

Chapter 8

Military Infrastructure and Strategic Capabilities: Russia's Arctic Defense Posture

Ernie Regehr

Left to its own internal dynamics, the Arctic should not be drifting towards geostrategic competition and growing tension. While the region's resource base is significant, no lawless claims rush is brewing, not least because it is *not* a lawless frontier and because most of those resources are within the acknowledged jurisdictions of individual states, either behind national boundaries or inside exclusive economic zones. There are promising fisheries resources in the international Arctic waters beyond national jurisdictions, but commonly agreed restraints and regulations are moving toward the status of law. The borders between states are largely settled, and where they are not, there is really no likelihood that their resolution will involve military confrontation. Continental shelf claims, still being processed at the United Nations, will be adjudicated by scientists, not soldiers, and by the application of established laws—laws which all five Arctic Ocean states have pledged to follow, through the Ilulissat Declaration (even though the United States is not party to the key legal framework, the UN Convention on the Law of the Sea, UNCLOS).¹ Ultimate legal jurisdiction over increasingly navigable sea transportation routes is contested, and while that could lead to symbolic challenges, like freedom of navigation voyages, and produce commensurate tensions, no state in the region or beyond has a serious interest in obstructing or disrupting those routes.

These are not conditions to drive intense competition. To be sure, Russia is a key Arctic power that is elsewhere in a serious stand-off with its Arctic neighbors through NATO. But its NATO issues are not Arctic issues and have not prevented Russia from supporting important international Arctic agreements—including search and rescue,² oil spill responses,³ scientific cooperation,⁴ Coast Guard cooperation,⁵ and the fisheries agreement (the latter also including China and other non-Arctic states).⁶

This is not to deny that the region faces myriad security challenges; yet these arise mostly within, rather than between, states. Food insecurity, economic fragility, inadequate housing and healthcare, porous and unregulated shorelines, and public safety challenges due to deficits in emergency response and search and rescue capabilities are common, though not of equal magnitude, throughout the Arctic. While serious, these are not sources of regional, never mind strategic, competition. Indeed, the prevailing regional posture has been to affirm that meeting local security challenges would be aided by greater inter-state cooperation.

But the Arctic is definitely not left to its own dynamics, and much of the public narrative on the Arctic has in short order pivoted from cooperation to competition. Russia's inclinations to inflate the NATO threat and NATO's tendencies to see all Russian military activity as provocative have become a core analytical framework for policymakers and scholars alike, with China's looming interests only adding to the climate of foreboding.

A prominent post-Cold War assumption had been that the Arctic's geography and climate would continue to bend it towards cooperation—keeping the fallout from events in places like Ukraine to a minimum. But these assumptions are now challenged, with some of the challengers seeing the region being drawn fully into the great game of strategic competition.⁷ Ukraine, Georgia, and Syria are seen as harbingers of Russian adventurism, those fears stoked further by increased Russian submarine and strategic bomber patrols. For a significant school of academics and pundits, a radically beefed-up Western military presence in the Arctic has become the preferred response. In that narrative, expansion of Russian military infrastructure in the Arctic is prime evidence of ill intentions.⁸ Meanwhile Moscow, in the context of its accumulated anger at NATO's steady expansion eastward to the Russian frontier, points to NATO's escalating air patrols in Baltic border regions, its maritime and air incursions toward and into traditional Russian bastions in the Barents and Okhotsk seas, and mounting anti-Russian rhetoric as evidence of the ill intentions and military adventurism of the West.⁹

Russia is undeniably at the center of the changing military landscape in the Arctic. Of course, all eight Arctic states host military facilities

in their Arctic and near Arctic territories, but none has to date moved toward the same broad range of military installations that Russia has come to view as essential. Moscow broadly defines its defense objectives as:

- defending its vital Arctic resource base;
- developing and managing the Northern Sea Route;
- asserting sovereignty and border protections, including reliable domain awareness and control of the air and sea approaches to its national territory;
- promoting public safety through search and rescue and emergency response supports to civil authorities;
- protecting its sea-based second-strike deterrent forces; and
- burnishing its perceived status as the pre-eminent Arctic power and a global power with which others must still reckon.¹⁰

This is not an unusual list. Major and middle powers obviously have similar commitments to protecting their homelands and bolstering their status and influence beyond their borders. As the Arctic becomes more accessible, most states in the region place similar demands on their northern forces, but, as yet, none has come to view its own Arctic sovereignty and territorial integrity as requiring enhanced military protection to the same degree that Russia has. And while there is increasing talk of the dangers of Russian militarization, military developments in the rest of the Arctic still tend to emphasize the softer side of security threats—including search and rescue and emergency responses—rather than arming against state-based military threats. The exceptions are the increased NATO exercises and U.S. strategic patrols.

The primary focus here is to survey military developments in the Russian Arctic and to ask whether those expanding military capabilities warrant a heightened threat assessment by non-Russian Arctic states. Selected initiatives and policies that have been proposed to reduce tensions and to keep some distance between regional security and geostrategic competition are also identified. Full Arctic isolation from global dynamics is clearly not possible, but in the now-familiar language of pandemics, there are political and military behavioral changes that

could help flatten the Arctic tension curve and keep it at levels that diplomacy can continue to manage.

Russia's Military Prominence

If questions about the impacts of Arctic military developments inevitably become questions about Russia's military posture, it is not because Russia is by definition the problem. Rather, it is because Russia, by any measure, is the most prominent presence in the region. Its Arctic population comes close to equalling that of the seven other Arctic states combined. A fifth of its GDP and more than a fifth of its exports are linked to the Arctic. Its Arctic waters—territorial waters and especially the exclusive economic zones off its Arctic coasts—are central to growing sea transportation. And its Arctic military forces and infrastructure north of the Arctic Circle dwarf those of the other states combined. Globally, Russia may be declining, but Viatcheslav Gavrilov, a law professor at Russia's Far Eastern Federal University, is among those who nevertheless see Russia as the Arctic's essential power: "Russia is destined to play a leading role in forming the Arctic agenda and the functioning of international mechanisms of Arctic cooperation," making it "almost impossible to imagine the success of any Arctic initiative or multilateral agreement without the participation of Russia."¹¹

What Russia does militarily in the region obviously matters. Elements of its strategic nuclear arsenal are prominent in the Arctic, and though their mission is global, not local, they, and especially the forces mobilized to protect Russia's Arctic sea-based arsenals, inevitably impact the regional and North Atlantic security environment. Conventional Russian forces in the Arctic pursue routine national security objectives, but the airfields, ports, and garrisons strung along the more than 7,000 km of the Russian frontier from northern Kamchatka to Murmansk, are also intended to shape regional dynamics.

*Strategic Forces*¹²

Russia's Arctic nuclear arsenal is sea-based and assigned to the Northern Fleet on the Kola peninsula, home to its primary near-Atlantic naval bases. The rest of Russia's sea-based nuclear arsenal is assigned to the Pacific fleet based at a still northerly latitude, Petropavlovsk on

the Kamchatka Peninsula. The United States has naval nuclear forces capable of patrolling in the Arctic. But, unlike Russia, it does not base nuclear weapons there.

When the Soviet Union collapsed, its sea-based nuclear deterrent did not meet the same fate; yet, those forces did essentially go dormant for a time. There were occasional patrols, but in 2002, for example, none of its nuclear-powered submarines armed with nuclear-tipped intercontinental ballistic missiles (SSBNs) left port. By 2009 regular patrols resumed, but certainly not with the same frequency and duration as American SSBN patrols (the Pentagon always maintained roughly six to ten SSBNs on sea patrols). As early as the 1990s Russia had launched plans for and construction of new generations of SSBNs (the Borei-class) and attack submarines (the Yassen-class), but it took another two decades before any of those boats entered service. Russia's moves to reactivate and rebuild its sea-based nuclear forces, including those based in the Arctic, had nothing to do with the politics or security environment of the Arctic specifically. Global nuclear arsenals generally, and notably the nuclear arsenals of NATO states (United States, France, United Kingdom), had remained prominent and active in the post-Cold War years, and post-Soviet Russia unsurprisingly remained convinced that it still needed a sea-based nuclear deterrent—one which it soon set about reviving and rebuilding.¹³

Arms control advocates increasingly question why basic deterrence should require a nuclear triad (air-, land-, and sea-launched strategic nuclear weapons), but for every nuclear weapons power the pursuit of a sea-based nuclear arsenal currently continues to be a priority. Thus, virtually all of them could theoretically become capable of operating sea-based nuclear weapons in the Arctic. Here, speculation now focuses especially on China. When its nascent nuclear-armed submarine force begins to patrol beyond its home waters, it could bring its sea-launched ballistic missiles within much closer range of the contiguous United States via the Arctic. Unsurprisingly, the Pentagon has recently given voice to worries about just such a prospect.¹⁴ But Beijing's submarine-launched missiles will by then have a global reach, so it is not clear why the Chinese would prefer to patrol the confined waters of the Arctic, and contend with heightened vulnerability to American attack submarines, over the open spaces of the Pacific.

Seven of Russia's 10 currently operational SSBNs are with the Northern Fleet. Six are Delta IV subs (dating from the late 1980s) and one is a version of the new Borei submarine. Two of the Borei models are with the Pacific fleet, which also operates one older Delta III sub. Current plans are to replace the Delta IV and III subs with a total of 10 Borei subs by the 2030s, basing five each with the Northern and Pacific Fleets.

Borei and Delta subs are designed to carry 16 missiles each, and each missile can carry several independently targeted warheads. The "Nuclear Notebook" of the *Bulletin of the Atomic Scientists*, the pre-eminent public source on nuclear arsenals,¹⁵ puts the total Russian SSBN warhead count at 560, that being below total capacity for those subs because of limits imposed by the U.S.-Russia New START agreement of 2010 (which will run out in February 2021). That means the Northern Fleet SSBNs are now collectively likely to be carrying up to 400 nuclear warheads (although, if New START is extended, that number will be reduced when half of the all-Borei fleet will be based in the Pacific). Kola-based SSBNs are currently largely deployed to the Barents Sea bastion (even though the Northern Fleet maintains reliable access to the Atlantic Ocean).

The United States now operates 12 nuclear SSBNs,¹⁶ none deployed in the Arctic. Though capable of operating there, while with little strategic point to doing so, they are deployed in the Pacific and the Atlantic, and each is capable of carrying 24 inter-continental range ballistic missiles with multiple warheads. But to stay within New START limits, their total deployed SSBN warhead count is estimated at 900-950. The long-term plans are to replace the current fleet with 12 new and modernized SSBNs.¹⁷

Russia currently operates a total of 39 attack submarines (the United States operates 53), 18 of which are with the Northern Fleet—and of those, 12 are nuclear powered, six are diesel electric.¹⁸ They are equipped with a broad array of torpedoes and cruise missiles in anti-submarine, anti-ship, and land attack versions, and their two-fold mission is to protect Russian SSBNs from American attack subs and to demonstrate a capacity to challenge American/NATO naval forces in the North Atlantic. Western analysts have taken special note of the Russian Kalibr cruise missile, a family of cruise missiles similar to the

U.S. Tomahawk. The sea-launched version can be fired from a variety of surface vessels and submarines, with ranges up to about 2,000 km, armed with one warhead each, conventional or nuclear. A possible new version¹⁹ might have a longer range of more than 4,000 km and be deployed on the new generation Yassen class attack submarine, the first of which is now with the Northern Fleet. Ultimately there are to be 10 Yassen-class subs, five each with the Northern and Pacific Fleets. Furthermore, Russia is testing hypersonic anti-ship missiles that can be launched from the Yassen-class submarines as well as surface ships. *TASS* reports that Northern Fleet Yassen-class attack submarines will see operations in the Atlantic, focused on Europe and the eastern U.S. Coast.²⁰ It must be noted that Russian and American attack submarines have generally not been armed with nuclear weapons (tactical or short-range land attack and anti-ship missiles) since the U.S./Soviet 1991 Presidential Nuclear Initiatives.²¹ That reportedly is still the case for the United States, although the Trump administration has announced an intention to develop a submarine-launched, nuclear-armed cruise missile.²² The “Nuclear Notebook” estimates that the Russian navy maintains more than 900 tactical-range warheads available for use by land-attack and anti-ship cruise missiles, as well as anti-submarine rockets, anti-aircraft missiles, torpedoes, and depth charges,²³ and it is likely that some of those warheads could now be deployed on attack subs.

The Northern Fleet also operates about 40 surface ships²⁴—a wide range of destroyers, cruisers, corvettes and coastal patrol and mine hunting boats, with armaments that include cruise missiles and surface-to-air ballistic missiles. These vessels are based in the Arctic, but Mathieu Boulègue’s key Chatham House account of Russia’s military posture in the Arctic notes that the majority of the Northern Fleet’s assets “are not Arctic-specific, operating beyond the region and in other strategic directions.”²⁵

Five major bases and multiple additional naval yards and bases on the Kola Peninsula host the 25 submarines and 40 surface ships of the Northern Fleet. Airfields also populate the Kola Peninsula, hosting forward operating locations for strategic bombers, bases for fighter aircraft, and a wide range of surveillance, reconnaissance, and other aircraft. Missile and warhead storage sites are also prominent on the Kola Peninsula, notably on the Okolnaya²⁶ base, linked to Gadzhiyevo.

The Gadzhiyev base hosts the Northern Fleet's operational SSBNs. Severomorsk is the Northern Fleet headquarters and includes a major updated air base from which surveillance patrols and search and rescue operations are undertaken. Zapadnaya Litsa is home to the new Yasen-class attack submarine and, as the largest submarine base in Russia, it has four naval facilities associated with it.²⁷ Gremikha is primarily a storage site for decommissioned submarines, spent reactors, spent fuel and radioactive waste. Vid'yayev is home to diesel-electric subs.

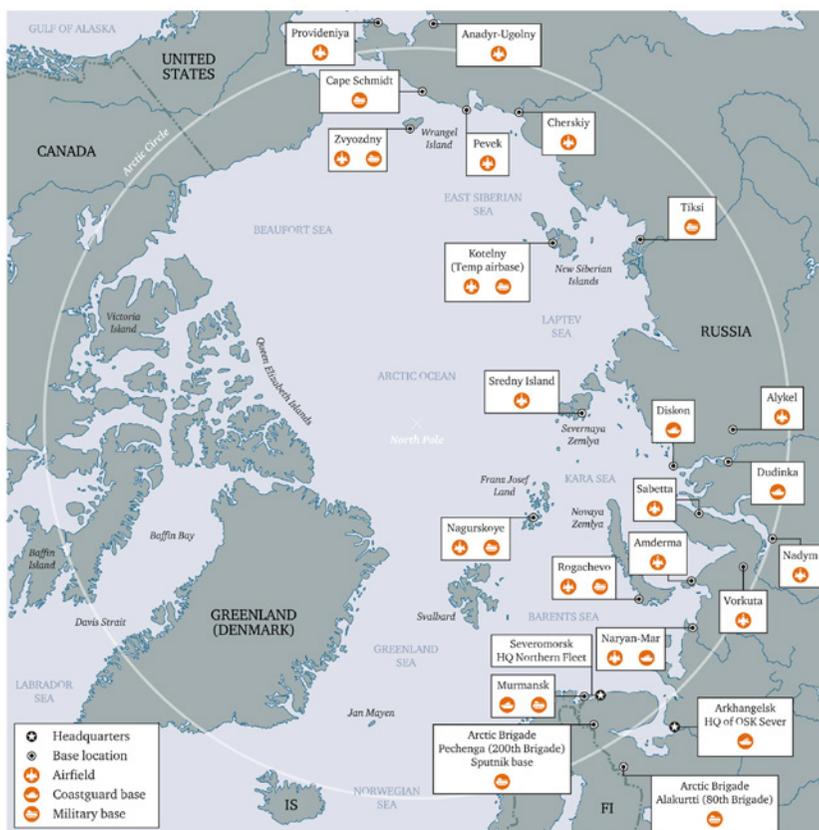
Neither the United States nor Russia bases strategic nuclear bombers or land-based intercontinental ballistic missiles in the Arctic. Russian Tu-160 and Tu-95 strategic bombers, based in central and eastern Russia, nevertheless patrol the Arctic, assisted by aerial refuelling and Arctic forward operating locations. They are armed with air-launched cruise missiles that are slated to include the new Kh-101/Kh-102 versions with a range of more than 2,500 km and able to deliver either conventional or nuclear warheads.

*Tactical Forces*²⁸

Going east to west, a series of 20 bases strung across the north of Russia²⁹ begins at Anadyr-Ugolny on the Pacific side of the Chukotka Peninsula, and then runs from the Bering Strait along the Arctic coast, through multiple islands and archipelagos, to the Pechenga and Alakurtti infantry bases on the far western reaches of the Kola Peninsula near the Norwegian and Finish borders. Only one of that chain of facilities, Wrangel Island, does not have air access. The U.S. Center for Strategic and International Studies (CSIS), in its "Ice Curtain" series of papers, observes that "dual-use outposts across the Arctic are the defining characteristic of Russia's military footprint in the region."³⁰ Those northern bases serve the military and defense posture, but also undertake other significant missions, including search and rescue, disaster response, and support for scientific and meteorological activities.

The Ice Curtain project, a particularly useful series of investigations aided by satellite imagery and analysis by the U.S. National Geospatial-Intelligence Agency,³¹ identifies three geographic zones: eastern installations with airfields, search and rescue capabilities, and radars focused on air and maritime domain monitoring and management of the Northern Sea Route (NSR); a central zone that extends to the ar-

Map 1. Russian Arctic Bases 2019



Source: Mathieu Boulègue, Chatham House (2019)

chipelagos, where the emphasis is on air defense; and a western zone focused on defending Russian strategic nuclear forces. The Northern Fleet operates across all three zones,³² and in 2014 it was made the strategic command for the Arctic region.

Virtually all the facilities from the Pacific to the Kola Peninsula include search and rescue assets, and at least 10 of those locations have been designated as integrated Emergency Response Centres. Upgrades to the region's air defense capabilities are particularly prominent. New radar installations aim to blanket the entire length of the northern coast

and the waters of the Northern Sea Route. The newest of those systems can detect aircraft out to some 600 km, obviously including surveillance toward North America. The Sopka-2 radar is being installed in multiple locations for airspace monitoring and control operations and can identify aircraft and drones at ranges of up to 450 km.³³

Air defense surface-to-air missiles linked to the radars are the S-300 and S-400 missile systems, capable of engaging multiple targets out to maximums of 300 to 400 km respectively. These are supplemented by the shorter-range Pantsir-S1 anti-aircraft gun and missile system with a range of up to 20 km and Tor-M2Dt surface to air missiles with a range of 15 km. Coastal defense systems include the K-300 Bastion system equipped with P-800 Onyx anti-ship cruise missiles, as well as the 4K51 Rubezh, a Soviet era truck-mounted coastal defense system which fires cruise missiles with a maximum range of 80 km.

Russia's extraordinary fleet of icebreakers is widely noted as the world's largest, involving more than 40 ships, some of which are nuclear-powered. More are in production. An Arctic of extensive commerce, substantial population centers, and natural resources that must be moved by sea, requires icebreakers—and the dual-use element comes in their capacity to escort military vessels. There are now also plans to arm icebreakers, notably with Kalibr cruise missiles and electronic warfare systems—a notably unhelpful expansion of the dual-use model.

Under the December 2019 Northern Sea Route Development Plan, Russia plans an additional five LK60 nuclear powered icebreakers and three Lider-class icebreakers. The LK60s can break through up to three meters of ice and are intended for operations along the NSR.³⁴ Three are already under construction, the first of which is to come into service in 2020. The Lider-class will be almost twice the displacement weight of the LK60 and Russia claims it will be capable of breaking through just over four meters of ice and will have a capacity to operate year-round and traverse the transpolar route. The primary role will be to escort the largest of LNG tankers from the Yamal region to the Pacific. Each will be powered by two nuclear reactors. They are slated for delivery between 2027 and 2035.³⁵

Many of the airfields have the capacity to host fighter aircraft, long-range bombers, and surveillance/reconnaissance and air-to-air refuelling aircraft. That is true, for example, of Anadyr-Ugolny on

Russia's far northeast, a few hundred kilometers from North America's far northwest. Further up the Bering Strait coast just across from Alaska is Provideniya, a deep-water port on Providence Bay that serves the eastern end of the Northern Sea Route and is a designated Emergency Rescue Center. Cape Schmidt, on the northern coast of the Peninsula on the Chuckchi Sea, is the site of ongoing construction and has seen upgrades to its airfield and port, with reports of a new radar installation.³⁶

Wrangel Island, on the Western edge of the Chukchi Sea, is one of the major upgrades. It hosts a communications installation and a Sopka-2 radar that is key to the blanket radar coverage for the eastern coasts and the NSR. It hosts the Arctic's first trefoil base structure, notable for its capacity to house some 100-plus personnel year-round.

Further west along the Russian Arctic coast, the port of Pevek hosts the Marine Operations Headquarters of the Northern Sea Route. It is also a designated Emergency Rescue Center. *TASS* calls it the biggest port on the NSR,³⁷ and it is the home of a new floating nuclear power plant, the Akademik Lomonosov, which was towed to Pevek from the Kola Peninsula in 2019 and is now providing power to the region's residences and its oil and gas industries. Continuing west, the base at Tiksi has also undergone significant upgrading of airfield and naval facilities, with a garrison to house 100-plus personnel. In April 2020, the S-300 air defense system was activated, the Vice Admiral of the Northern Fleet calling it part of a system that would afford protection of the Russian Arctic "from any means of air attack by the enemy, including aviation, cruise or ballistic missiles."³⁸ Further west, the Sabetta and Dikson ports and airfields link to the Yamal peninsula oil and gas operations and the shipping lanes needed to move those resources to international markets.

Kotelny Island in the New Siberian Islands, Alexandra Land in the Franz Josef archipelago, and the Nova Zemlya archipelago host three key installations (the Temp, Nagurskoye, and Rogachevo bases respectively). Each includes a major trefoil base structure to house up to 250 personnel each, as well as air defense systems and airfields. Nagurskoye in particular contributes to the defense of the Barents Sea bastion and the Kola Peninsula, as does the Vorkuta mainland base further west. The latter is home to long-range patrol aircraft and provides a forward

Figure 1. Nagurskoye Trefoil Air Base on Franz Josef Land

Source: Mil.ru, CC BY 4.0, <https://commons.wikimedia.org/w/index.php?curid=58118496>

operating location for fighter interceptor aircraft, while Pechenga and Alakurtti are centers for land forces and training under Arctic conditions.

The trefoil base structures have received attention for their unique, modernistic designs, and for their comprehensive, comfortable, and year-round lodgings for Russian troops.³⁹ The Franz Josef Land base is Russia's most northerly. It is said to have the capacity to house 150 personnel on 18-month tours of duty, in facilities that include a clinic, library, chapel, gym, and cinema. The specific military significance of such barracks and accompanying facilities is linked to the capacity for the ongoing accommodation of the personnel that operate northern systems—in the Franz Josef Land case, the multilayered maritime and air denial power systems are designed to “safeguard the Kola Peninsula and Northern Fleet headquarters, and assert Russia's control over the NSR.”⁴⁰

All other Arctic states also, of course, have military facilities in their far northern territories, although there is space here only for brief references.

Norwegian Armed Forces Joint Headquarters are located at Bodø in northern Norway. The northern forces include more than a dozen additional Arctic military sites, from the Vardø radar in the farthest north, near the Kola Peninsula, to operational centres for fighter aircraft and surface-to-air missile systems, (for example, Sørreisa, Bardufoss, Ølavsværn, Grøysund, Banak, Kirkenes, Porsanger), maritime patrol aircraft (Andøya), army garrisons (Evenes, Setermoen, Skjold), an allied training centre (Harstad), and search and rescue capabilities throughout.

Nuuk and Grønnedal in Greenland include search and rescue facilities; and a U.S. ballistic missile early warning installation is at Thule.

Canada's northern forces are headquartered in Yellowknife, with detachments in Whitehorse and Iqaluit. There are four forward operating locations for fighter aircraft (Yellowknife, Rankin Inlet, Iqaluit, and Inuvik). A new naval docking facility for civilian and military vessels is located at Nanisivik (Baffin Island), an Arctic Training Center is at Resolute (Cornwallis Island), and there is a communications establishment at Alert, with a supporting link at Eureka (both on Ellesmere Island). The North Warning System is a Canada-U.S. string of radars across the entire breadth of North America from Alaska to Labrador. It is slated for major modernization, but defined plans and funding are not yet in place.

U.S. military facilities in Alaska include a missile warning and space surveillance operation at Clear Air Force Base, ballistic missile defense interceptors plus a cold weather test facility at Fort Greely, the Fort Wainwright infantry base, the Eielson and Elmendorf-Richardson Air Force bases, and the Fort Richardson Army Command Centre. In June 2020 a presidential memorandum mandated a study on the acquisition of a fleet icebreakers for the Coast Guard that would include "at least three heavy polar-class cutters," as well as an investigation of options to lease icebreakers to bridge the gap from 2022 until 2029 when the polar-class cutters are to become available.⁴¹ The memorandum refers to the need for a "fleet of polar security icebreakers," intended to support "national interests," the "National Security Strategy," and the "National Defense Strategy." In July 2020 President Trump spoke about the early acquisition of as many as 10 icebreakers from an unnamed country (observers speculated about Finland) at "much cheaper" pric-

es than those built domestically.⁴² The promised move on icebreakers, which still requires Congressional funding approval, is interpreted by some analysts as an overdue recognition of Washington's long-term neglect of icebreaking—currently essential for the annual resupply of a research station in Antarctica and to support Arctic scientific research. The planned acquisitions are intended to extend American ability to operate more freely in territorial and exclusive economic zone waters and to patrol Alaska coastlines.⁴³ That would still leave the United States a very long way from matching Russian capabilities, but, of course, it does not have nearly the same level of icebreaking requirements.

Implications for Arctic Security

The central question raised by the expanding Russian military infrastructure in the Arctic is whether it warrants growing concern that regional stability is seriously eroding. Is Russia on track to mount forces that go beyond defense requirements and that will enable it to project power in ways that threaten its Arctic neighbors and thus pressure them to mount commensurate military responses? And the follow-up question is, are expanded military capacities and operations by the other Arctic states the most effective way to respond to Russia's Arctic military expansion?

The top strategic mission for Russia's Arctic forces, which remain well short of Soviet Cold War levels, is to protect its submarine-based second-strike nuclear deterrent forces. That means keeping American anti-submarine warfare forces at bay. Russia has sought to manage that contest by trying to cordon off a maritime bastion that encompasses the Barents Sea out to at least the Novaya Zemlya, Franz Josef, and Svalbard archipelagos, as well as to the northern edges of the Norwegian Sea. It guards those waters with patrol aircraft, surface vessels, and attack submarines in the interests of establishing a zone in which its SSBNs can patrol freely, not threatened by American attack submarines, and be available to deliver a devastating retaliatory attack on the heartlands of the United States and its NATO allies in the event of a nuclear attack on Russia.

It is, to be sure, a grizzly scenario of potential catastrophe by deliberate choice, but it remains the essence of deterrence based on mutu-

ally assured destruction. The United States and China similarly go to great lengths to keep their SSBNs beyond the reach of their adversaries' attack submarines. Within a deterrence framework, the point of preserving an assured retaliatory destruction capacity is not therefore to threaten initial attack, but to threaten retaliation to remove any incentive for an adversary to initiate a nuclear attack. A state that cannot protect its deterrent, that is, a state that cannot assure retaliation because its second-strike forces are vulnerable to pre-emptive attack, is essentially left with two options: expand its second-strike arsenal to restore confidence that enough of it would survive a first strike to still be able to deliver the devastating counter attack; or decide, in times of high tension when conflict is deemed inevitable, to launch first, before an adversary could attack them (the "use them or lose them" scenario). The first option is inimical to arms control, the second radically escalates the danger of a conflict "going nuclear." In other words, as long as the nuclear confrontation persists, maritime bastions for SSBNs, from which attack submarines are effectively excluded, reinforce deterrence and stability. The Americans are less reliant on such a bastion inasmuch as their SSBNs can get to vast Atlantic and Pacific Ocean expanses, without having to move through any choke point, where they can more readily evade pursuers. Russia's assertive protection of its second-strike deterrent does not pose a threat to its adversaries.

However, the key problem is that, even though the deterrence paradigm relies on an assured second strike, both Russia and especially the United States continue to hone sub-tracking skills and technologies for the purpose of rendering second-strike deterrent forces vulnerable to pre-emptive attack. The result being the Russian worry that, without robust defenses in place, their Barents Sea bastion could one day become routinely accessible to American attack submarine patrols. A March 2018 Pentagon report, "Commander's Intent for the United States Submarine Force," describes "the main role" of U.S. attack submarines as being to "hold the adversary's strategic assets at risk from the undersea."⁴⁴ "Strategic" in that context means nuclear, making it a message that exacerbates Russian worries.

American strategic anti-submarine-warfare (ASW) patrols do include the Arctic,⁴⁵ and in 2018 the British Navy sent its HMS *Trenchant* attack submarine into the Western Arctic on a joint exercise with the United States.⁴⁶ In May 2020, a world distracted by the pandemic

paid little attention when an American and British naval group carried out five days of sailing in the Barents Sea⁴⁷—the first time since the 1980s that American war ships had ventured into the Arctic waters where Russia’s sea-based nuclear deterrent forces routinely patrol.

Russia, of course, takes such patrols as a clarion call to bolster its bastion defense forces, but as the CSIS Ice Curtain reports point out, that defense turns to offense the further south it moves.⁴⁸ Russia has demonstrated both an interest and a capacity to extend its bastion defense forces more assertively southward to the Greenland-Iceland-United Kingdom-Norway (GIUKN) gap and into key Europe/North America sea lanes. The bastion defense forces include attack submarines equipped with longer-range non-strategic anti-ship and land attack cruise missiles and thus represent a potential threat to European/North America sea lanes. In March 2020, Russian anti-submarine warfare (ASW) aircraft travelled south from the Barents Sea to patrol well into the North Atlantic.⁴⁹ The previous fall a fleet of at least 10 attack submarines of the Russian Northern Fleet ventured from their Kola Peninsula home base to enter the Norwegian Sea and the North Atlantic in the biggest exercise of its kind since the end of the Cold War.⁵⁰ In response, NATO has re-established the North Atlantic Command (headquartered in Norfolk, Virginia), and the United States has revived its 2nd fleet, “amid a return to great power competition,”⁵¹ making the North Atlantic an increasingly contested theatre.

All that said, there is an undeniable air of unreality to scenarios about vulnerable sea lanes. They posit an extended conventional European war with Russia in which NATO, despite its major European forces and strategic airlift capacities, would have to rely on World War II style ship-borne replenishments from North America. Katarzyna Zysk of the Norwegian Institute for Defence Studies rejects the idea that Russia has the capacity for an extended European conventional war, and thus doubts its willingness to enter a war that it knows it would not have the resources to sustain, never mind win.⁵² (Without the resort to nuclear weapons, Russia is not a major power and not a formidable challenger to the combined military forces of NATO). Even a short conventional war would however lead to great devastation and, in a more likely scenario, would escalate quickly, by miscalculation or desperation, to nuclear exchanges, making the devastation complete—with ship-borne resupply links then irrelevant. The 1988 Reagan/Gor-

bachev joint statement remains true: “a nuclear war cannot be won and must never be fought.”⁵³

Threats to the Russian bastion in the Barents Sea and military contestations in the GIUKN gap (a vulnerability for NATO and a choke-point for Russia) clearly add to strategic pressures, but not so much to Arctic regional tensions. The ongoing NATO/Russia confrontation is still not an Arctic conflict. Importing that conflict more directly into regional relations and dynamics would not obviously accrue to the strategic or tactical advantage of any Arctic states. Thus, serious analysts from across the region continue to conclude that, despite regular pronouncements on the return of great power geopolitical competition to the region, the likelihood of Arctic conflict turning to military confrontation remains remote.⁵⁴ Indeed, a July 2020 *Foreign Affairs* analysis suggests that the tradition of Arctic cooperation could yet be a base from which to restore Russia/NATO-U.S. relations to “a more productive footing.”⁵⁵

Major powers continue to intervene militarily in weak and failing states where their interests are deemed at stake, but they show little inclination to invade stable states surrounded by allies (all of Russia’s Arctic neighbors are obviously demonstrably stable and supported by strong allies), or to go to war against each other. The extraordinary destructiveness of modern warfare, its virtually unblemished record of failure in resolving the conflicts that spawn it, and the overriding danger that a war among major powers would go nuclear, have not ended preparations for such wars, but they do increasingly lead to the conclusion that a more realistic purpose for modern armed forces must be to prevent wars, rather than to fight them.

Since the end of the Cold War, the practical missions of many northern armed forces have been focused on supporting local governance in pursuing the kinds of conditions that build human security and help to prevent escalation to armed conflict. They are prominently focused on aiding civil authorities responsible for advancing “soft security” agendas: reinforcing sovereignty and territorial integrity through border patrols and monitoring air and sea approaches to national territory; supporting public safety through search and rescue and emergency response operations; and aiding civilian authorities in tasks as diverse as law enforcement, fisheries patrols, and scientific research.

Non-military security challenges are destined to become more onerous. COVID-19 will not be the last large-scale health emergency. Climate change promises a challenging future of more frequent and more destructive weather events and major population displacements. As Arctic accessibility increases, the potential for irregular immigration, contraband, and non-state group operations along the Arctic's vast shorelines will demand increased monitoring and control. Add threats of cyber-attacks on public infrastructure and it is clear that Arctic states face northern security agendas for which civilian departments and agencies have primary responsibility, but for which they will increasingly need the kinds of complex coordination, technical expertise, and logistic services that military forces are mandated to maintain and keep available.

Russia is no different. Indeed, Russian international affairs academic Alexander Sergunin describes the primary roles of Russia's Arctic military forces to be "patrolling and protecting ... recognized national territories" and addressing emerging vulnerabilities to such illegal activities as "overfishing, poaching, smuggling, and uncontrolled migration."⁵⁶

Of course, many Western analysts do not find Russian military capabilities to be exclusively defensive. Increasingly sophisticated radars linked to state-of-the-art air defense missiles of steadily increasing range could, as one study puts it, allow Russia to "achieve integrated air and missile defense superiority"⁵⁷ within the region. Air defenses, notably the S-300 and S-400 systems, and even the coming S-500 surface-to-air missiles capable of engaging multiple targets out to maximums of 500 km, are not themselves a threat to neighbors. Bolstered by shorter-range Tor-M2Dt surface to air missiles, Pantsir-S1 anti-aircraft guns and missiles, and anti-ship cruise missile with ranges from 15 km to 80 km, these systems are all point-defense systems, designed to protect national interests and military installations at home—not to project power into neighboring lands. But the locations protected do include forward operating locations for fighter aircraft and long-range bombers, the latter with a reach well beyond an Arctic theater.⁵⁸ As the Canadian scholar and Arctic expert with the University of Calgary and the Centre for Military and Strategic Studies, Rob Huebert, points

out, “a defensive system in conjunction with an offensive system can provide for an overall offensive capability.”⁵⁹

Realistically, however, any confrontation in which strategic-range and nuclear-armed systems like the Russian Bear and Backfire bombers became involved would no longer be a regional skirmish—it would be a full-scale strategic confrontation, the outcome of which would certainly not be determined by Arctic capabilities. Others thus insist that Russia’s Arctic air defense systems remain essentially defensive. And that fits a generally defensive posture, as noted by the American analyst, Jim Townsend of the Center for a New American Security (CNAS):

“I think the first thing is to not overreact. What the Russian’s are doing doesn’t look that threatening. This is not in the middle of Europe, it’s on their own territory, way up there. And what the Russians are putting in right now is oriented towards trying to keep control over their territory.”⁶⁰

The very real expansion of Russian military capacity in the Arctic points, at least indirectly, to the fact that all Arctic states to varying degrees face similar defense needs—that is, increased accessibility demands increased attention to domain awareness and control, search and rescue and emergency responses, sovereignty patrols, protection of national resource assets, and so on. To date, therefore, non-Russian Arctic states still show an inclination to develop their northern military capabilities, less in response to Russian capabilities and more to adjust domestic capabilities in the face of changing climate, economic, and transportation conditions. The military requirements of Russia’s neighbors can be realistically defined by their own unique circumstances, rather than by generalized calls, like that of a recent Canadian think-tank appeal, for “substantial” expansion of “airpower, land forces, capable icebreakers, and infrastructure” to “protect the country’s sovereignty in the North” from a threatening Russia.⁶¹ Despite those kinds of encouragements, both security and budgetary realism suggest that any upgrades to Canadian military capacity in the North of Canada will respond to basic domain awareness and public safety needs rather than trying to match what Russia is doing on the other side of the Arctic Ocean.

Constructing Stability

An Arctic Security Forum

Given the sheer vastness of Russia's Arctic territory, its more advanced resource extraction industry, a potentially major transportation waterway in its adjacent seas, and an ongoing need to protect its strategic deterrent forces, Moscow's Arctic military requirements will continue to outstrip those of its neighbors for the foreseeable future. At the same time, political pressures in the West to respond in kind to Russian military developments in the Arctic will not soon abate. So, keeping military postures and activities on both sides of the Arctic Ocean prudent and measured will require meaningful and sustained diplomatic and policy engagement among states and Indigenous stakeholders of the region. A forum through which to share and explain security policies, doctrines, military procurements and deployments, and to hear the concerns and the counsel of neighbors and stakeholders is not now available. But it is becoming essential.

Engagement and information sharing are not governance, so a call for security dialogues is not a call to incorporate security matters into formal Arctic governance or negotiating structures. There are good reasons to avoid the risks of bogging down pan-Arctic affairs, which have a good record of cooperation, with contentious security agendas.⁶²

To date, minimalist but constructive dialogue initiatives have included the Arctic Security Forces Roundtable and the Arctic Chiefs of Defense Staff meetings, but since 2014 these fora have excluded Russia. Even if Russia were to rejoin those tables, there would remain a need to go beyond military-to-military discussions, as important as they still are. Additional mechanisms through which to exchange perspectives on the kinds of conditions and practices needed to build confidence and ease tensions would pay extensive dividends.

The 2020 foreign policy review of the Danish Institute for International Studies (DIIS), for example, recommends to the government of Denmark that it become actively engaged in de-escalating tensions in the Arctic and support the establishment of an Arctic forum to take up security issues.⁶³ Troy Bouffard, Elizabeth Buchanan, and Michael Young, in their July 2020 analysis,⁶⁴ come to a similar conclusion, warning that as the United States and NATO increase their military

capabilities and presence in the Arctic, “without dialogue, misunderstanding of intent and perceptions, among other things, will likely worsen.” They thus call for “a formal dialogue between Russia and the other Arctic states regarding issues of national security in the Arctic... so that all sides understand each others’ actions and the motives behind them....” The meetings of such a forum should address Arctic defense philosophy, perspectives on key defense challenges and threats to Arctic security, and the exploration of ways “to improve Arctic security cooperation and reduce tensions.” They recommend that such a forum be confined to the Arctic Council member states, but remain wholly independent of it, and they specifically recommend that it not include NATO.

The institutional framework or home for such a forum will continue to be debated, but it is clear that Arctic stability would be served by direct and inclusive engagement among the region’s political representatives, security policy officials, academic experts, Indigenous community representatives, civil society, and military commanders. Above all, the structure should be such that inclusive engagement continues and even intensifies when serious disruptions occur. Talking should not be construed as a reward for good behavior. Instead it should reflect the common and sustained pursuit of responsible and constructive behavior.

Preserving the Non-militarized Surface of the Central Arctic Ocean

Historically, climate and geography have reliably collaborated to ensure that the surface of the central Arctic Ocean would not become a theatre of military operations. Yet, that salutary service will not be available much longer. The move to weaponize icebreakers, and Russia’s forthcoming Lider-class ships with the capacity to break over four meters of ice and traverse the central Arctic Ocean, mean weaponized surface patrols are imminent. Preserving the status quo now depends on the international community agreeing to accomplish politically what climate and geography can no longer deliver.⁶⁵ The idea of prolonging indefinitely the non-militarization of the surface waters of the high Arctic, advanced some decades back by the Canadian Arctic scholar Franklyn Griffiths,⁶⁶ has the great advantage of simply needing to preserve what already exists, just as the Seabed Treaty preserved the status quo in prohibiting the deployment of nuclear weapons on the seabed.⁶⁷ Formal demilitarization in the Arctic has the precedent of

the 1920 Svalbard Treaty⁶⁸ and the European Parliament has called for a protected area around the North Pole⁶⁹—all of which suggests another bold move. In the context of concerns about China's ambitions to access the central Arctic Ocean, the CSIS Ice Curtain project has included in its recommendations for Arctic security enhancements a call for the five Arctic coastal states to discuss management of the central Arctic Ocean.⁷⁰ In this context, the continuing non-militarization of its surface would be a worthy topic for that discussion.

Limiting Attack Submarine Operations

The stability of the global strategic environment would be significantly bolstered by a U.S. and Russian agreement not to deploy their SSBNs close to each other's territories and not to track and thus threaten each other's SSBN's with attack submarines in agreed locations. A proposal roughly along those lines was a feature of the 1987 Murmansk Initiative put forward by Soviet leader Mikhail Gorbachev,⁷¹ and before that the idea of anti-submarine warfare (ASW) free zones had been floated by Canadian analyst Ron Purver.⁷² While land-based missiles in fixed locations were becoming, at the height of the Cold War, vulnerable to pre-emptive attack, sea-based deterrent forces could be kept reliably invulnerable if they were allowed to patrol in areas from which ASW operations were banned. A 2009 report by Anatoli Diakov and Frank von Hippel argued briefly, but without elaboration, that strategic stability would be served if Russia were to confine its northern SSBN fleet to the Arctic and if the United States agreed to keep its attack submarines out of the Russian side of the Arctic.⁷³

The present times are not conducive to an outbreak of that level of strategic sanity, but the logic of their own deterrence requirements should move the United States and Russia to welcome strategic ASW-free zones—that is, zones, or bastions, in which their own ballistic missile carrying submarines are freed of threats of pre-emptive attacks from anti-submarine warfare subs, with the perimeters of those zones clearly defined and actively patrolled by their own ASW forces.

Exercising Cooperation

Each year the Canadian Armed Forces mount an exercise that focuses on working with Canadian non-military agencies and departments of

government⁷⁴ with responsibilities related to security and public safety in the Arctic. In Operation NANOOK, the defense of Canada is less about vanquishing state enemies and more about honing supportive responses to the kinds of natural calamities and human misadventures that can, in the Arctic's challenging environment, quickly overwhelm the capacity of civilian agencies.

Pan-Arctic exercises that similarly test civil-military cooperation—and especially state-to-state cooperation mandated through international agreements on oil spill mitigation, search and rescue, and Coast Guard operations—will have to become a more prominent feature of Arctic security operations in the interests of preserving and entrenching regional stability.

Future Scenarios

The world of 2020 is rediscovering, in extraordinarily dramatic ways, the perils of prediction. We obviously cannot know what further shocks the planet will face between now and 2040, but it is still interesting to speculate on the path the Arctic might take over the next two decades. In one sense, absent unforeseen catastrophes, there are only three options—more of the same, dangerously heightened and militarized tensions, or reduced tensions that foster cooperation built on shared interests and reliable mutual processes. There are no compelling reasons why the latter scenario is any less credible than the others.

When geopolitical tensions receded during the first two decades after the end of the Cold War, Arctic cooperation flourished. Then, in the context of re-emerging European-centered East-West tensions, cooperation with Russia anywhere, including in the Arctic, has been increasingly decried under the insistence that Moscow not be rewarded for bad behavior. In other words, political postures in the Arctic can certainly be influenced by the external environment. By the same token, when the global political climate eased tensions in the 1990s there were no conditions intrinsic to the Arctic that prevented it from sharing in those reduced tensions.

Writing on “Realism in the Arctic” in *The National Interest*, which describes itself as exploring American foreign policy within a realist framework, two academics linked to the Woodrow Wilson Center

argue⁷⁵ that despite the broad range of American disagreements with Russia currently, the United States should be open to “constructive cooperation” where that is possible, with the Arctic presenting itself as one such context in which “opportunities for statesmanship can be seized.” They call for the resumption of high-level military contacts on Arctic affairs, and for, among other matters, discussions of issues related to the Northern Sea Route.

North America faces no direct threats from anybody that are directly driven by competing interests in the Arctic. The Nordics face serious vulnerabilities to their east (i.e. Russia); those however are also not linked to Arctic-induced disputes, but to the Nordics being situated on the frontlines of the larger East-West confrontation. The absence of deeply rooted Arctic-specific conflicts means there is at least the possibility of addressing Arctic security objectives on their own merits.

What also bodes well for the region is the absence of any Arctic or near Arctic states that see benefit from instability—all direct stakeholders (and exogenous interested parties) see benefit in stable and peaceful relations. Not all regions are as fortunate. There are clearly regions in which influential players see advantage in instability (e.g. in the Baltics, Central Asia, areas of the Middle East)—that is, settings in which powerful regional actors see advantage in fomenting and sustaining conflict. That is not the case in the Arctic.

Realism thus should not preclude tilting any prognoses on the Arctic’s next two decades in the direction of its tradition of cooperation shaped by geography and shared interests. To be sure, Arctic stability is clearly currently being challenged—not by divisions in the Arctic itself, but by competing global interests centered elsewhere, meaning that the Arctic is not now being left to its own dynamics. Still, constructive diplomacy supported by military prudence and restraint are still available tools to prevent it from becoming a region of direct and dangerous competition. Indeed, the Arctic’s internal dynamics and inclinations toward cooperation could yet help to ease the wider tensions on the rest of the planet impinging on the region and thereby help bend it toward models of cooperation.

Notes

1. Ilulissat Declaration, Adopted in Ilulissat, Greenland on 28 May 2008, Arctic Ocean Conference Ilulissat, Greenland, May 27-29, 2008, <https://www.natolibguides.info/arcticsecurity/documents>.

2. Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, adopted May 12, 2011, <https://oaarchive.arctic-council.org/handle/11374/531>.

3. Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, adopted May 15, 2013, <https://oaarchive.arcticcouncil.org/handle/11374/529>.

4. Agreement on Enhancing International Arctic Scientific Cooperation, adopted May 11, 2017, <https://oaarchive.arctic-council.org/handle/11374/1916>.

5. The Arctic Coast Guard Forum, established in 2015, <https://www.arctic-coastguardforum.com/>.

6. Agreement to prevent unregulated high seas fisheries in the Central Arctic Ocean, adopted October 3, 2018 (the Treaty will enter into force once all signatory states have ratified it), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2019.073.01.0003.01.ENG.

7. See the chapter by Lackenbauer and Dean in this volume.

8. Examples include: Robert Farley, "Arctic Aggression: Russia Is Better Prepared for a North Pole Conflict Than America Is," *The National Interest*, February 12, 2020, <https://nationalinterest.org/blog/buzz/arctic-aggression-russia-better-prepared-north-pole-conflict-america-122766>; Alice Hill, "What's Putin up to in the Arctic?" *The Hill*, June 27, 2019, <https://thehill.com/opinion/energy-environment/450678-whats-putin-up-to-in-the-arctic>; Alan Dowd and Alexander Moens, "Meeting Russia's Arctic Aggression," n.d. <https://www.fraserinstitute.org/article/meeting-russias-arctic-aggression>; Aurel Braun and Stephen J. Blank, "The Cold Reality Behind Russia's Charm Offensive," Macdonald Laurier Institute, April 2020, <https://www.macdonald-laurier.ca/>.

9. Examples include: "Russia Trails First U.S. Warships in Barents Sea Since 1980s," *The Moscow Times*, May 5, 2020, <https://www.themoscow-times.com/2020/05/04/russia-trails-first-us-warships-in-barents-sea-since-1980s-a70181>; "Russian fighter jets scrambled to intercept US B-52H bombers over Okhotsk Sea," *Russian Aviation*, June 19, 2020, <https://www.ruaviation.com/news/2020/6/19/15165/>; "Russia, NATO drifting towards Arctic stand-off," *TASS*, Press Review, July 24, 2020: "One thing to note is that Russia deploys naval and ground forces in the Arctic on its own soil and near its borders," retired Colonel Eduard Rodyukov pointed out. "At the same time, the

United States and some of its allies are active far from their domain and close to Russia's boundaries." <https://tass.com/presreview/1181905>; Atle Staalesen, "Russian Navy 2019: Two new submarines, 23 new surface vessels and 480 new kinds of armament," *The Barents Observer*, December 6, 2019: "Putin reiterated his key mantra; Russian national security is threatened by the build-up of NATO infrastructure along its borders and Russia must give the highest possible attention to the technical re-equipment of its armed forces and Navy." <https://thebarentsobserver.com/en/security/2019/12/russian-navy-2019-two-new-submarines-23-new-surface-vessels-and-480-new-kinds>; "With Arctic security as backdrop, Russia's Lavrov calls UK's Williamson 'minister of war'," *Arctic Today*, February 19, 2019, <https://www.arctictoday.com/with-arctic-security-as-backdrop-russias-lavrov-calls-uks-williamson-minister-of-war/>.

10. Ekaterina Klimenko, "Russia's new Arctic policy document signals continuity rather than change," *Stockholm International Peace Research Institute*, April 6, 2020, <https://www.sipri.org/commentary/essay/2020/russias-new-arctic-policy-document-signals-continuity-rather-change>; Alexander Sergunin, "Arctic Security Perspectives from Russia," in P. Whitney Lackenbauer and Suzanne Lalonde, eds., *Breaking the Ice Curtain? Russia, Canada, and Arctic Security in a Changing Circumpolar World* (Calgary, AB: Canadian Global Affairs Institute, 2019), pp. 43-60, https://www.cgai.ca/breaking_the_ice_curtain.

11. Viatcheslav V. Gavrillov, "Russian Arctic Policy," in Lackenbauer and Lalonde, op cit., pp. 1-12.

12. Three essential sources are: Hans M. Kristensen and Matt Korda, *The Nuclear Notebook* of the *Bulletin of the Atomic Scientists*. For Russia, Vol. 76, No. 2 (2020); and the United States, Vol. 76, No. 1 (2020). <https://thebulletin.org/>; *The Military Balance 2020*, International Institute of Strategic Studies. <https://www.iiss.org/>; The Nuclear Threat Initiative, Global Nuclear Policy, <https://www.nti.org/about/global-nuclear-policy/>.

13. For historical background, see publications of the Federation of American Scientists (<https://fas.org/issues/nuclear-weapons/>) and the Nuclear Threat Initiative (<https://www.nti.org/>).

14. Phil Stewart, "Pentagon warns on risk of Chinese submarines in Arctic," *Reuters*, May 2, 2019.

15. Kristensen and Korda, op. cit.

16. Hans M. Kristensen and Robert S. Norris, "United States nuclear forces, 2018," *Nuclear Notebook, Bulletin of the Atomic Scientists* 74, 2 (2018), <https://thebulletin.org/>.

17. "US Nuclear Modernization Programs," *Arms Control Association*, December 2016, <http://www.armscontrol.org>.

18. *The Military Balance 2020*, International Institute of Strategic Studies, <https://www.iiss.org/publications/the-military-balance>.

19. Mark Episkopos, "Russia's Dangerous 'Kalibr' Cruise Missile Could See Range Doubled," *The National Interest*, January 12, 2019, <https://nationalinterest.org/blog/buzz/russias-dangerous-%E2%80%9Ckalibr%E2%80%9D-cruise-missile-could-see-range-doubled-report-41427>.

20. Xavier Vavasseur, "Russia Approves SSGN Deployment Plan Between Northern and Pacific Fleets," *TASS, NavalNews*, April 3, 2020. <https://www.navalnews.com/naval-news/2020/04/russia-approves-ssgn-deployment-plan-between-northern-pacific-fleets/>.

21. In separate unilateral statements in September and October 1991, Presidents George H.W. Bush and Mikhail Gorbachev undertook to stop deploying tactical nuclear weapons on surface ships and attack/all-purpose submarines.

22. US Department of Defense, Nuclear Posture Review 2018, <https://dod.defense.gov/News/SpecialReports/2018NuclearPostureReview.aspx>.

23. Kristensen and Korda, op. cit.

24. *The Military Balance 2020*, op. cit.

25. Mathieu Boulègue, "Russia's Military Posture in the Arctic: Managing Hard Power in a 'Low Tension' Environment," Chatham House (The Royal Institute of International Affairs), June 2019, <https://reader.chathamhouse.org/russia-s-military-posture-arctic-managing-hard-power-low-tension-environment>.

26. "The Ice Curtain: Modernization on the Kola Peninsula," Center for Strategic and International Studies (CSIS), Briefs, March 23, 2020, <https://www.csis.org/analysis/ice-curtain-modernization-kola-peninsula>.

27. Andreeva Bay, Bolshaya Lopatka, Malaya Lopatka, Nerpicha.

28. Russia's Arctic military build-up receives prominent attention and commentary in the West, though there are relatively few descriptive and detailed accounts of that build-up. Notable among these are: Siemon T. Wezeman, "Military Capabilities in the Arctic," Stockholm International Peace Research Institute, SIPRI Background Paper, 2012, <https://www.sipri.org/publications/2012/sipri-background-papers/military-capabilities-arctic>; idem, "Military Capabilities in the Arctic: A New Cold War in the North," Stockholm International Peace Research Institute, *SIPRI Background Paper 2016*, <https://www.sipri.org/publications/2016/sipri-background-papers/military-capabilities-arctic>; Boulègue, op. cit. See also Matthew Melino and Heather A. Conley, "Russia's Arctic Military Presence," Center for Strategic and International Studies, March 2020, <https://www.csis.org/features/ice-curtain-rus>.

sias-arctic-military-presence. (This overview paper is supported by a series of papers, by Heather Conley, Matthew Melino, Joseph Bermudez, and the National Geospatial-Intelligence Agency, that include detailed satellite imagery examining particular facilities on, to date, Wrangel Island, Kotelnny Island, the mainland base at Tiksi, the Franz Josef archipelago, Novaya Zemlya, and the Kola Peninsula—all available at: https://www.tearline.mil/public_cat/arctic/ or <https://www.csis.org/regions/arctic>; and “Circumpolar Military Facilities of the Arctic Five,” prepared by Ernie Regehr, Amy Zavitz, The Simons Foundation, last updated September 2019, <http://www.thesimonsfoundation.ca/arctic-security> (an ongoing compilation from current public sources of military facilities of the five Arctic Ocean States, 122pp.).

29. Going roughly east to west, these are the facilities identified in public sources: Anadyr-Ugolny, Provideniya, Cape Schmidt, Wrangel Island, Pevek, Chersky, Tiksi, Kotelnny Island, Severnayer Zemlya, Alykel (linked to Dudinka), Nadym, Sabetta (linked with the Dikson airfield), Amderma, Franz Josef, Novaya Zemlya, Vorkuta, Naryan-Mar, Arkhangelsk (Northern Command Headquarters), Pechenga, and Alakurtti.

30. “The Ice Curtain: Tiksi Airbase; Many Russian Announcements, Little Equipment,” June 10, 2019, https://www.tearline.mil/public_page/the-ice-curtain-tiksi-airbase-many-russian-announcements-little-equipment/.

31. “The Ice Curtain,” CSIS, *op. cit.*

32. Melino and Conley, “Russia’s Arctic Military Presence,” *op. cit.*

33. Sergey Sukhankin, “Completing the Arctic Shield: Russian Activities on Wrangel Island,” *Eurasia Daily Monitor* (The Jamestown Foundation) Vol. 17, No. 48, April 9, 2020, <https://jamestown.org/program/completing-the-arctic-shield-russian-activities-on-wrangel-island/>.

34. Xavier Vavasseur, “Russia’s ATOMFLOT orders 4th and 5th Project 22220 Nuclear-Powered Icebreakers,” *Naval News*, August 11, 2019, <https://www.navalnews.com>.

35. Thomas Nilsen, “In a last move as PM, Russia’s Medvedev secured funding for the first Lider-class icebreaker,” *Barents Observer*, January 20, 2020, <https://www.arctictoday.com>.

36. Heather A. Conley and Matthew Melino, “America’s Arctic Moment; Great Power Competition in the Arctic to 2050,” Center for Strategic and International Studies, March 2020, <https://www.csis.org/analysis/americas-arctic-moment-great-power-competition-arctic-2050>.

37. “Berths at Pevek port to be reconstructed by yearend,” *TASS*, January 30, 2019, <https://tass.com>.

38. Malte Humpert, "Russia activates a new S-300 air defense unit in the Arctic," *High North News*, April 9, 2020, <https://www.arctictoday.com>.

39. Western reporters got a first-hand look at the Kotelnny Island base in 2019. Mary Ilyushina and Frederik Pleitgen, "Inside the Military Base at the Heart of Putin's Arctic Ambitions," *CNN*, April 5, 2019, <https://www.cnn.com/2019/04/04/europe/russia-arctic-kotelnny-island-military-base/index.html>. In 2017 the new base on Franz Josef Land was opened for a virtual tour. "Russia's New Arctic Trefoil Military Base Unveiled with Virtual Tour," *BBC*, April 18, 2017, <https://www.bbc.com/news/world-europe-39629819>.

40. Melino and Conley, "Russia's Arctic Military Presence," op. cit.

41. Memorandum on Safeguarding US National Interests in the Arctic and Antarctic Regions," Presidential Memoranda, June 9, 2020, <https://www.whitehouse.gov>.

42. "Trump Previews Plan to Acquire 10 Icebreakers," *The Maritime Executive*, July 10, 2020, <https://www.maritime-executive.com>.

43. Heather A. Conley and Max Sharon, "Is the United States Having an 'Arctic Moment' on Icebreaker Acquisition?" The Center for Strategic and International Studies, June 12, 2020, <https://www.csis.org/analysis/unit-ed-states-having-arctic-moment-icebreaker-acquisition>.

44. Commander's Intent for the United States Submarine Force and Supporting Organizations, Commander, US Submarine Forces, March 2018, www.public.navy.mil/subfor/hq.

45. Siemon T. Wezeman, "Military Capabilities in the Arctic: A New Cold War in the High North?" *SIPRI Background Paper 2016*, <https://www.sipri.org/publications/2016/sipri-background-papers/military-capabilities-arctic>.

46. Mark D. Faram, "ICEX Gives Navy, Coast Guard Divers Time under the Ice," *NavyTimes*, March 20, 2018, <https://www.navytimes.com/news/your-navy/2018/03/20/icex-gives-navy-coast-guard-divers-time-under-the-ice/>.

47. Thomas Nilsen, "American Flags in the Barents Sea are the 'New Normal,' a Defense Analyst Says," *The Independent Barents Observer*, May 12, 2020, <https://www.actictoday.com>.

48. Melino and Conley, "Russia's Arctic Military Presence," op. cit.

49. Thomas Nilsen, "Russian Submarine Hunters on Record Long Mission in North Atlantic," *The Barents Observer*, March 12, 2020, <https://thebarentsobserver.com>.

50. Tyler Rogoway, "Russia Sends Ten Subs into North Atlantic in Drill Unprecedented in Size since Cold War," *The Drive*, October 29, 2019, <https://www.thedrive.com>.

51. 2nd Fleet Declares Full Operational Capability, US Navy, December 31, 2019, https://www.navy.mil/submit/display.asp?story_id=111782.

52. James Glanz and Thomas Nilsen, "A Deep-Diving Sub. A Deadly Fire. And Russia's Secret Undersea Agenda," *New York Times*, April 20, 2020, <https://www.nytimes.com/2020/04/20/world/europe/russian-submarine-fire-losharik.html>.

53. Joint Soviet-United States Statement on the Summit Meeting in Geneva, November 21, 1985, <https://www.reaganlibrary.gov/research/speeches/112185a>.

54. Troy Bouffard, Andrea Charron, and Jim Fergusson, "A Tale of 'Two' Russias," in Lackenbauer and Lalonde, eds, *Breaking the Ice Curtain?* pp. 71-3. https://www.cgai.ca/breaking_the_ice_curtain; Siri Gulliksen Tømmerbakke, "This is Why Finland and Iceland Want Security Politics in the Arctic Council," *High North News*, October 22, 2019, <https://www.highnorthnews.com/en/why-finland-and-iceland-want-security-politics-arctic-council>. Harri Mikko-la, "The Geostrategic Arctic: Hard Security in the High North," Finnish Institute of International Affairs, FIIA Briefing Paper, April 2019, www.fia.fi. As quoted in, Vladimir Isachenkov, "Russia revamps Arctic military base to stake claim on region," *The Associated Press, CNC News*, April 4, 2019, <https://www.cbc.ca/news/canada/north>; Michel E. O'Hanlon, "Beyond NATO: A New Security Architecture for Eastern Europe" (Brookings Institution Press, 2017), p. 103, https://www.brookings.edu/uploads/2017/06/full-text_-beyond-nato.

55. Thomas Graham and Amy Myers Jaffe, "There Is No Scramble for the Arctic," *Foreign Affairs*, July 27, 2020, <https://www.foreignaffairs.com>.

56. Alexander Sergunin, "Arctic Security Perspectives from Russia," in Lackenbauer and Lalonde, eds, *Breaking the Ice Curtain?*, pp. 43-60. https://www.cgai.ca/breaking_the_ice_curtain.

57. "Ice Curtain: Why Is There a New Russian Military Facility 300 Miles from Alaska?" Center for Strategic and International Studies, March 24, 2020, <https://www.csis.org/analysis/ice-curtain-why-there-new-russian-military-facility-300-miles-alaska>.

58. "Why the S-400 Missile is Highly Effective—If Used Correctly," *Stratfor Worldview*, July 12, 2019, <https://worldview.stratfor.com/article/why-s-400-s400-missile-long-range-turkey-russia-syria-effective>.

59. As quoted in Malte Humpert, "Satellite Images Reveal New Russian Long-Range Radar in the Arctic," *High North News*, December 17, 2019, <https://www>.

highnorthnews.com/en/satellite-images-reveal-new-russian-long-range-radar-arctic.

60. Ibid.

61. Braun and Blank, op. cit.

62. Siri Gulliksen Tommerbakke, "This is Why Finland and Iceland Want Security Politics in the Arctic Council," High North News, October 22, 2019, <https://www.highbnorthnews.com/en/why-finland-and-iceland-want-security-politics-arctic-council>.

63. Kevin McGwin, "Denmark Should Support an Arctic military Forum, a Danish Think-tank Says," *Arctic Today*, June 12, 2020, <https://www.arctictoday.com>.

64. Troy L. Bouffard, Elizabeth Buchanan and Michael Young, "Arctic Security and Dialogue: Assurance through Defence Diplomacy," *Modern Diplomacy*, July 11, 2020, <https://modern diplomacy.eu/2020/07/11/arctic-security-and-dialogue-assurance-through-defence-diplomacy/>.

65. Franklyn Griffiths, "A Northern Foreign Policy," Wellesley Papers, Canadian Institute for International Affairs, 1979.

66. Ibid.

67. This is only largely the case because the Pelindaba Treaty in fact helped to confirm the denuclearization that took place in Africa when South Africa divested itself of nuclear weapons, and in other regions, like Tlatelolco, when states with nuclear weapons programs agreed to halt them and the NWFZ solidified that posture into the future.

68. Michael Byers, *International Law and the Arctic* (Cambridge: Cambridge University Press, 2013), pp. 256-7.

69. "European Parliament calls for sanctuary around North Pole area," *Nunatsiaq Online*, March 13, 2014, http://www.nunatsiaqonline.ca/stories/article/65674european_parliament_calls_for_protection_of_high_arctic/.

70. Conley and Melino, "America's Arctic Moment; Great Power Competition in the Arctic to 2050," op. cit.

71. Kristian Åtland, "Mikhail Gorbachev, the Murmansk Initiative, and the Desecuritization of Interstate Relations in the Arctic," *Cooperation and Conflict* 43 (September 2008), pp. 289-311.

72. Ron Purver, "The Control of Strategic Anti-Submarine Warfare," *International Journal* 38, 3 (Summer 1983).

73. Anatoli Diakov and Frank von Hippel, *Challenges and Opportunities for Russia-U.S. Nuclear Arms Control* [A Century Foundation Report, The Century Foundation] (New York, Washington, 2009), pp. 15-16.

74. Non-military partners in the exercise were: the Government of the Yukon Territory, Town of Haines Junction, City of Whitehorse. Champagne Aishihik First Nation, RCMP, Public Health Agency Canada, Transport Canada, Parks Canada, Service Canada, Public Safety, Environment Canada, Transport Safety Board.

75. Kenneth Yalowitz and Ross A. Virginia, "Realism in the Arctic," *The National Interest*, July 10, 2020, <https://nationalinterest.org>.