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Climate Change and U.S. Security in the Arctic

Testimony of Abbie Tingstad¹
The RAND Corporation²

Before the Committee on Homeland Security
Subcommittee on Transportation and Maritime Security
United States House of Representatives

September 19, 2019

Chairman Correa, Ranking Member Lesko, and other distinguished members of the committee, thank you for the opportunity to appear before you this afternoon. We have known for many years that the Arctic region is sensitive to environmental shifts; today, it is experiencing one of the most rapid rates of climate change in the world. These changes in the Arctic have created both homeland security and international issues. The northern rim of the United States is already an area of concern for illegal, unreported, and unregulated (IUU) fishing; search and rescue; and environmental protection. In the future, trafficking- and terrorism-related problems could arise as well. In addition, the Arctic presents possibilities for both engagement and conflict with Russia and China in and near U.S. territory.³

Why does climate change in the Arctic matter, and what does the United States need to do about it from a security perspective? I would like to present the following points:

- The Arctic's ongoing changes in climate promote both challenges and opportunities; these are also influenced by technology, economic, and other factors.
- Climate change in the Arctic matters for U.S. security because of the potential for a real or perceived security void to develop in the absence of additional action.
- Averting a security void requires sufficient capability to promote safety, security, and stewardship in the region; multiple types of investments are needed to do this.

¹ The opinions and conclusions expressed in this testimony are the author's alone and should not be interpreted as representing those of the RAND Corporation or any of the sponsors of its research.

² The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest.

³ Abbie Tingstad, Stephanie Pezard, and Scott Stephenson, "Will the Breakdown in U.S.-Russia Cooperation Reach the Arctic?," *RAND Blog*, October 12, 2016. As of September 16, 2019: <https://www.rand.org/blog/2016/10/will-the-breakdown-in-us-russia-cooperation-reach-the.html>

Changing Arctic Will Foster Problems and Opportunities

The Arctic has recently attracted so much attention—from foreign governments, commercial interests, and, increasingly, the U.S. government—because climate is changing patterns of physical access to the region, altering the historical, broadly held perception of the Arctic as a relatively static place.⁴ The environment for native and other local stakeholders is changing at an intensifying pace.⁵ One reason for this is diminished ice-albedo feedback; less ice means that a smaller fraction of solar energy is mirrored back into space, exacerbating the warming of the Arctic environment.⁶

In the past, the Arctic's vast, harsh conditions, its persistent sea ice, and its limited opportunities for economic development have served as a deterrent to Arctic presence. Though the Arctic was strategic during the Cold War (Arctic nations still maintain military assets in and around the area), the region itself was not a driver of tensions so much as a battleground in a larger conflict. It is time to re-evaluate security needs and capabilities now that warmer temperatures are opening the Arctic to a different set of challenges and opportunities.

The long distances between remote inhabited areas in the North American Arctic will remain, and the environment across the region will still be relatively harsh. Farmers in Greenland now grow potatoes and Saami reindeer herders worry about newly invading pests, but the Arctic will not become a tropical paradise in our lifetimes. Warming has an uneven effect on access to the Arctic—diminishing sea ice increases maritime access, but thawing permafrost and softer ice roads inhibit access via land. Even with general icemelt, some areas of the maritime Arctic—notably the Canadian archipelago and northwestern Greenland—are projected to experience particularly persistent sea ice.

Climate is not the sole driver of change shaping the Arctic's future.⁷ Technology, even that which is not groundbreaking in today's terms, is influencing access. Ships' hulls are hardened to break ice, and sections of the Trans-Alaska Pipeline running through permafrost are elevated on vertical support members. New sensors and autonomous vehicles will increase the accessibility of Arctic land, air, and sea, even if those areas are not directly accessed by humans. Growing communications networks also will enhance reach across, into, and out of the Arctic.

Other change factors motivate or discourage access to the region. For example, the availability and cost of energy resources influence decisions on whether or how to operate in the Arctic.⁸ Indigenous autonomy and partnerships also affect whether and how areas of the Arctic

⁴ Ron Kwok, "Arctic Sea Ice Thickness, Volume, and Multiyear Ice Coverage: Losses and Coupled Variability (1958–2018)," *Environmental Research Letters*, Vol. 13, 2018.

⁵ Josefino C. Comiso and Dorothy K. Hall, "Climate Trends In The Arctic as Observed From Space," 2014, *WIRES Climate Change*, Vol. 5, 2014, pp. 389–409; R.K. Pachauri and L.A. Meyer, eds., *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Geneva, Switzerland: Intergovernmental Panel on Climate Change, 2014.

⁶ Comiso and Hall, 2014.

⁷ Stephanie Pezard, Abbie Tingstad, Kristin Van Abel, and Scott Stephenson, *Maintaining Arctic Cooperation with Russia: Planning for Regional Change in the Far North*, Santa Monica, Calif.: RAND Corporation, RR-1731-RC, 2017. As of April 29, 2019: https://www.rand.org/pubs/research_reports/RR1731.html

⁸ Pezard et al., 2017.

are opened or maintained for business. The vast majority of Greenlanders are indigenous, and Nuuk increasingly manages the country's affairs, although Copenhagen still handles international relations and external security. Canada's Inuit also have an increasingly strong voice in their portions of the Arctic.

Among others, Russia and China are definitely taking advantage of economic opportunities in the Arctic. Russia has been increasing its military capabilities there, forming a northern command, establishing two Arctic brigades, developing infrastructure, and deploying and upgrading military assets.⁹ The Russian government and economic sector is also investing in fixed and mobile infrastructure for civilian or commercial use, and some of this infrastructure appears to be dual-use. For example, this year, the Russian Ministry of Natural Resources and Environment released a plan for further developing mineral resources in the Arctic and the logistics for bringing them to market via the Northern Sea Route.¹⁰

China has been promoting the idea of a "Polar Silk Road" in recent years. This builds on China's decades-long interest in polar science and its more recent participation as an observer in Arctic governance issues through the Arctic Council. In its 2018 Arctic policy, China reaffirmed its interests in participating in Arctic governance and development.¹¹ China's investment in the Yamal Liquid Natural Gas project with Russia was substantial. Other investments have been more modest, and some have not come to fruition (such as the purchase of an unoccupied naval base in Greenland and the now-cancelled development of a resort in Svalbard).

The economic promise of shipping lanes, hydrocarbon extraction, and fishing all come with their own challenges. These activities raise the risk of safety hazards and toxic spills. Furthermore, any increased militarization of the Arctic raises the chance of an unintended military confrontation in the Arctic.

We must consider whether and how to provision basic governance in a changing Arctic. Such governance includes U.S. Coast Guard activities, such as search and rescue, drug interdiction, and fisheries enforcement. Although the Coast Guard already operates in the region, its current resources are limited, and it could be overwhelmed with a rapid increase in demand for service capabilities. Here, we explore the concept of an Arctic security gap and some of the capability shortfalls that may inhibit the United States' ability to avoid it – assuming this is something the Nation decides to prioritize.

⁹ Andrew Osborn, "Putin's Russia in Biggest Arctic Military Push Since Soviet Fall," Reuters, January 30, 2017. As of April 22, 2019:

<https://www.reuters.com/article/us-russia-arctic-insight/putins-russia-in-biggest-arctic-military-push-since-soviet-fall-idUSKBN15E0W0>

¹⁰ "Russia Releases Comprehensive Plan for Arctic Logistics," *Maritime Executive*, March 19, 2019. As of April 22, 2019:

<https://www.maritime-executive.com/article/russia-releases-comprehensive-plan-for-arctic-logistics>

¹¹ People's Republic of China, State Council, "China's Arctic Policy," white paper, January 26, 2018. As of April 22, 2019:

http://english.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm

Does the United States Face an Arctic Security Gap?

Our work on the durability of Arctic cooperation among stakeholders—particularly among nation-states—revealed that, although natural resources and territorial claims are important, they might have less potential to escalate tensions over the next two decades than an increase in maritime safety and security incidents.¹² Examples of such incidents include maritime vessel collisions, “dark”¹³ vessels engaging in IUU fishing or drug running, oil spills, and acts of terrorism or piracy. Nations that appear to lack adequate capabilities to prevent and respond to these types of incidents will face a real or perceived security void in the Arctic. This will have consequences domestically as well as internationally. Economic opportunities, such as resource extraction, legal fishing, trans-Arctic shipping, and wind and data farms, could stagnate. Indigenous community wellbeing could decline, and broader social problems, such as violent crime and illegal drug use, might be exacerbated. A security void might also allow other nations, notably China and Russia, to justify an increase in presence and influence in the region.

Now that environmental access barriers are falling, we must ask: How does climate change alter the needs and abilities of the U.S. government to carry out responsibilities and use its authorities in the Arctic? It is imperative to know which key government responsibilities and authorities can be carried out in the Arctic and under which ongoing or emerging circumstances they will be necessary. For example, defending the nation’s exclusive economic zone represents a small fraction of the Coast Guard’s discretionary budget. Should this be increased—either in total dollar amount or as a fraction of the budget—and why?

Answering these types of questions is a necessary step toward understanding whether the United States has a security gap in the Arctic and what the nature of any gap is. Such a gap, whether perceived or real, could lead to undesirable and avoidable consequences. Ultimately, however, the United States must decide on the right level of capability in the Arctic. By virtue of its operational history, statutory missions, and authorities, the Coast Guard will play a large role in any steps towards enhancing governance activities in the Arctic. However, our recent work on Coast Guard capability gaps in the Arctic reveals that this Department of Homeland Security component and military service is already operating at a disadvantage in the region.¹⁴

The numbers and capabilities of icebreaking vessels are frequently cited as a proxy for Arctic operating capability or as a more general reflection on Arctic interest or influence.¹⁵ Differences

¹² Stephanie Pezard, Abbie Tingstad, and Alexandra Hall, *The Future of Arctic Cooperation in a Changing Strategic Environment: Insights from a Scenario-Based Exercise Organised by RAND and Hosted by NUPI*, Santa Monica, Calif.: RAND Corporation, PE-268-RC, 2018. As of April 29, 2019: <https://www.rand.org/pubs/perspectives/PE268.html>

¹³ Not emitting via the Automatic Identification System (AIS) used to locate maritime vessels. AIS relies on the cooperative or voluntary use of the system.

¹⁴ Abbie Tingstad, Scott Savitz, Kristin Van Abel, Dulani Woods, Katherine Anania, Michelle D. Ziegler, Aaron C. Davenport, and Katherine Costello, *Identifying Potential Gaps in U.S. Coast Guard Arctic Capabilities*, Santa Monica, Calif.: RAND Corporation, RR-2310-DHS, 2018. As of April 29, 2019: https://www.rand.org/pubs/research_reports/RR2310.html

¹⁵ Charlie Gao, “The ‘Icebreaker Gap’: How Russia is Planning to Build More Icebreakers to Project Power in the Arctic,” *National Interest*, August 19, 2018. As of March 19, 2019:

between nations are acute; Russia holds a dramatic lead over all others with dozens of these ships, including several newer ones, some of which are nuclear powered. In contrast, the United States has only two operational icebreakers—the heavy icebreaker U.S. Coast Guard Cutter (USGCG) *Polar Star* (commissioned in 1976) and the medium icebreaker USGCG *Healy* (commissioned in 1999). More are planned through the Polar Security Cutter program.¹⁶ Canada, Finland, and Sweden all have more operational icebreakers than the United States. This summer, China operationalized its second polar icebreaker, the first to be made in China.

However, the availability of these specialized ships is just one of many areas in which the United States may face capacity or capability shortfalls. Generally speaking, infrastructure—ports, onshore facilities, roads, railroads, airfields, hospitals, and urban centers—is much thinner on the ground in the North American Arctic. Russia and Northern Europe have booming cities and industries in the far north, whereas the United States and Canada have far lower densities of population. This limits the ability of U.S. organizations, such as the Coast Guard, to carry out their roles and responsibilities in the region. For example, northern Alaska has few facilities and airfields that can support larger aircraft operations and maintenance. This is one limitation on the scope and scale of Coast Guard summertime presence (the Coast Guard budget is another). In some cases, more than one stakeholder might need access to limited infrastructure in northern Alaska, leading to competition for use.

Our Path Forward Requires Multiple Investments

Ongoing regional changes mean that U.S. efforts in the Arctic will require regular access to the services common to other parts of the United States. For example, most of the United States enjoys access to year-round search and rescue and disaster relief support from a range of national, state, and local entities. Several potential gaps might stand in the way of Coast Guard—among other—operations in the Arctic. The prioritization of these gaps in the context of other national needs must be considered in decisions moving forward.

We found that no single capability worked in every Arctic scenario or acted as a “silver bullet” to mitigate every shortfall. For this study, we defined *capability* broadly, as a means to accomplish a mission, function, or objective.¹⁷ Capabilities included individual materiel assets, such as icebreakers and helicopters; fixed infrastructure, such as ports and airfields; and organizations, agreements for cooperation, and people (including training).

First, we looked at the existing capabilities that the Coast Guard, federal interagency partners, local communities, and commercial providers could use to add value in different scenarios. In addition to existing icebreakers, the most valuable assets included MH-60 Jayhawk

<https://nationalinterest.org/blog/buzz/icebreaker-gap-how-russia-planning-build-more-icebreakers-project-power-arctic-29102>

¹⁶ U.S. Coast Guard, “Polar Security Cutter Program,” webpage, undated. As of September 16, 2019: <https://www.dcms.uscg.mil/Our-Organization/Assistant-Commandant-for-Acquisitions-CG-9/Programs/Surface-Programs/Polar-Icebreaker>

¹⁷ Department of Homeland Security, *Department of Homeland Security Manual for the Operation of the Joint Requirements Integration and Management System*, Washington, D.C., DHS Instruction Manual 107-01-001-01, April 4, 2016, p. 3.

helicopters; HC-130 aircraft; airports and airfields; ports; National Security Cutters; drones, medical evacuation capabilities; satellite and other communications networks; rescue coordination centers; Coast Guard sector specialist personnel; and data on maritime traffic, weather, ice, and other conditions important for on-scene response. The variety of these examples help highlight the diversity of capabilities that are needed for Arctic operations.

Second, we examined shortfalls in the existing capabilities within the study scenarios. We found that the shortfalls varied as much or more as the existing capabilities. In general, these gaps—defined as capabilities not readily available or planned to be available to the Coast Guard—fell into the broad categories of communications, awareness, and response.

Communications are critical for Coast Guard (and a variety of other) missions. Problems in the Arctic include patchy and unreliable voice communications and extremely limited or nonexistent bandwidth.

An important aspect of awareness is understanding and assessing situations. In the Arctic, the term “operating blind” is used to describe the level of awareness: Threats and hazards are often poorly understood, and those that are identified cannot be regularly monitored because the capacity and capability to do so do not exist. There is particular concern about threats and hazards that do not or cannot actively emit signals, such as “dark” vessels and fast-moving ice. The ability to fuse information from individual data streams into a unified picture of activity and conditions is also challenging.

Finally, the ability to respond to a threat or hazard in the Arctic is extremely limited and strongly depends on the proximity to the incident location of scarce material assets, people, and supporting infrastructure. Naturally, reducing the incidence of threats and hazards is an important first step. However, if prevention fails, ensuring that the right people and assets are available and can be deployed rapidly to the right place is necessary. Responders must consider harsh operating conditions and the few resources available for coordination. Ensuring sufficient sustainment of operations is the next challenge. Access to appropriate follow-up materiel and procedures, including medical care and hazardous material clean-up, is not guaranteed.

This study was not intended to provide recommendations on specific ways to mitigate gaps. However, the diversity of ways in which workshop participants elected to shore up capability and capacity in the context of different scenarios alludes to a rich set of possibilities. No one type of mobile asset, fixed infrastructure, organization, collaboration, or other entity satisfied every potential gap. Rather, combining existing capabilities and increasing their capacities, while diversifying capabilities to support communications, awareness, and response, is necessary to tackle current and future vulnerabilities in the Arctic.

Specific types of mitigation options considered include the following:

- installing additional communications infrastructure and leveraging the growing number of commercial communications satellites in polar orbits
- exercising communications tactics, techniques, and procedures to train service members in overcoming decisionmaking challenges associated with weak communications channels

- investing in remotely controlled air, sea, and amphibious craft for persistent wide-area surveillance, especially if these assets are networked together and to sensors on other assets to provide a common operating picture
- updating data-gathering and database construction processes to enhance automation and improve data quality, make data accessible, and fuse information into a common operating picture
- developing operating concepts, plans, and investment strategies that recognize the need for agile first-response assets as well as infrastructure and logistics to sustain longer-term operations and (literally) conduct heavy lifting
- investigating remotely controlled airlift and oil-spill response capability
- adding small-boat landing capability to icebreakers
- increasing the number of forward operating locations and resources, including local and mobile elements
- prepositioning key response items in partner communities
- enforcing new industry self-help regulations
- improving long-term relationships with native communities (including through additional Coast Guard cultural training).

One issue that concerns me greatly is the characterization—in the media at least—of the United States’ Arctic operating challenges as merely an “icebreaker gap.”¹⁸ I do think that the United States is dangerously limited in its ability to break ice. However, while this generalization of Arctic challenges might be convenient, it distracts from the broader problem of systemic capability shortfalls, as detailed earlier.

It is just as important to recognize that concerns about Arctic security and closing capability gaps are more than just Coast Guard issues—they are matters of national relevance. In addition to taking specific actions such as those outlined earlier, the United States has the opportunity to continue work in the Arctic Council and Arctic Coast Guard Forum. Finding ways to keep discussion channels open for important military security communications is also vital. The United States might also reconsider ratifying the United Nations Convention on the Law of the Sea. Historically, Arctic cooperation and governance has benefited when stakeholders operate under the same frameworks.

Change anywhere necessitates a re-evaluation of security needs and capabilities. In this respect, the Arctic is not exceptional. Consider continuing efforts by the U.S. to re-evaluate military operations in antiaccess environments in response to evolving threats or how the use of drone boats and synthetic drugs is challenging methods of drug interdiction.

This is a time for the United States to continue engaging in the Arctic.¹⁹ Fixing the security void does not only involve military might, but also includes providing prevention and response services that Americans expect from their government, whether they live in Los Angeles, Houston, New York, or Utqiagvik, Alaska.

¹⁸ Gao, 2018.

¹⁹ Pezard et al., 2017; Abbie Tingstad and Stephanie Pezard, “What Does 'America First' Look Like in the Arctic?,” *RAND Blog*, May 25, 2017. As of September 16, 2019: <https://www.rand.org/blog/2017/05/what-does-america-first-look-like-in-the-arctic.html>.