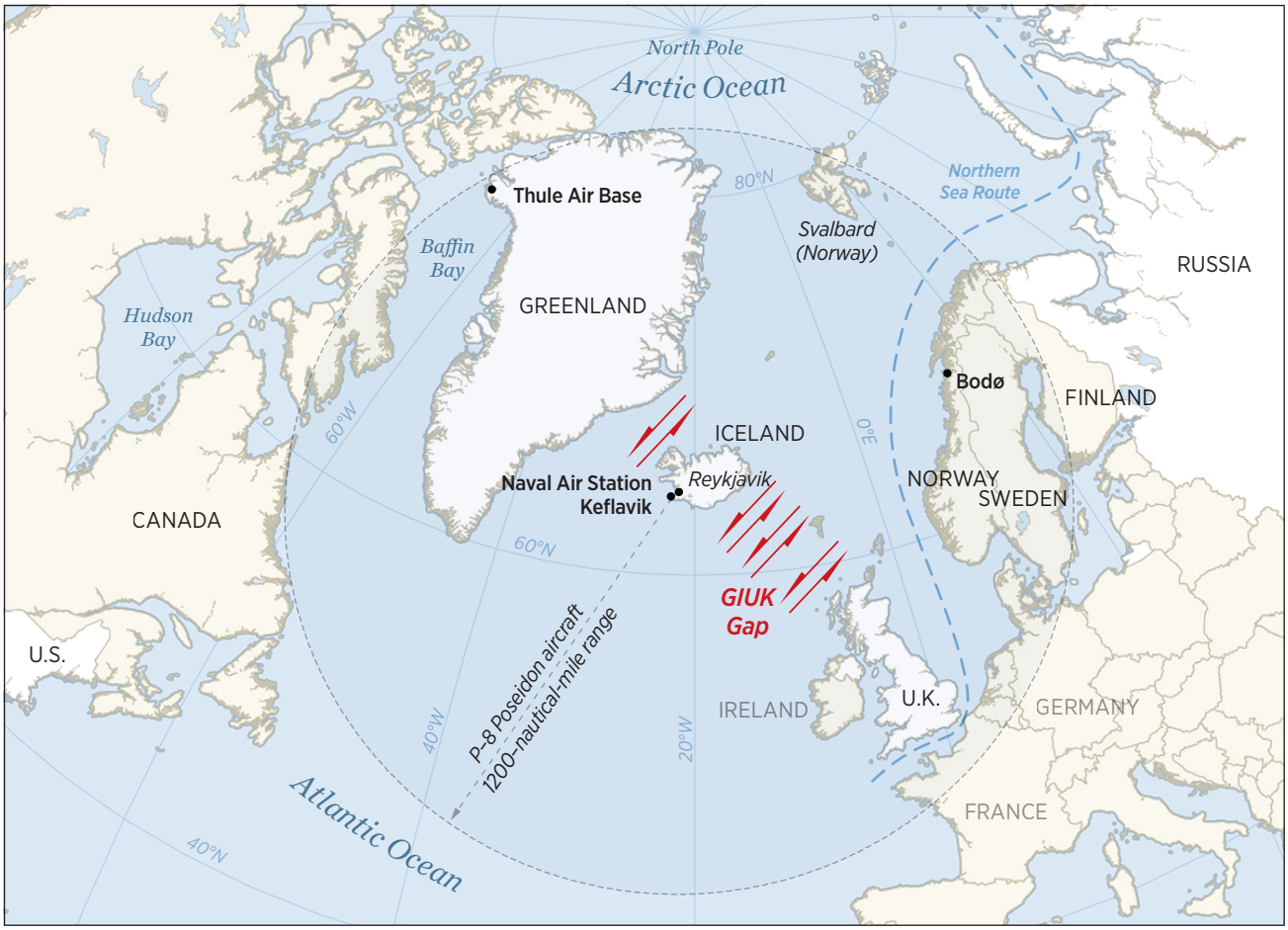
A recent report highlights the continued importance of the GIUK gap for both Russian and NATO defense planning:

> Russia's extended ambition of denial with the Bastion defence concept means that ensured operations and security for submarine-launched ballistic missiles (SLBMs) will require force deployment through this chokepoint. Russian operations around the GIUK gap would have a negative impact on North Atlantic sea lines of communication (SLOC), which constitute the main routes for reinforcement and resupplies from North America to theatres of operation in Europe.[116]

In addition to U.S. P-8 patrols, since May 2008, Naval Air Station Keflavik has hosted NATO's Icelandic air policing mission. While the Icelandic Coast Guard keeps constant surveillance of the nation's airspace from the ground and at sea, NATO provides a periodic deployment of fighter aircraft from member states to provide an aerial presence over the island nation. The U.S. has deployed 11 times in support of Icelandic air policing, most recently in July and August 2019. Twice in March 2019, Italian jets taking part in Icelandic air policing scrambled to escort Russian aircraft that had flown into NATO airspace surveillance areas near Iceland.[117] The first incident concerned two Russian Tu-142 long-range reconnaissance and anti-submarine aircraft,[118] and the second saw two of the same Russian aircraft fly

MAP 3

Iceland's Strategic Location in the North Atlantic



SOURCE: Heritage Foundation research.

SR220 heritage.org

into NATO airspace without contacting air traffic control and with radio transponders turned off.[119]

While Iceland does not have a formal military, it operates a number of civilian security forces, including a coast guard and a national police force. In 2019, Iceland raised its defense budget by 37 percent, from $12.9 million in 2017 to $17.7 million in 2019.[120] The budget supports the Icelandic Coast Guard, operations of Keflavik, host nation support, and upgrades to radar systems and military bases.[121] Iceland has four radar sites and an air-command-and-control system, which are part of NATO's Integrated Air and Missile Defence (NIAMD) system.

Svalbard (Norway). Norway's geographical location is vitally important for the defense of the north Atlantic region, and the country is a reliable partner for the U.S. inside NATO. Svalbard is a non-militarized Norwegian archipelago some 500 nautical miles off the northern coast of Norway. Located well above the Arctic Circle, it capital and largest city is Longyearbyen (population 2,100).

Although belonging to Norway, during the turn of the past century, there was uncertainty about which country had authority over Svalbard. As part of the various peace settlements after World War I, Norway was granted sovereignty under the terms of the 1920 Svalbard Treaty.[122]

Although Norway was awarded sovereignty, the terms of the Svalbard Treaty allowed any of the treaty's signatories to have non-discriminatory access to the islands' fishing, hunting, and natural resources. These countries included major powers, such as Russia, the U.S., the U.K., and China, as well as countries far from the Arctic, such as Saudi Arabia, South Africa, and even Afghanistan. In total, some 46 countries enjoy equal access to Svalbard's natural resources.

Other than Norway, it has only been the Soviet Union, and later Russia, that maximized its ability to operate on Svalbard. At the height of the Cold War, Russians accounted for two-thirds of Svalbard's population, totaling 2,000 people in the 1960s,[123] a number that has declined to under 500 today.[124]

Russia has been mining coal on Svalbard since 1913, but it was not until the late 1920s that it did so in any meaningful and commercial way. During the Cold War, the Soviet Union maintained three settlements on Svalbard. One at Grumant was closed in 1961. Another at Pyramiden was closed in 1998.[125]

The last remaining settlement, located in Barentsburg, is still active today, but is dependent on Russia for food and other provisions. Curiously, considering the remoteness of its location, Barentsburg has a Russian consulate. These settlements have always been more about national prestige for Russia and never produced that much coal. Even the settlement in Barentsburg today only produces enough coal to sustain itself.

The military importance of Svalbard is limited in peacetime due to the restrictions placed on the region under the Svalbard Treaty, which demilitarized the islands. As Article 9 of the Svalbard Treaty states:

> Subject to the rights and duties resulting from the admission of Norway to the League of Nations, Norway undertakes not to create nor to allow the establishment of any naval base in the territories specified in Article 1 and not to construct any fortification in the said territories, which may never be used for warlike purposes. The non-militarized nature of the islands is under constant debate.

Russia accuses Norway of violating this clause in the treaty when Norwegian coast guard ships call into port or when the occasional Norwegian air force cargo planes lands at Longbeartyan airport. Norway contests these accusations by stating that these visits are in line with the limitations outlined in Article 9 of the treaty.[126]

During the Cold War, there was concern that the Soviets could use the settlements to preposition military hardware in violation of the terms laid out in the Svalbard Treaty.[127] Even today, Russia blurs the lines. In 2015, just after the Ukraine crisis got underway, Russian Deputy Prime Minister Dimitry Rogozin conducted a surprise visit to Longyearbyen airport and then went on to Barentsburg, even though he was listed as being under sanctions and banned from entering Norway.[128] In 2016, Chechen special forces landed at Longyearbyen airport en route to Russia's Barneo ice-base in the Arctic.[129] At the time, the Norwegian government protested to show its displeasure.

The geostrategic location of Svalbard, especially in terms of its proximity to the Kola Peninsula, home of Russia's Northern Fleet, is not lost on the Russians, either. In 2017, officials in the Russian defense ministry reportedly highlighted Svalbard as a potential area of future conflict for the Russian navy.[130] During a major Russian military exercise that same year, one of the scenarios reportedly played out by the Russian military was its invasion and capture of Svalbard.[131]

Even though Svalbard is currently demilitarized, one cannot pretend that in the event of a major outbreak of conflict in the Arctic region that the archipelago would not be front and center in any military campaign. U.S. military planners must always have this reality in the back of their minds.

The Role of the U.S. Coast Guard in the Arctic

The U.S. Coast Guard provides institutional leadership for the Arctic in homeland security, maritime safety, and environmental stewardship. The United States' new Arctic Strategy identifies three main lines of effort: (1) enhancing capability to operate effectively in a dynamic Arctic, (2) strengthening the rules-based order, and (3) innovating and adapting to promote resilience and prosperity.[132] With a large number of responsibilities, including enforcing U.S. law and conducting search and rescue operations in the Arctic, the presence of the Coast Guard in the High North is essential for ensuring a favorable environment. The Coast Guard delivers this presence with ships, aircraft, and unmanned systems. The Coast Guard operates the only ships capable of moving around the ice floes of the Arctic. No Navy ship

can safely navigate those waters, aside from submarines below the ice, and the Coast Guard's primary means of projecting power and presence in the icy waters is through its fleet of icebreakers.

Since 2009, the Coast Guard has conducted Operation Arctic Shield from July to November each year, designed to respond to the increased activity in the Arctic.[133] In addition to conducting missions and activities usually associated with Coast Guard operations, the operations are meant to increase Arctic Maritime Domain Awareness (MDA) and broaden the partnerships in the region, as well as enhancing preparedness, prevention, and response capabilities. During Arctic Shield 2017, the Coast Guard cutter *Maple* transited the Northwest Passage without support from an icebreaker, the first time that has been done since 1967.[134]

With a new focus on great power competition and keeping Russia and China in check, the Coast Guard needs to be able to operate in the Arctic. The Coast Guard has only two operational polar-capable vessels in the entire U.S. fleet, but a lack of funding has left it incapable of meeting the demands. The Russians operate more than 40 icebreakers, and the Chinese have built two and are building a third.

The Aging Icebreaker Fleet. An essential tool for maintaining a presence in the Arctic, Coast Guard icebreakers perform nine of the 11 Coast Guard statutory missions, including law enforcement, search and rescue operations, and defense missions. Icebreakers are important U.S. instruments in polar international cooperation, competition, or for deterring conflict.[135] The U.S. cannot shape events in an area it cannot physically access.

The Coast Guard currently operates one heavy polar icebreaker, the *Polar Star*, and one medium polar icebreaker, the *Healy*. The Coast Guard's other heavy polar icebreaker, the *Polar Sea*, is no longer operational and serves as spare parts for the *Polar Star*. This current fleet is incapable of effectively meeting current mission requirements. From 2010 to 2016, the U.S. only fulfilled 78 percent of icebreaking requests.[136]

Commissioned in 1976, the *Polar Star*, was designed for a 30-year service life, which was reached in 2006. The *Polar Star* currently requires extensive dry-dock maintenance after each McMurdo mission,[137] making this its only mission per year. It completed a service-life extension in 2012, designed to extend its service to 2023, when the first new icebreaker is due to be completed.[138] Even after undergoing this maintenance cycle, it is unclear whether the icebreaker will last until then, creating a possible capability gap.[139]

While the *Healy* is more modern than the *Polar Star*, it is has less icebreaking capability, and struggles to support heavy icebreaking operations,

such as the Antarctic McMurdo resupply operation, and is incapable of reaching certain areas of the Arctic in all seasons.[140] It can only provide seasonal presence in the Arctic as it cannot break through thick ice (greater than four and a half feet) at a sustained speed.

The program for the design and construction of a new polar class icebreaker began in 2013 with a budget request for $23 million. The Coast Guard has taken steps to advance the program in recent years. In August 2016, the Coast Guard created an integrated program office with the Navy in order to leverage the Navy's shipbuilding expertise to assist in the acquisition effort. The Coast Guard also engaged with the shipbuilding industry in order to get a better understanding of the domestic shipbuilding market.[141]

On March 2, 2018, the Coast Guard's Integrated Program Office released a Request for Proposals for the first heavy icebreaker to industry for the advance procurement and detail design, with options for detail design and construction for up to three heavy polar icebreakers.[142]

The Coast Guard's fiscal year 2019 budget requests $750 million for the detail design and construction contract for the first new heavy icebreaker, as well as another service-life extension for the *Polar Star*.[143]

While there was recently uncertainty about the funding for the program, money seems to have been allocated. On April 23, 2019, the Coast Guard–Navy Integrated Program Office for the Polar Security Cutter project awarded a $745.9 million contract for detail design and construction of the first icebreaker to the VT Halter Marine shipbuilding company, located in Pascagoula, Mississippi, but owned by Singapore Technologies Engineering. The program looks to acquire three heavy icebreakers with an estimated procurement cost of $2.6 billion,[144] and the Coast Guard hopes to get them built as soon as possible in order to fill the critical-capability gap.

In order to ensure that the U.S. meets its strategic objectives in both Polar Regions, the Coast Guard needs a fleet of icebreakers. Its official requirement calls for up to six new polar class icebreakers, three heavy and three medium. There is flexibility on that mix according to Coast Guard Commandant Admiral Zukunft, as six heavy icebreakers would fulfill all of the mission requirements better.[145] This requirement comes from the 2010 High Latitude Study, which the Department of Homeland Security affirmed in a Mission Needs Statement in June 2013.[146] This would allow year-round access to the Arctic as well as the ability to meet national strategic objectives in the Polar Regions.[147]

The Coast Guard partially based this requirement on the concept commonly used by the U.S. Navy that it takes three ships to ensure that one ship

is constantly deployed. Typically, one ship is deployed, another is in training, and the final ship is undergoing major maintenance.[148]

The new heavy icebreaker must be able to break between six feet and eight feet of ice at a continuous speed of three knots, and must have the ability to break 21 feet of ice using the back-and-ram method.[149] Many of its planned features are similar to those of the *Polar Star*, but provide improvements in some key ways.

The new icebreaker is expected to have better reliability and maintainability, better ship control and communications, as well as space, weight, and power margins to add scientific or defense equipment later if the need arises.[150] This is important for addressing the shifting mission needs on a ship that will be in service for over thirty years.

What the U.S. Should Do

Russia is reverting to its imperial ways, and China is expanding its economic influence across much of the world. As new economic opportunities and security challenges continue to manifest in the Arctic, the U.S. must be prepared. The U.S. should:

- **Promote economic freedom in the Arctic.** Economic freedom spurs prosperity, respect for the rule of law, jobs, innovation, and economic sustainability in the Arctic region. Most important, economic freedom can help to keep the Arctic stable and secure. It should be the focal point of broader U.S. engagement in the region.

- **Conduct Freedom of Navigation operations in the Arctic.** Russia's dubious claim that the Northern Sea Route is an internal waterway goes against international law and norms. The U.S. should follow the lead of the French navy and conduct Freedom of Navigation operations in the region.

- **Continue to invest in the U.S. Coast Guard and U.S. Navy Arctic situational awareness capabilities.** The remote and harsh conditions of the Arctic region make unmanned systems particularly appealing for providing additional situational awareness, intelligence, surveillance, and reconnaissance. The Coast Guard should also consider upgrading facilities, such as its Barrow station in Alaska, to reinforce its Arctic capabilities and demonstrate a greater commitment to the region.

- **Announce the re-establishment of the position of Special Representative for the Arctic.** The position of Special Representative for the Arctic was created under the Obama Administration. The Trump Administration eliminated this position, leaving the U.S. once again as the only Arctic power without a Special Representative or Arctic Ambassador. The U.S. needs a senior and single point of contact to represent the U.S. on Arctic issues.

- **Deepen relations with Iceland.** Not only is Iceland an important NATO member, it also holds the current chairmanship of the Arctic Council. There is also a new opportunity to advance bilateral relations now that the Trump Administration has ended the diplomatic sanctions that applied to Reykjavik by the Obama Administration over Icelandic whaling. The U.S. should use this new opportunity, along with Iceland's chairmanship, to advance American interests in the Arctic.

- **Continue to raise awareness of China's questionable ambitions.** China has declared itself a "near Arctic state"—a made-up term that previously did not exist in Arctic discourse. The U.S. should work with like-minded partners in the Arctic Council to raise legitimate concerns about China's so-called Polar Silk Road ambitions. The U.S. should also make sure that China does not try to exceed what it is allowed to do under its status as an observer in the Arctic Council.

- **Officially acknowledge NATO's role in the Arctic for the first time.** The upcoming NATO Strategic Review should acknowledge that NATO is, in part, an Arctic alliance

- **Work with allies to develop a NATO Arctic strategy.** The Alliance should agree to develop a comprehensive Arctic policy to address security challenges in the region. This should be done in cooperation with non-NATO members Finland and Sweden.

- **Call for the next NATO summit to be held above the Arctic Circle.** This would bring immediate awareness of Arctic issues to the Alliance. In the next few years, perhaps the Norwegian city of Tromsø would be most appropriate, since few cities above the Arctic Circle have the required infrastructure to hold a major international gathering like a NATO Summit.

- **Work with NATO's non-Arctic members, such as the U.K. and the Baltic states, to promote an Arctic agenda.** The U.K. takes an active interest in the Arctic. Geographically, the U.K. is the world's closest non-Arctic country to the Arctic Circle. The Baltic states work closely with the Nordic countries, which are Arctic powers. The U.S. should leverage its relationships with these countries to advance an Arctic agenda within NATO.

- **Continue to participate in training exercises in the region.** Exercises above the Arctic Circle are vital to ensuring that the Alliance is prepared to meet potential threats to Arctic security. The U.S. should also consider hosting NATO exercises in Alaska.

- **Make the U.S. diplomatic presence in Greenland fulltime.** Opening a part-time U.S. consulate in Nuuk was a good first step. A formal diplomatic presence would be an effective way for the U.S. to better understand local political and economic dynamics. This is particularity important at a time when other global actors, such as China, are becoming more involved in the Arctic region. But the U.S. should follow Iceland's lead and have a diplomatic presence in Greenland year round.

- **Resolve the BMC and shipping contract issue with Greenland.** The negative impact on the bilateral relationship that the contract process has had cannot be overstated. The U.S. government has an obligation to get the best capability for its armed forces at the best cost for the American taxpayer. The U.S. must also consider how certain decisions affect strategic relationships. Protectionist legislation, such as the 1904 Cargo Preference Act, is an anachronism and often undermines U.S. interests instead of protecting them.

- **Preserve Kangerlussuaq Airport.** Both the U.S. and Danish militaries need continued use of the airstrip at Kangerlussuaq, but the Greenlandic government does not. The U.S. should find a mutually acceptable cost-sharing arrangement with Denmark and not allow this issue to harm its relationship with Greenland.

- **Explore ways to increase economic links between Greenland and the U.S.** Greenland is actively trying to attract foreign investments, diversify its economy, and more closely integrate into the world economy. Greenland wants to raise the standard of living and prepare

for eventual independence from Denmark. With Greenland located in North America, and with new potential transport links and tourism opportunities, the U.S. should pursue policies that develop economic ties between the two countries.

- **Work more closely with the Danish and Norwegian militaries.** Both countries have proven themselves to be important NATO members. Although neither meets NATO's benchmark of 2 percent of gross domestic product for defense spending, each punches above its weight when it comes to deploying troops for NATO missions, and participating in NATO missions and exercises. Each has also increased its defense spending in the Arctic.

- **Establish EUCOM as the lead combatant command for the Arctic.** As lead combatant command for the Arctic, EUCOM will facilitate coordination and cooperation between combatant commands with overlapping interests and AOR in the Arctic. EUCOM's position is best for continuing to develop situational awareness and to facilitate robust cooperation, training, and strategy coordination with U.S. allies—most importantly through NATO.

- **Encourage Finland and Sweden to join NATO.** Ultimately, the Swedish and Finnish populations will decide whether to join NATO, but the U.S. should pursue a policy that encourages NATO membership for these two Nordic countries. Until they join NATO, they will not benefit from the Alliance's security guarantee.

- **Consider the use of Svalbard for any required scientific needs.** Due to its location in the Arctic region and its particular environmental conditions, Svalbard is very attractive for scientific research. In the past, the Department of Defense has conducted research there[151] and it should consider doing so in the future if the need arises. This is an excellent way for the U.S. to "fly the flag" in a region with significant geo-political importance.

- **Fully fund the Coast Guard's budget request for the polar security cutters.** The cost of each icebreaker was estimated at around $1 billion, but the Coast Guard estimates it will be well under that figure. Given the important U.S. interests in the Arctic and Antarctic, and increasing competition, it is essential to provide the Coast Guard

with the necessary funding for this first icebreaker, followed by the remaining five.

- **Acquire the first three heavy icebreakers using a block-buy strategy.** A block-buy strategy could save upwards of $200 million for the program.[152] While some program flexibility is lost using this strategy, it is made up for by lowering the overall cost of the program.

- **Assess whether to acquire medium icebreakers or three more heavy icebreakers of common design to reach a total of six.** According to a study conducted by the National Academy of Sciences, a fourth heavy icebreaker could cost $692 million versus $786 million for the first in class medium icebreaker, a savings of nearly $1 million for the first ship alone.[153] A fleet of heavy icebreakers would also provide more capability, as it could complete the entire suite of icebreaking missions and reduce maintenance costs.

- **Move toward development of an Arctic port.** The Department of Defense should identify possible locations for a strategic port in the Arctic and conduct an analysis of the utility of such a port. As waterways and resources become more available in the coming years, a strategic port could assist the U.S. in projecting naval power in the region.

- **Increase Arctic Freedom of Navigation Operations (FONOPS).** The Navy should increase FONOPS, deployments, and exercises in Arctic waters to improve its capability to operate in the harsh conditions, as well as reinforcing freedom of the seas.

Conclusion

America's interests in the Arctic region will only increase in the years to come. As other nations devote resources and assets in the region to secure their national interests, America cannot afford to fall behind. The U.S. needs to champion an agenda that advances the U.S. national interest and devotes the required national resources to the region. These measures are not preparations for armed conflict. They are preparations for a peaceful future. With the Arctic becoming increasingly important for economic and geopolitical reasons, now is not the time for the U.S. to turn away from its own backyard.

Endnotes

1. Canada, Denmark (Greenland), Finland, Iceland, Norway, Russia, Sweden, and the United States.
2. Nordic Council of Ministers, "Arctic Social Indicators," January 27, 2011, p. 13, http://library.arcticportal.org/712/1/Arctic_Social_Indicators_NCoM.pdf (accessed September 16, 2019).
3. U.S. Geological Survey, "Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle," July 23, 2008, http://pubs.usgs.gov/fs/2008/3049/ (accessed September 16, 2019).
4. Rachael Gosnell, "The Future of the Arctic Economy," *The Maritime Executive*, July 9, 2018, https://www.maritime-executive.com/editorials/the-future-of-the-arctic-economy (accessed October 7, 2019).
5. Frederick W. Seward, "Seward's Folly: A Son's View," *University of Rochester Library Bulletin*, Vol. 22, No. 3 (Spring 1967), https://rbscp.lib.rochester.edu/487 (accessed September 16, 2019).
6. Bryan Walsh, "Obama Takes Steps to Stop Icelandic Whaling. Could He Do More?" *Time*, September 16, 2011, http://science.time.com/2011/09/16/obama-takes-steps-to-stop-icelandic-whaling-could-he-do-more/ (accessed September 16, 2019).
7. Lesley Wroughton, "U.S. and Iceland Boost Trade Ties, Discuss Arctic Security," Reuters, February 15, 2019, https://www.reuters.com/article/us-usa-iceland-pompeo/us-and-iceland-boost-trade-ties-discuss-arctic-security-idUSKCN1Q41RT (accessed September 16, 2019).
8. Paul Reynolds, "Russia Ahead in Arctic 'Gold Rush,'" BBC News, August 1, 2007, http://news.bbc.co.uk/2/hi/in_depth/6925853.stm (accessed October 1, 2019).
9. Thomas Nilsen, "FSB Gets Right to Confiscate Land from People," *The Barents Observer*, May 16, 2017, https://thebarentsobserver.com/en/security/2017/05/fsb-gets-right-confiscate-land-people#.WR3YvGBXtZy.twitter (accessed June 20, 2019).
10. Atle Staalesen, "New FSB Base Opens Way for More Operations in Arctic," *The Barents Observer*, January 3, 2019, https://thebarentsobserver.com/en/security/2019/01/new-fsb-base-opens-way-more-operations-arctic (accessed June 19, 2019).
11. "Putin Creates New National Guard in Russia 'to Fight Terrorism,'" BBC, April 6, 2016, https://www.bbc.com/news/world-europe-35975840 (accessed June 19, 2019).
12. Atle Staalesen, "National Guard Becomes Arctic Protector," *The Barents Observer*, January 28, 2019, https://thebarentsobserver.com/en/security/2019/01/national-guard-becomes-arctic-protector (accessed June 19, 2019).
13. Oksana Kobzeva and Natalia Chumakova, "Russia's Novatek Starts Yamal's Second LNG Train, Sends Condensate to Middle East," Reuters, August 9, 2018, https://www.reuters.com/article/us-russia-novatek-yamal/russias-novatek-starts-yamals-second-lng-train-sends-condensate-to-middle-east-idUSKBN1KU1KM (accessed June 20, 2019).
14. Staalesen, "National Guard Becomes Arctic Protector"; Atle Staalesen, "World's First Floating Nuclear Power Plant Is Making Pevek an Arctic Boom Town," *The Barents Observer*, November 30, 2018, https://thebarentsobserver.com/en/arctic-industry-and-energy/2018/11/worlds-first-floating-nuclear-power-plant-making-pevek-arctic (accessed June 20, 2019); and Aria Bendix, "Russia's First Floating Nuclear Power Plant, Which Activists Dubbed 'Chernobyl on Ice,' Has Docked Near Alaska. Photos Show Its Journey," *Business Insider*, September 27, 2019, https://www.businessinsider.com/russia-floating-nuclear-plant-photos-arrival-2019-9 (accessed October 7, 2019).
15. Bendix, "Russia's First Floating Nuclear Power Plant, Which Activists Dubbed 'Chernobyl on Ice,' Has Docked Near Alaska."
16. Mathieu Boulègue, "Russia's Military Posture in the Arctic, Managing Hard Power in a 'Low Tension' Environment," Chatham House, June 28, 2019, p. 6, https://www.chathamhouse.org/publication/russia-s-military-posture-arctic-managing-hard-power-low-tension-environment (accessed July 22, 2019).
17. Dave Majumdar, "Russia to Standup New Arctic Command," *U.S. Naval Institute News*, updated February 18, 2014, http://news.usni.org/2014/02/18/russia-standup-new-arctic-command (accessed June 20, 2019).
18. Boulègue, "Russia's Military Posture in the Arctic, Managing Hard Power in a 'Low Tension' Environment," p. 23.
19. "Russian Northern Fleet Creates Submarine Division for Deep-Water Operations," Navy Recognition, April 27, 2018, http://www.navyrecognition.com/index.php/news/defence-news/2018/april-2018-navy-naval-defense-news/6169-russian-northern-fleet-creates-submarine-division-for-deep-water-operations.html (accessed June 20, 2019).
20. Boulègue, "Russia's Military Posture in the Arctic, Managing Hard Power in a 'Low Tension' Environment," p. 18.
21. Ibid.
22. Ibid.
23. Elizabeth McLaughlin, "The Race for the Arctic: As New Frontier Opens, Russia Leaves US in Its Wake," ABC News, May 10, 2017, http://abcnews.go.com/International/race-arctic-frontier-opens-russia-leaves-us-wake/story?id=47304875 (accessed June 20, 2019), and Andrew Osborn, "Putin's Russia in Biggest Arctic Military Push Since Soviet Fall," Reuters, January 30, 2017, http://mobile.reuters.com/article/idUSKBN15E0W0 (accessed June 20, 2019).
24. Jacek Siminski, "Russia Reactivates Military Airfield in the Arctic Region After 20 Years," *The Aviationist*, December 8, 2013, https://theaviationist.com/2013/12/08/russia-arctic-base/ (accessed June 20, 2019), and Osborn, "Putin's Russia in Biggest Arctic Military Push Since Soviet Fall."
25. Nurlan Aliyev, "Russia's Military Capabilities in the Arctic," International Centre for Defence and Security, June 25, 2019, https://icds.ee/russias-military-capabilities-in-the-arctic/ (accessed October 9, 2019).
26. Malte Humpert, "New Satellite Images Reveal Extent of Russia's Military and Economic Build-Up in the Arctic," *High North News*, May 6, 2019, https://www.highnorthnews.com/en/new-satellite-images-reveal-extent-russias-military-and-economic-build-arctic (accessed November 4, 2019).
27. Atle Staalesen, "Russia Establishes New Arctic Air Squadron to Protect Its Northern Sea Route," *The Barents Observer*, July 19, 2019, https://thebarentsobserver.com/en/security/2019/07/russia-establishes-new-arctic-air-squadron-protect-its-northern-sea-route (accessed July 23, 2019).
28. Joseph Trevithick, "Russia Projects Heavy Airpower in the Arctic from Constellation of New and Improved Bases," The War Zone, January 2, 2019, http://www.thedrive.com/the-war-zone/25763/russia-projects-heavy-airpower-in-the-arctic-from-constellation-of-new-and-improved-bases (accessed June 20, 2019).

29. Robbie Gramer, "Here's What Russia's Military Build-Up in the Arctic Looks Like," *Foreign Policy*, January 25, 2017, http://foreignpolicy.com/2017/01/25/heres-what-russias-military-build-up-in-the-arctic-looks-like-trump-oil-military-high-north-infographic-map/?utm_content=buffer12641&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer (accessed June 20, 2019).
30. Alte Staalesen, "Navy Pilots Take Off to New Arctic Bases," *The Barents Observer*, March 13, 2019, https://thebarentsobserver.com/en/2019/03/navy-pilots-take-new-arctic-bases (accessed June 20, 2019).
31. Thomas Nilsen, "Russia Resumes North Pole Patrols with Fighter Jets," *The Barents Observer*, February 2, 2019, https://thebarentsobserver.com/en/security/2019/02/russia-resumes-north-pole-patrols-fighter-jets (accessed June 20, 2019).
32. Thomas Nilsen, "In Polar Night, Russia Exercises Strategic Bombers and Newest Frigate," *The Barents Observer*, January 27, 2019, https://thebarentsobserver.com/en/security/2019/01/polar-night-russia-exercises-strategic-bombers-and-newest-frigate (accessed June 20, 2019).
33. Thomas Nilsen, "Video: Russian Bombers Outside Norway for Second Time in a Week," *The Barents Observer*, April 4, 2019, https://thebarentsobserver.com/en/security/2019/04/video-russian-bombers-outside-norway-second-time-week (accessed June 20, 2019).
34. Thomas Nilsen, "Russian Bombers Simulated an Attack Against This Radar on Norway's Barents Sea Coast," *The Barents Observer*, March 5, 2018, https://thebarentsobserver.com/en/security/2018/03/russian-bombers-simulated-attack-against-radar-norways-barents-sea-coast (accessed June 20, 2019).
35. Thomas Nilsen, "Arctic Challenge 2017 Set for Take Off," *The Barents Observer*, May 16, 2017, https://thebarentsobserver.com/en/security/2017/05/arctic-challenge-2017-set-take (accessed June 20, 2019), and Nilsen, "Russian Bombers Simulated an Attack Against This Radar on Norway's Barents Sea Coast."
36. "Russian Pacific Fleet Il-38N MPA Practice ASW in Arctic," Navy Recognition, April 2, 2018, https://www.navyrecognition.com/index.php/news/defence-news/2018/april-2018-navy-naval-defense-news/6109-russian-pacific-fleet-il-38n-mpa-practice-asw-in-arctic.html (accessed June 20, 2019).
37. Trude Pettersen, "Northern Fleet Gets Own Air Force, Air Defense Forces," *The Barents Observer*, February 1, 2016, https://thebarentsobserver.com/en/security/2016/02/northern-fleet-gets-own-air-force-air-defense-forces (accessed June 20, 2019).
38. Damien Sharkov, "Russia Deploys Air Radar on Arctic Wrangel Island," *Newsweek*, January 4, 2017, http://www.newsweek.com/russia-deploys-air-radar-arctic-wrangel-island-538527 (accessed June 20, 2019).
39. Thomas Nilsen, "Russia Plans to Lay Trans-Arctic Fiber Cable Linking Military Installations," *The Barents Observer*, April 24, 2018, https://thebarentsobserver.com/en/security/2018/04/russia-slated-lay-military-trans-arctic-fibre-cable#.Wt-EVDOjIWI.twitter (accessed June 20, 2018).
40. Thomas Nilsen, "Russia to Test-Launch Rockets Near Norway's Arctic Coast in Last Days of Trident Juncture," Radio Canada International, Eye on the Arctic, October 31, 2018, http://www.rcinet.ca/eye-on-the-arctic/2018/10/31/russia-missile-launch-norway-finnmark-arctic-flight-nato-trident-juncture/ (accessed June 21, 2019).
41. Atle Staalesen, "Russia Says Its Radio-Electronic Shield Now Covers the Arctic," *The Barents Observer*, May 21, 2019, https://thebarentsobserver.com/en/arctic-security/2019/05/russia-says-its-radio-electronic-shield-now-covers-arctic#.XOQApTtGEgg.twitter (accessed July 23, 2019).
42. Nurlan Aliyev, "Russia's Military Capabilities in the Arctic," Diplomaatia, International Centre for Defense and Security, June 25, 2019, https://icds.ee/russias-military-capabilities-in-the-arctic/ (accessed January 13, 2020).
43. Stephen Blank, "Russia's New Arctic Base Continue [sic] the Militarization of the High North," *Eurasia Daily Monitor*, Vol. 12, No. 202 (November 2015), http://www.jamestown.org/single/?tx_ttnews%5Btt_news%5D=44572&no_cache=1#.VxqCwfkrJph (accessed June 21, 2019), and Osborn, "Putin's Russia in Biggest Arctic Military Push Since Soviet Fall."
44. Yasmin Tadjdeh, "Zukunft: Coast Guard Could Arm Future Icebreaker," *National Defense*, May 3, 2017, http://www.nationaldefensemagazine.org/articles/2017/5/3/zukunft-coast-guard-could-arm-future-icebreaker (accessed June 21, 2019).
45. Thomas Nilsen, "New Arctic Anti-Aircraft Missiles Tested at Novaya Zemlya," *The Barents Observer*, July 18, 2019, https://thebarentsobserver.com/en/security/2019/07/new-tor-m2dt-missiles-tested-novaya-zemlya (accessed July 23, 2019).
46. Dmitry Gorenburg, "Russia's New and Unrealistic Naval Doctrine," War on the Rocks, July 26, 2017, https://warontherocks.com/2017/07/russias-new-and-unrealistic-naval-doctrine/ (accessed June 20, 2019).
47. Daniel Brown, "Russia's NATO Northern Fleet Beefs Up Its Nuclear Capabilities to Phase 'NATO Out of Arctic,'" *Business Insider*, June 1, 2017, http://www.businessinsider.com/russias-northern-fleet-beefs-up-its-nuclear-capabilities-phase-nato-out-arctic-2017-6 (accessed June 20, 2019).
48. Boulègue, "Russia's Military Posture in the Arctic, Managing Hard Power in a 'Low Tension' Environment," p. 20.
49. Kyle Mizokami, "Russia Launches Belgorod, the World's Longest Submarine," *Popular Mechanics*, April 24, 2019, https://www.popularmechanics.com/military/navy-ships/a27243915/russia-launches-belgorod-the-worlds-longest-submarine/ (accessed November 4, 2019).
50. Thomas Nilsen, "Russia's Most Secret Sub Soon to Be Launched with This Terrifying Weapon," *The Barents Observer*, March 14, 2019, https://thebarentsobserver.com/en/security/2019/03/russias-most-secret-sub-soon-be-launched-terrifying-weapon (accessed June 21, 2019).
51. Alex Lockie, "Russia Says It's Going to Arm a Submarine with 6 Nuclear 'Doomsday' Devices," *Business Insider*, March 12, 2019, https://www.businessinsider.com/russia-to-arm-a-secretive-submarine-with-6-nuclear-doomsday-devices-2019-3 (accessed June 21, 2019). See also "Russian Northern Fleet Creates Submarine Division for Deep-Water Operations," Navy Recognition, and "Russia to Convert Belgorod Submarine for Special Missions," *Sputnik News*, February 9, 2012, https://sputniknews.com/military/20120209171227695/ (accessed June 20, 2019).
52. Lockie, "Russia Says It's Going to Arm a Submarine with 6 Nuclear 'Doomsday' Devices."
53. "Russian Navy to Receive Biggest and Most Unique Nuclear Submarine in the World," *Sputnik News*, updated April 23, 2017, https://sputniknews.com/military/201704231052905471-russia-navy-biggest-sub/ (accessed June 21, 2019).
54. Nilsen, "Russia's Most Secret Sub Soon to Be Launched with This Terrifying Weapon."
55. European Command, "EUCOM Posture Statement 2018," March 8, 2018, http://www.eucom.mil/mission/eucom-posture-statement-2018 (accessed September 16, 2019).
56. The State Council Information Office of the People's Republic of China, "China's Arctic Policy," *White Paper*, January 26, 2018, http://english.www.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm (accessed on September 16, 2019).

57. Ibid.
58. Radio Canada International, "US Stuns Audience by Tongue-Lashing China, Russia on Eve of Arctic Council Ministerial," May 6, 2019, https://thebarentsobserver.com/en/arctic/2019/05/us-stuns-audience-tongue-lashing-china-russia-eve-arctic-council-ministerial (accessed September 16, 2019).
59. For more information on the 1920 Svalbard Treaty, see below under "America's Arctic Forward Operating Bases: Svalbard (Norway)."
60. Dean Cheng, "The Importance of Maritime Domain Awareness for the Indo–Pacific Quad Countries," Heritage Foundation *Backgrounder* No. 3392, March 6, 2019, https://www.heritage.org/global-politics/report/the-importance-maritime-domain-awareness-the-indo-pacific-quad-countries.
61. Xian Jiangnan and Liang Jun, "China's First North Pole Station Begins Expedition," *People's Daily Online,* May 27, 2019, http://en.people.cn/n3/2019/0527/c90000-9581728.html (accessed October 7, 2019).
62. Thomas Nilsen, "'We Must Be Prepared for Clearer Chinese Presence in Our Neighborhood,'" *The Barents Observer*, February 11, 2019, https://thebarentsobserver.com/en/security/2019/02/norwegian-intelligence-service-we-must-be-prepared-clearer-chinese-presence-out (accessed October 7, 2019).
63. Phil Stewart and Idrees Ali, "Pentagon Warns of Risk of Chinese Submarines in Arctic," Reuters, May 2, 2019, https://www.reuters.com/article/us-usa-china-military-arctic/pentagon-warns-on-risk-of-chinese-submarines-in-arctic-idUSKCN1S829H (accessed October 7, 2019).
64. "Yamal LNG Project Reaches Full Production Capacity," Xinhuanet, December 12, 2018, http://www.xinhuanet.com/english/2018-12/12/c_137666821.htm (accessed October 7, 2019).
65. Lyle J. Goldstein, "What Does China Want with the Arctic?" *The National Interest,* September 7, 2019, https://nationalinterest.org/feature/what-does-china-want-arctic-78731 (accessed October 7, 2019).
66. The State Council Information Office of the People's Republic of China, "China's Arctic Policy," *White Paper*.
67. For a comprehensive overview of China's BRI, see Jeff M. Smith, "China's Belt and Road Initiative: Strategic Implications and International Opposition," Heritage Foundation *Backgrounder* No. 3331, August 9, 2018, https://www.heritage.org/asia/report/chinas-belt-and-road-initiative-strategic-implications-and-international-opposition.
68. Thomas Nilsen, "Details of China's Nuclear-Powered Icebreaker Revealed," *The Barent Observer*, March 21, 2019, https://thebarentsobserver.com/en/arctic/2019/03/details-chinas-nuclear-powered-icebreaker-revealed (accessed October 7, 2019).
69. The aircraft carrier *Cavour*, the flagship of the Italian Navy, displaces 27,100 tons of water.
70. Marc Lanteigne and Mingming Shi, "China Steps up Its Mining Interests in Greenland," *The Diplomat*, February 12, 2019, https://thediplomat.com/2019/02/china-steps-up-its-mining-interests-in-greenland/ (accessed October 30, 2019).
71. The White House, "Remarks by Vice President Pence and Prime Minister Jakobsdóttir of Iceland Before Bilateral Meeting," September 4, 2019, https://www.whitehouse.gov/briefings-statements/remarks-vice-president-pence-prime-minister-jakobsdottir-iceland-bilateral-meeting-keflavik-iceland/ (accessed October 7, 2019).
72. "Pence, in Visit to Iceland, to Discuss 'Incursions' into Arctic Circle by China, Russia: Official," Reuters, August 28, 2019, https://www.reuters.com/article/us-usa-pence/pence-in-visit-to-iceland-to-discuss-incursions-into-arctic-circle-by-china-russia-official-idUSKCN1VI1QW (accessed September 16, 2019).
73. Simon Johnson, "Pompeo: Russia Is 'Aggressive' in Arctic, China's Work There also Needs Watching," Reuters, May 6, 2019, https://www.reuters.com/article/us-finland-arctic-council/pompeo-russia-is-aggressive-in-arctic-chinas-work-there-also-needs-watching-idUSKCN1SC1AY (accessed September 16, 2019).
74. Natural Resources Canada, "Geomagnetic Effects on Radio Propagation," February 8, 2019, https://spaceweather.gc.ca/tech/se-hf-en.php (accessed October 7, 2019).
75. Natural Resources Canada, "Space Weather effects on GPS," February 8, 2019, https://spaceweather.gc.ca/tech/se-gps-en.php (accessed October 7, 2019).
76. National Oceanic and Atmospheric Administration, "Arctic Survey to Help Set Charting Priorities," July 30, 2012, https://oceanservice.noaa.gov/news/features/july12/fairweather.html (accessed October 7, 2019).
77. U.S. Department of Defense, "Department of Defense Arctic Strategy," June 6, 2019, https://media.defense.gov/2019/jun/06/2002141657/-1/-1/1/2019-dod-arctic-strategy.pdf (accessed November 4, 2019).
78. Ibid., p. 2.
79. Ibid.
80. U.S. Navy, Chief of Naval Operations, *Strategic Outlook for the Arctic*, January, 2019, https://www.navy.mil/strategic/Navy_Strategic_Outlook_Arctic_Jan2019.pdf (accessed November 4, 2019).
81. Megan Eckstein, "Iceland Embracing Its Strategic Lovation By Supporting NATO Air Defense," *USNI News*, October 24, 2018, https://news.usni.org/2018/10/24/iceland-embracing-its-strategic-location-though-supporting-nato-air-defense-hosting-us-planes (accessed November 4, 2019).
82. U.S. Department of Defense, "Department of Defense Artic Strategy."
83. Navy Petty Officer 1st Class Kiona Miller, Alaskan Command, "Special Operations Forces Exercise in Arctic Conditions," U.S. Department of Defense, March 16, 2018, https://www.defense.gov/Newsroom/News/Article/Article/1468225/special-operations-forces-exercise-in-arctic-conditions/ (accessed November 4, 2019).
84. Geoff Ziezulewicz, "Navy Warships Roaming Arctic Waters," *Navy Times*, September 25, 2019, https://www.navytimes.com/news/your-navy/2019/09/25/navy-warships-roaming-arctic-waters/ (accessed November 4, 2019).
85. Kris Osborn, "The Navy Is Training for War with Russia in the Arctic," *The National Interest*, March 20, 2018, https://nationalinterest.org/blog/the-buzz/the-navy-training-war-russia-the-arctic-24987 (accessed November 4, 2019).
86. Geoff Ziezulewicz, "SECNAV: Readiness Recovery Will Suffer Under Defense Budget Cuts," *Navy Times*, December 6, 2018, https://www.navytimes.com/news/your-navy/2018/12/06/secnav-readiness-recovery-will-suffer-under-defense-budget-cuts/ (accessed November 4, 2019).
87. Rebecca Pincus, "Trump's New Arctic Policy Has a Familiar Ring," *Defense One*, June 11, 2019, https://www.defenseone.com/ideas/2019/06/trumps-new-arctic-policy-has-familiar-ring/157622/ (accessed November 4, 2019).
88. Melody Schreiber, "New U.S. Senate Defense Bill Requires Arctic Strategic Ports, Attention on Russia and China," *Arctic Today*, July 2, 2019, https://www.arctictoday.com/new-u-s-senate-defense-bill-requires-arctic-strategic-ports-attention-on-russia-and-china/ (accessed November 4, 2019).

89. National Defense Authorization Act for Fiscal year 2020, S. 1790, 116th Cong., 1st Sess.
90. The White House, "Statement by President Donald J. Trump on the Elevation of Cyber Command," August 18, 2017, https://www.whitehouse.gov/the-press-office/2017/08/18/statement-donald-j-trump-elevation-cyber-command (accessed December 8, 2017).
91. Norwegian Armed Forces, "Trident Juncture 18," June 13, 2015, https://forsvaret.no/exercise (accessed October 7, 2019).
92. Christopher Woody, "A US Aircraft Carrier Is in the Frigid Waters North of the Arctic Circle for the First Time Since the Soviet Union Collapsed," *Business Insider*, October 19, 2018, https://www.businessinsider.com/trident-juncture-navy-aircraft-carrier-in-arctic-first-since-cold-war-2018-10 (accessed October 7, 2019).
93. U.S. Department of Defense, "Department of Defense Arctic Strategy," p. 9.
94. North American Aerospace Defense Command, "NORAD History," May 2016, https://www.norad.mil/About-NORAD/NORAD-History/ (accessed October 9, 2019).
95. News release, "Canadian and U.S. Commanders Sign Arctic Cooperation Framework," Canadian National Defense and the Canadian Armed Forces, December 11, 2012, http://www.forces.gc.ca/en/news/article.page?doc=canadian-and-u-s-commanders-sign-arctic-cooperation-framework/hgq87xa7 (accessed October 9, 2019).
96. Ibid., pp. 9 and 15.
97. "Canada, U.S. Must Do More to Check Russia's Military Moves in the Arctic, Says NORAD Chief," CBC, February 12, 2019, https://www.cbc.ca/news/politics/russia-arctic-norad-missiles-1.5016654 (accessed October 9, 2019).
98. Canadian National Defence and the Canadian Armed Forces, "The Canada–U.S. Defence Relationship," *Backgrounder* No. 13.055, December 4, 2014, updated, July 9, 2018, http://www.forces.gc.ca/en/news/article.page?doc=the-canada-u-s-defence-relationship/hob7hd8s (accessed October 9, 2019).
99. Stephanie Pezard, "How Not to Compete in the Arctic: The Blurry Lines Between Friend and Foe," War on the Rocks, February 27, 2019, https://warontherocks.com/2019/02/how-not-to-compete-in-the-arctic-the-blurry-lines-between-friend-and-foe/ (accessed October 9, 2019).
100. Peter Baker and Maggie Haberman, "Trump's Interest in Buying Greenland Seemed Like a Joke. Then It Got Ugly," *The New York Times*, August 21, 2019, https://www.nytimes.com/2019/08/21/us/politics/trump-greenland-prime-minister.html (accessed October 7, 2019).
101. Jacob Gronholt-Pedersen et al., "Danish PM Says Trump's Idea of Selling Greenland to U.S. Is Absurd," Reuters, August 18, 2019, https://www.reuters.com/article/us-usa-trump-greenland/danish-pm-says-idea-of-selling-greenland-to-u-s-is-absurd-idUSKCN1V80M0 (accessed October 7, 2019).
102. Private author interview with Danish official.
103. Parliament of Denmark, Act on Greenland Self-Government, Act No. 473, June 12, 2009, https://naalakkersuisut.gl/~/media/Nanoq/Files/Attached%20Files/Engelske-tekster/Act%20on%20Greenland.pdf (accessed October 30, 2019).
104. Antonia Noori Farzan, "Trump Reportedly Wants to Buy Greenland. So Did the Truman Administration," *The Washington Post*, August 16, 2019, https://www.washingtonpost.com/nation/2019/08/16/trump-greenland-purchase-harry-truman-denmark/?noredirect=on (accessed October 7, 2019).
105. Peterson Air Force Base, "821st Air Base Group," https://www.peterson.af.mil/About/Fact-Sheets/Display/Article/326240/821st-air-base-group/ (accessed October 30, 2019).
106. Author interviews with Greenlandic officials.
107. Defense of Iceland: Agreement Between the United States and the Republic of Iceland, May 5, 1951, http://avalon.law.yale.edu/20th_century/ice001.asp (accessed October 30, 2019).
108. Daniel Kochis and Brian Slattery, "Iceland: Outsized Importance for Transatlantic Security," Heritage Foundation *Backgrounder* No. 3121, June 21, 2016, https://www.heritage.org/global-politics/report/iceland-outsized-importance-transatlantic-security.
109. Joint Declaration Between the Department of Defense of the United States of America and the Ministry of Foreign Affairs of Iceland, June 2016, https://grapevine.is/wp-content/uploads/Joint-Declaration-Signed-.pdf (accessed August 13, 2019).
110. "Iceland Agrees to the Return of American Troops," Deutsche Welle, June 30, 2016, http://www.dw.com/en/iceland-agrees-to-the-return-of-american-troops/a-19369461 (accessed October 30, 2019).
111. Vala Hafstað, "US Military to Invest Billions of ISK in Keflavík," *Iceland Monitor*, June 24, 2019, https://icelandmonitor.mbl.is/news/politics_and_society/2019/06/24/us_military_to_invest_billions_of_isk_in_keflavik/ (accessed August 13, 2019).
112. Teri Schultz, "Cast Off by the United States a Decade Ago, Keflavik Is Again a Key Lookout," The Atlantic Council, May 7, 2018, https://www.atlanticcouncil.org/blogs/new-atlanticist/cast-off-by-the-united-states-a-decade-ago-keflavik-is-again-a-key-lookout (accessed August 13, 2019).
113. Hafstað, "US Military to Invest Billions of ISK in Keflavík."
114. "Pence to Visit Iceland Over Concerns of 'Russian Aggression' in Arctic Region," Radio Free Europe/Radio Liberty, August 29, 2019, https://www.rferl.org/a/pence-iceland-visit-russian-aggression-arctic-region/30134840.html (accessed October 9, 2019).
115. Brian Everstine, "B-2 Visits Iceland for the First Time," *Air Force Magazine*, August 29, 2019, http://airforcemag.com/Features/Pages/2019/August%202019/B-2-Visits-Iceland-for-the-First-Time.aspx (accessed October 9, 2019).
116. Boulègue, "Russia's Military Posture in the Arctic: Managing Hard Power in a 'Low Tension' Environment."
117. Larissa Kyzer, "Russian Bombers Re-Enter NATO Airspace Near Iceland," *Iceland Review*, March 29, 2019, https://www.icelandreview.com/news/russian-bombers-reenter-nato-airspace-near-iceland/ (accessed August 13, 2019).
118. "Italian Eurofighters Scrambled to Escort Russian Tu-142 Planes Off Iceland Coast," Defense Blog, March 20, 2019, https://defence-blog.com/news/italian-eurofighters-scrambled-to-escort-russian-tu-142-planes-off-iceland-coast.html (accessed August 13, 2019).
119. Kyzer, "Russian Bombers Re-Enter NATO Airspace Near Iceland."
120. Jelena Ćirić, "Iceland Ups Defence Budget by 37%," *Iceland Review*, June 7, 2019, https://www.icelandreview.com/news/iceland-ups-defence-budget-by-37/ (accessed August 13, 2019).
121. Ibid.

122. Status of Spitsbergen (Svalbard), February 9, 1920, 43 Stat. 1892, Treaty Series 686, https://www.loc.gov/law/help/us-treaties/bevans/m-ust000002-0269.pdf (accessed October 31, 2019).
123. Atle Staalesen, "Moscow Wants to Know More About Oil Potential at Svalbard, Re-Examines Drill Samples from 1975," *The Barents Observer*, September 2, 2019, https://thebarentsobserver.com/en/2019/09/moscow-wants-know-more-about-oil-potential-svalbard-re-examines-drill-samples-1975 (accessed October 7, 2019).
124. "Population of Svalbard," *Statistisk sentralbyrå*, October 2, 2019, https://www.ssb.no/en/befsvalbard/ (accessed October 7, 2019).
125. Per Kyrre Reymert, "Barentsburg, Pyramiden and Grumant," Svalbard Museum, https://svalbardmuseum.no/en/kultur-og-historie/gruvesamfunn/russisk-samfunn/ (accessed October 7, 2019).
126. Atle Staalesen, "Russian Svalbard Protest Totally without Merit," *The Barents Observer*, April 21, 2017, https://thebarentsobserver.com/en/arctic/2017/04/russian-svalbard-protest-totally-without-merit (accessed October 7, 2019).
127. The Svalbard Archipelago, November 22, 1976, HL Deb Vol. 377 cc1652-3, UK Parliament, https://api.parliament.uk/historic-hansard/lords/1976/nov/22/the-svalbard-archipelago (accessed October 31, 2019).
128. "Norway in Arctic Dispute with Russia over Rogozin Visits," BBC, April 20, 2015, https://www.bbc.com/news/world-europe-32380101 (accessed October 7, 2019).
129. Thomas Nilsen, "Russia Defense Report Lists Norway's Svalbard Policy as Potential Risk of War," *Arctic Today*, October 4, 2017, https://www.arctictoday.com/russia-defense-report-lists-norways-svalbard-policy-as-potential-risk-of-war/#targetText=In%20April%202016%2C%20Chechen%20special,conflict%20with%20the%20Svalbard%20Treaty. (accessed October 16, 2019).
130. Thomas Nilsen, "Kommersant: Russia Lists Norway's Svalbard Policy as Potential Risk of War," *The Barents Observer*, October 4, 2017, https://thebarentsobserver.com/en/security/2017/10/kommersant-russia-lists-norways-svalbard-policy-potential-risk-war (accessed October 7, 2019).
131. Kjetil Stormark, "Russian Forces Exercised Attack on Svalbard," AldriMer.no, October 18, 2017, https://www.aldrimer.no/russian-forces-exercised-attack-on-svalbard/ (accessed October 7, 2019).
132. U.S. Department of Homeland Security, U.S. Coast Guard, *Arctic Strategic Outlook*, 2019, April 2019, https://www.uscg.mil/Portals/0/Images/arctic/Arctic_Strategic_Outlook_APR_2019.pdf (accessed October 7, 2019).
133. U.S. Department of Homeland Security, U.S. Coast Guard, "Operation Arctic Shield 2018," https://www.pacificarea.uscg.mil/Our-Organization/District-17/Arctic-Shield/ (accessed October 7, 2019).
134. U.S. Department of Homeland Security, U.S. Coast Guard, *Arctic Shield Fact Sheet*, 2017, https://www.pacificarea.uscg.mil/Portals/8/District%2017/Arctic%20Shield/Arctic%20Shield%20fact%20sheet_final.pdf?ver=2018-02-06-161421-003 (accessed October 7, 2019).
135. Author briefing with U.S. Coast Guard personnel, February 16, 2018.
136. U.S. Government Accountability Office, "Coast Guard: Status of Polar Icebreaking Capability and Recapitalization Plan," September 25, 2017, https://www.gao.gov/assets/690/687330.pdf (accessed April 4, 2018).
137. The McMurdo mission is an annual Coast Guard mission to resupply America's McMurdo Station in Antarctica. The McMurdo Station is used for National Science Foundation research in the polar regions.
138. U.S. Coast Guard, Acquisition Directorate, "Polar Icebreaker," https://www.dcms.uscg.mil/Our-Organization/Assistant-Commandant-for-Acquisitions-CG-9/Programs/Surface-Programs/Polar-Icebreaker/ (accessed April 4, 2018).
139. U.S. Government Accountability Office, "Coast Guard: Status of Polar Icebreaking Capability and Recapitalization Plan," September 25, 2017, p. 23, https://www.gao.gov/assets/690/687330.pdf (accessed April 4, 2018).
140. Ibid., p. 16.
141. Ibid.
142. U.S. Coast Guard, Acquisition Directorate, "Polar Icebreaker."
143. U.S. Coast Guard, "Posture Statement," https://www.uscg.mil/Portals/0/documents/budget/2019%20BIB_FINALw.pdf (accessed April 4, 2018).
144. Congressional Research Service, "Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress," October 4, 2019, https://fas.org/sgp/crs/weapons/RL34391.pdf (accessed November 5, 2019).
145. Center for Strategic and International Studies, "U.S. Coast Guard: Priorities for the Future," August 1, 2017, https://www.csis.org/analysis/us-coast-guard-priorities-future (accessed April 4, 2018).
146. Ibid.
147. Author briefing with U.S. Coast Guard personnel, February 16, 2018.
148. Center for Strategic and International Studies, "U.S. Coast Guard: Priorities for the Future."
149. U.S. Coast Guard, Acquisition Directorate, "Polar Icebreaker Operational Requirements Document," November 2015, https://www.dcms.uscg.mil/Portals/10/CG-9/Surface/Icebreaker/ORD_Report.pdf?ver=2017-08-01-122741-043 (accessed April 4, 2018).
150. Ronald O' Rourke, "Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress," Congressional Research Service, November 30, 2017, https://fas.org/sgp/crs/weapons/RL34391.pdf (accessed April 4, 2018).
151. National Science Foundation, "Department of Defense," 1998, https://nsf.gov/pubs/1998/nsf98150/dod.htm (accessed October 7, 2019).
152. O'Rourke, "Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress."
153. The National Academies Press, "Acquisition and Operation of Polar Icebreakers: Fulfilling the Nation's Needs," July 11, 2017, p. 9, https://www.nap.edu/read/24834/chapter/1 (accessed October 31, 2019).

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