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**EXPANDING OPPORTUNITIES, CHALLENGES, AND
THREATS IN THE ARCTIC: A FOCUS ON THE
U.S. COAST GUARD ARCTIC STRATEGIC OUTLOOK**

HEARING

BEFORE THE

SUBCOMMITTEE ON SECURITY

OF THE

COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

DECEMBER 12, 2019

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED SIXTEENTH CONGRESS

FIRST SESSION

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EXPANDING OPPORTUNITIES, CHALLENGES, AND THREATS IN THE ARCTIC: A FOCUS ON THE U.S. COAST GUARD ARCTIC STRATEGIC OUTLOOK

THURSDAY, DECEMBER 12, 2019

U.S. SENATE,
SUBCOMMITTEE ON SECURITY,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 10 a.m. in room SD-562, Dirksen Senate Office Building, Hon. Dan Sullivan, Chairman of the Subcommittee, presiding.

Present: Senators Sullivan [presiding], Wicker, Fischer, Young, Scott, Markey, Cantwell, Blumenthal, and Sinema.

OPENING STATEMENT OF HON. DAN SULLIVAN, U.S. SENATOR FROM ALASKA

Senator SULLIVAN. Good morning. This hearing will now come to order.

I am pleased to welcome our distinguished panel of witnesses today to share with the Subcommittee their perspectives on the expanding opportunities, challenges, and national security threats in the Arctic and how the Coast Guard can shape its Arctic strategy to best protect U.S. interests in the region.

The changes occurring in the Arctic are monumental. For the first time in living history, receding sea ice is opening up an entire ocean to the world. This provides access to previously unreachable natural resources. Estimates are that 30 percent of the world's undiscovered natural gas, 13 percent of its undiscovered oil, and an abundance of rare earth and other minerals exist in the Arctic region.

It opens up formerly impassable maritime traffic routes that are thousands of nautical miles shorter when compared to using the Suez or Panama Canals potentially saving shippers weeks in travel expenses.

There is a whole realm of economic opportunity that did not exist 10 or 20 years ago, and other nations have already taken major steps to capitalize on this prospect.

We can see Arctic nations like Russia who have built ports, icebreakers, maritime traffic infrastructure, and ice-hardened shipping vessels to expand their commercial activity in the Arctic.

Even non-Arctic nations like China are making major investments in Arctic development. They are building icebreakers and

vessels capable of operating in the high latitudes even though they have no sovereign territory near any Arctic waters.

The U.S., one of eight actual Arctic nations, has lagged behind in developing the infrastructure needed to meet the challenges and opportunities brought on by this expanding economic opportunity. We only have one operational heavy and one medium polar icebreaker. Compare this to the growing fleet of over 50 Russian icebreakers, and they are building many more. And even China's icebreaking capacity will surpass ours by 2025 or earlier.

The nearest Department of Defense strategic seaport is 1,500 nautical miles from the Arctic. That is like putting our Coast Guard resources in Miami and asking them to respond to distress calls in Boston.

The level of infrastructure development, domain awareness, hydrographic mapping, and reliable communications are far from sufficient to support the current and projected maritime traffic through the region.

Overcoming these hurdles will take a whole-of-government effort, working with industry, NGO partners, Arctic communities, and strong international cooperation to enable the safe flow of commerce and protection of the natural Arctic environment.

A key component of the U.S. Government strategy for managing the changing landscape in the Arctic is the U.S. Coast Guard. The Coast Guard has long been at the forefront of Arctic operations. They have been leading heroic rescue missions there for more than 150 years, including the overland relief expedition in 1897 that saved the lives of 265 whalers iced in at Point Barrow.

Recognizing the vital service the Coast Guard provides for our nation, I am pleased to announce today that my Ranking Member, Senator Markey, and I have formed the Senate Coast Guard Caucus, along with a number of other Senators who will come together in a bipartisan manner to bolster and strengthen this important branch of the armed services. I am very glad about this, and to be honest, I am quite surprised that there was no Senate caucus prior to today. So that is good news.

I am continually impressed with the valiant actions of the men and women of the U.S. Coast Guard and look forward to the great work this newly formed caucus will do to support their service.

We are making progress slowly but surely on many of these Arctic issues. The Coast Guard, for example, in April of this year released an updated Arctic strategic outlook that laid out their lines of effort for meeting the challenges of increased maritime activity in the region. Those lines of effort will include: enhancing their capability to operate in the Arctic, cooperating with partners and allies to uphold rules-based order in the region, and innovating new solutions to provide crisis response, law enforcement, and maritime transportation management. The Coast Guard also awarded a contract for the construction of up to three heavy icebreakers, the first new heavy icebreakers to be built by the United States in over 40 years. These are part of the six new icebreakers authorized by Congress in last year's NDAA, a bipartisan provision in that bill that I was proud to have authored. Getting these icebreakers is an important step in the right direction for building our capacity to operate in the Arctic, but we need to do more.

Just yesterday, the Full Committee of the Commerce Committee passed the Arctic Shipping Federal Advisory Committee Act, which is another important step with regard to our Arctic strategic interests.

I will also soon be introducing legislation to further advance the collaboration between the Navy and the Coast Guard to increase their effectiveness for carrying out sustained operations in the Arctic. This bill will direct the strategic focus, infrastructure investment, and capability development needed to rapidly respond to crises in the Arctic, to secure our sovereignty through persistent presence in this region of increasing great power competition. And part of the reason for this hearing is to help inform that bill as we are putting the final touches on it.

With that, I want to thank our witnesses today. We have two panels. So we will be efficient in our questioning. Here to discuss this very important topic are some of the nation's foremost experts as well as the Vice Commandant of the Coast Guard, Admiral Ray, who I am pleased is here.

I now want to recognize Senator Markey for any opening statement he may have.

**STATEMENT OF HON. EDWARD MARKEY,
U.S. SENATOR FROM MASSACHUSETTS**

Senator MARKEY. Thank you, Mr. Chairman. And thank you for having this very important hearing.

And to our distinguished witnesses, thank you for joining us this morning.

The frozen Arctic is a hotbed of challenges for security in maritime transportation, international relations, and on-the-ground community needs. I believe the primary underlying cause of these challenges is climate change. We cannot ignore the effects of the climate emergency in the Arctic. It is happening right before our eyes. NOAA's 2019 Arctic report card published on Tuesday recounts record warming and ice melt in the Arctic. Unprecedented wildfires raged across Greenland and Siberia this summer. And Arctic communities are under threat from the rapidly thawing ice and permafrost. The Arctic is warming at least twice as fast as the global average, and between 1992 and 2019, Arctic sea ice shrank by nearly 1 million square miles, an area larger than the State of Alaska. This melt is opening new trade routes, flooding towns, and unlocking marine resources faster than we can keep up.

These changes have consequences far beyond the Arctic Circle. The Arctic is our planet's air conditioner. It sustains the ocean circulation that regulates weather on the U.S. east coast. And melting Arctic ice sheets raise sea levels across the world.

I had the opportunity to visit Greenland in 2007 and learned firsthand how climate change affects Arctic ice. Greenland's ice sheet is thousands of feet thick and the height of five and a half Empire State Buildings, enough to raise global sea levels by more than 20 feet. The ice sheet is now melting twice as fast as when I visited 12 years ago. It is pouring almost 300 billion tons of melt water into the ocean every year, contributing to sea levels on the U.S. east coast rising three to four times higher than the global average.

President Trump may have been unsuccessful in his bid to purchase Greenland, but we already have more Greenland than we know what to do with piling up on the shores of Massachusetts.

As you will hear from our witnesses, climate change in the Arctic poses a security threat both in the Arctic and beyond. China and Russia are putting a new spin on the term “cold war” as they build their strategic presence in the frozen Arctic. Increased commercial use of a changing Arctic presents risk for maritime safety as ships navigate volatile new routes. Thawing ice and permafrost threaten Arctic communities’ food security and their very way of life. Oil spills and other hazards threaten the fragile Arctic ecosystem. All of these threats put additional strain on our Coast Guard as they fulfill their many important missions in the Arctic.

The Coast Guard must also address the vulnerability of their own facilities and operations to extreme storms, flooding, changing ice conditions, and other climate impacts.

In this year’s Coast Guard’s reauthorization, I worked to secure language encouraging the Coast Guard to report on its most climate vulnerable installations as the rest of the Department of Defense has done. But reporting is not enough. We must rethink our approach to infrastructure planning from our southernmost to northernmost installations, and climate change must be at the center of our calculus.

The 2019 NOAA Arctic report card makes the climate science clear. The Arctic is experiencing unprecedented warming and loss of snow and ice. The Coast Guard’s Arctic Strategic Outlook makes the security risk of a warming Arctic clear. We are not adequately prepared to respond to the Arctic climate emergency. The Coast Guard must better incorporate climate considerations in its missions and planning, and Congress must support our Coast Guard to ensure they have the resources and facilities to do so. We must maintain leadership in our scientific missions to ensure we can understand rapidly changing conditions in the Arctic, as well as support our diplomatic goals. Most importantly, we need bold and transformative climate action now.

And I agree with the Chairman of the Committee that it is important for us to, on a bipartisan basis, have a Coast Guard Caucus. This is going to become a very critical part of the long-term strategic thinking of the United States, and it is important that, on a bipartisan basis, we partner to create this caucus now.

So I thank you, Mr. Chairman. I yield back.

Senator SULLIVAN. Thank you, Senator Markey.

Well, I want to welcome our very distinguished witnesses today. On our first panel, we have Heather Conley, Senior Vice President for Europe, Eurasia, and the Arctic, and the Director of the Europe Program at the Center for Strategic and International Studies; Ms. Sherri Goodman, Senior Fellow, Polar Institute and Environmental Change and Security Program, the Woodrow Wilson International Center for Scholars; and Michael Sfraga, Director of Global Risk and Resilience Program, and Director of the Polar Institute also at the Woodrow Wilson International Center for Scholars.

Each of you will have five minutes for your opening statement. A longer statement can be included in the record, if you would like. We will start with you, Ms. Conley.

**STATEMENT OF HEATHER A. CONLEY, SENIOR VICE
PRESIDENT, EUROPE, EURASIA, AND THE ARCTIC;
AND DIRECTOR, EUROPE PROGRAM, CENTER FOR
STRATEGIC AND INTERNATIONAL STUDIES (CSIS)**

Ms. CONLEY. Senator Sullivan, thank you and Senator Markey so much for holding this very important hearing. And I congratulate you on the bipartisan Coast Guard caucus, as well as continued work in bringing the Navy and the Coast Guard together in this joint mission.

What a timely moment to have this hearing. It is a great time to take stock of what we have accomplished in 2019, but, more importantly, think about what must be done in 2020. And I think exactly the NOAA Arctic report card from two days ago, in highlighting so many profound changes in the Arctic, one of its most important points was the lack of sea ice formation in the Bering Sea, again very important to America's territorial waters and its coastline.

So let us take a look at 2019. Absolutely the exciting news that we now have in process: the construction of one heavy polar security cutter.

And I think the other two elements of 2019 certainly was Secretary Mike Pompeo's speech in Finland in May of this year, which was the first time a senior official placed the Arctic in a public speech within a great power competition framework. But that was very surprising and shocking to our allies. And I think that reminds us that we have to work more closely with our allies as we look at the Arctic increasingly through this lens.

And of course, as you rightly note, Greenland became much more a topic of conversation and its strategic importance. But again, this is all part of the strategic awakening that we are having regarding the Arctic.

But I have to say perhaps the year closed out with the most troubling news to me, which was 4 days ago the announcement by the Russian military that they are placing S-400s in each of their Russian military units across the Russian Arctic, calling it a de facto anti-missile dome. So today we are already potentially losing access to the Arctic because of Russia's growing military footprint.

You have asked us here to assess the Coast Guard's updated Strategic Outlook for the Arctic. And of all of us that have worked so closely with the Coast Guard over the last decade as it is thinking about the Arctic, the Coast Guard has faithfully tried to protect America's sovereignty in the Arctic. They have warned us that they need more resources. They have detailed what they have required, and they have done the best with what they have. This is no longer sufficient. The Coast Guard simply needs a dedicated budget to build the Arctic infrastructure that it needs, and it needs strong and sustained civilian leadership to make sure that that infrastructure is in place.

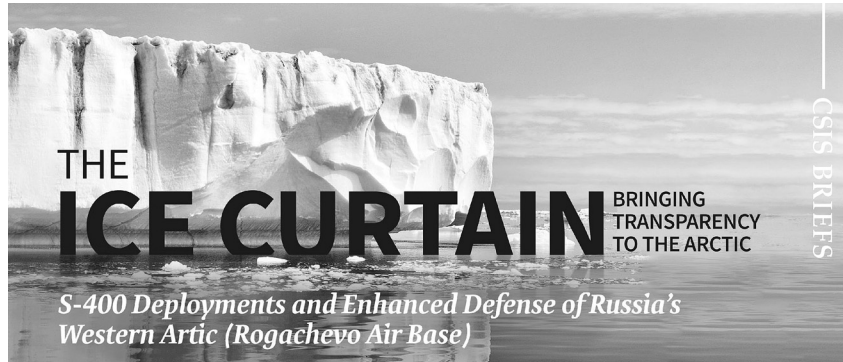
The challenges in the Arctic are great regarding security. In fact, the United States has two Arctics. We have the north Pacific/North American Arctic—and of course our requirements to support Alaska only continue to grow as we see increased commercial traffic—principally Chinese LNG carriers that are going to the Yamal Peninsula. But we also have the north Atlantic/European Arctic,

which is vital to protecting the north Atlantic sea lines of communication, and we are seeing a dramatic up-tick in Russian submarine activity in the north Atlantic. So, we not only have one challenge in the Arctic, we have two.

The Coast Guard frequently refers to “presence equals influence.” I could not agree more with that equation. And the two states that are building presence in the Arctic are, of course, Russia and China. Russia is, in my view, our most significant near-term security challenge in the Arctic. Although I know the U.S. Government continues to be very focused on China, and we do have a very important long-term strategic challenge there, Russia presents the near-term challenge. And CSIS has been in partnership with the National Geospatial-Intelligence Agency to detail Russia’s military footprint using satellite imagery. And if it meets the Committee’s approval, I would like to put for the record some of these satellite imageries and the analysis that we have included.

Senator SULLIVAN. Without objection.

[The information referred to follows:]



By Matthew Melino, Heather A. Conley, and Joseph S. Bermudez Jr.

MARCH 2020

The Ice Curtain: Bringing Transparency to the Arctic is an ongoing collaborative series between the CSIS Europe Program and NGA.

THE ISSUE

The deployment of S-400s to Rogachevo air base in the Novaya Zemlya archipelago is a critical part of Russia's efforts to secure its Northwest Arctic territory and expand its defensive capabilities. By deploying S-400s to Rogachevo, Russia has enhanced its radar coverage around the Novaya Zemlya archipelago and raised the potential costs for NATO in the event of a conflict in the region.

BACKGROUND

Rogachevo air base is located approximately nine kilometers north-northeast of Belushya Guba (Belushya Bay) on the southern Yuzhny Island of the Novaya Zemlya archipelago. This air base routinely hosted long-range strategic bombers and fighter aircraft to intercept U.S. reconnaissance aircraft in the Arctic during the Cold War.¹ Today, Rogachevo is commanded by the 45th Air Force and Air Defense Army of the Russian Northern Fleet, which was formed in December 2015.²

Satellite imagery indicates that sometime between July 2014 and August 2015 a new air defense missile base was established west of the Rogachevo air base, accompanied by a regiment-sized unit equipped with the S-300P (NATO reporting name: SA-10 Grumble) surface-to-air missiles (SAM).³ Upgrades to air defense capabilities on Novaya Zemlya occurred during 2018 and 2019 and included the deployment of additional radar, electronic warfare (EW), signals intelligence forces, and related equipment in

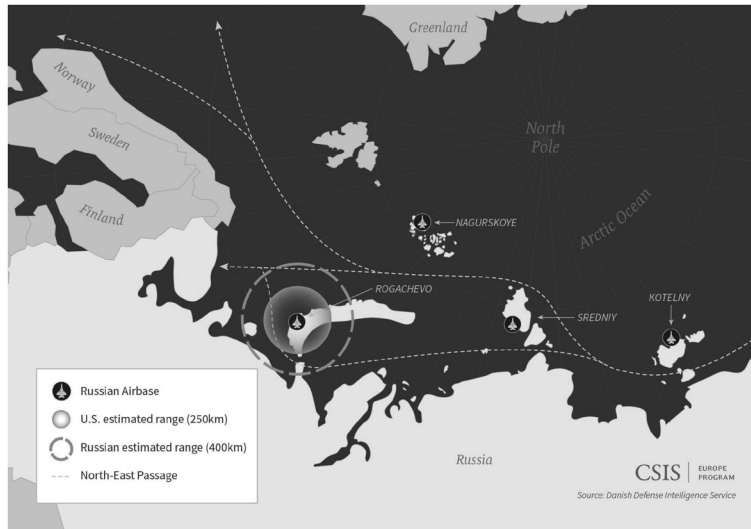
addition to the deployment of the S-400 (an upgrade from the S-300P), with the latter occurring during the July-August 2019 time frame.

On September 16, the Russian Northern Fleet Press Service reported that the redeployment of forces and conversion to the S-400 systems were complete.⁴ A few days later, on September 20, the Press Service published a report on the ceremony celebrating the unit's achievement of operational status.⁵ Why is this important?

ANALYSIS

THE IMPORTANCE OF S-400S IN THE ARCTIC

Russia's military posture in its Western Arctic reflects the Soviet legacy of bastion defense comprised of "concentric circles" designed to protect strategic territory.⁶ The S-400s provide more advanced radar and EW systems capabilities, which expand the range of Novaya Zemlya's air defenses. The airspace monitored and controlled from Rogachevo air base has now increased to 600 kilometers for detection and 400



kilometers for engagement, according to Russian assessments, although Western analysts estimate the range to be between 200-250 km based on the system's current configuration.⁷ The S-400 reportedly reduces deployment time from stowed position to launch to five minutes and complements previously implemented enhanced defensive measures, including the establishment of two Arctic motorized brigades, an Arctic naval group, and a command and control center at the refurbished Severomorsk-1 air base.⁸

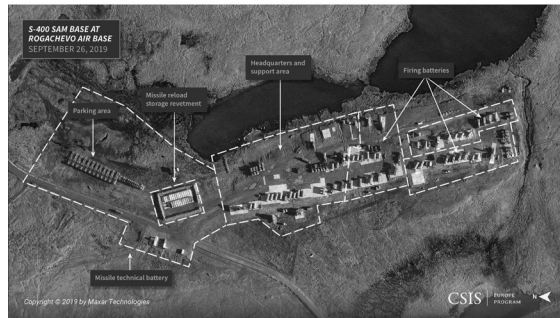
Russia's priority in the Arctic is to defend its northwest coast and the surrounding maritime domain around the Northern Fleet, Russia's most capable force, which includes ballistic missile submarines and surface combatants that are deployed worldwide, including its only operational aircraft carrier.⁹ Russia's efforts to modernize its Arctic military posture include refurbishing air bases and deploying advanced systems to defend and deny access to strategic bastions. The deployment of S-400 systems to Rogachevo air base enhances radar coverage around the Novaya Zemlya archipelago, plugging potential gaps between Nagurskoye air base on Alexandra Land and radar stations on the Kola Peninsula.

As Russia seeks to increase the Northern Sea Route's economic viability, Russia perceives greater strategic vulnerability in its Far North.¹⁰ The S-400s and similar coastal defense systems deployed across the Russian Arctic (Alexandra Land, Kotelnyy, and Wrangel Island, among others) address this vulnerability as the growing network of assets seeks to restrict freedom of action and lay the groundwork for effective anti-access/area denial (A2/AD) operations.

The S-400s, however, pose a challenge to NATO in the region, potentially complicating freedom of operation in the North Atlantic and Norwegian and Barents Seas. The system reinforces Russia's bastion defense and expands Russia's defensive capabilities potentially beyond the Barents Sea while also complicating future efforts to reinforce regional allies during a time of crisis. On an operational level, the S-400 raises the potential costs for allies in the event of conflict, deterring them from deploying assets to the region.

RUSSIAN USE OF BASTION DEFENSE

Russia continues to demonstrate that its growing capabilities in the Arctic can be deployed beyond the Kola



Peninsula. In April, Russia issued a Notice to Airman (NOTAM) for the Norwegian Sea area along Norway's northern coast, where Russian "strike forces," including anti-submarine Tu-142s, long-range supersonic missile carrier-bombers Tu-22M3 aircraft, and cruisers and submarines, exercised bastion defense. It was reportedly the first time Russia has conducted such a complex exercise outside of the Kola Peninsula and Barents Sea, suggesting that Russia may be looking to expand its bastion defense and sea denial capabilities toward the Greenland-Iceland-United Kingdom (GIUK) Gap. Although incomplete, Russia's layering of coastal defense systems enhances deterrence against and costs to the U.S. and NATO presence in the Arctic.

DESCRIPTION

Satellite imagery of Rogachevo shows its S-400 air defense missile base located at 71.6067470 N, 52.3876030 E, approximately 3.2 km west of the air base. It occupies an irregular shaped area that measures approximately 706-meters-by-180-meters, encompasses approximately 104,600 square meters, and is organized into a regiment-sized unit with:

- A headquarters and support area that appears to include the regimental headquarters, target acquisition battery, missile technical battery, transport company, and maintenance company. Among the equipment visible are a number of 55K6E command post vehicles, a 91N6E Big Bird acquisition



and battle management radar, a LEMZ 96L6-1/96L6E acquisition radar, two 5P85SM/SE2 self-propelled transporter erector-launchers (likely as spares or for training), and a number of support vehicles and trailers.

- Three firing battery areas, each with four 5P85SM/SE2 self-propelled transporter erector-launchers and a single 92N6E Grave Stone engagement radar—all of these are positioned on concrete pads—and a number of support vehicles.¹¹
- A 42-meter-by-60-meter missile reloading storage revetment that contains at least 39 S-400 twin missile reload packs (some double-stacked).
- Several support, storage, and parking areas are located around the base. The largest of which is the missile technical battery's parking area, which contains 12 5T58-2 missile transporters and what may be a number of trailers.

At present, there are no permanent structures at the base. Major items of equipment identified in recent satellite imagery include:¹²

- 4+ 55K6E command post vehicles
- 1 91N6E Big Bird acquisition and battle management radar
- 1 LEMZ 96L6-1/96L6E acquisition radar
- 3 92N6E Grave Stone engagement radars
- 14 5P85SM/SE2 self-propelled transporter erector-launchers
- 12 5T58-2 missile transporters
- 39 S-400 twin missile reload packs (some double-stacked)
- 90-100 Support vehicles, trailers, and shipping containers of various types

CONCLUSION

Russia's deployment of the S-400 system on Rogachevo air base signals the Kremlin's intent to secure its northwest Arctic territory, exercise its military capabilities, and protect its most vital military assets in the Far North. ■

Matthew Melino was an associate fellow with the Europe Program at the Center for Strategic and International Studies (CSIS) in Washington, D.C. Heather A. Conley is senior vice president for Europe, Eurasia, and the Arctic and director of the CSIS Europe Program. Joseph S. Bermudez Jr. is senior fellow for Imagery Analysis at CSIS.

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The Center for Strategic and International Studies' Europe Program and the National Geospatial-Intelligence Agency partnership uses unclassified geospatial imagery and data to produce new, timely, and accurate reporting on Arctic construction and modernization of civilian, dual-use, and defensive infrastructure. For more info, read the **Tearline Program Explainer**.

To read more, visit NGA's Tearline article or download the Tearline app from the Apple Store or Google Play.

This content also syndicates to the Office of the Director of National Intelligence's website intelligence.gov, which is a transparency effort to better explain certain strategic, economic, and humanitarian IC missions to the public.

ENDNOTES

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11. The concrete pads are themselves constructed from a number of smaller concrete pads that are connected by steel joints to allow them to flex somewhat on top of the semi-stable tundra they sit upon.
12. These numbers should be viewed cautiously as there are a number of pieces of equipment present that are not clearly identifiable and are not included in these totals.



By Matthew Melino, Heather A. Conley, and Joseph S. Bermudez Jr.

MARCH 2020

The Ice Curtain: Bringing Transparency to the Arctic is an ongoing collaborative series between the CSIS Europe Program and NGA.

THE ISSUE

In April 2017, Russia unveiled an Arctic Trefoil military base on Alexandra Land Island in the northeast Barents Sea. It is Russia's northernmost military outpost and the second of its kind, following the completed Northern Clover on Kotelny. Alexandra Land is also home to the upgraded Nagurskoye Airbase. Rather than ensuring these new Arctic bases remain secret, the Russian government is encouraging virtual tours of its state-of-the-art, clover-like compound, which is designed to withstand severe weather. Russia's military posture on Alexandra Land provides air, sea, and land capabilities to reinforce Russia's multilayered maritime and air denial capabilities; safeguard the Kola Peninsula, which is home to the Northern Fleet's headquarters and Russia's advanced Arctic land, air, and naval assets, including its nuclear arsenal and second-strike capabilities; and ensure Russia's access to and control over the Northern Sea Route (NSR). Geographically, Alexandra Land's proximity to the Greenland-Iceland-Norway (GIN) and Greenland-Iceland-United Kingdom (GIUK) gaps and its increased capabilities could disrupt NATO's vital sea lines of communication (SLOC) between North America and Europe, hindering U.S. military reinforcement to Europe.

BACKGROUND

Alexandra Land Island (Ostrov Zemlya Aleksandry) is the largest island in Russia's Franz Josef Land Archipelago (Zemlya Frantsa-Iosifa), and its strategic importance to Russia's national defense and presence in the Arctic dates back to the early-1950s.¹ During the Cold War, the former Soviet Union established and maintained the Nagurskoye Airbase—which included the 31st Separate

Radar Company, a meteorological station, a small dirt/snow airfield (known as the Nagurskoye Snow Strip), and likely small signal and communication intelligence collection units. Following the collapse of the Soviet Union, these facilities were substantially reduced to a "FSB [Federal Security Service] border post (30 persons), Arctic specialists (16 persons) and meteorologists (six persons)" who lived and work there.²

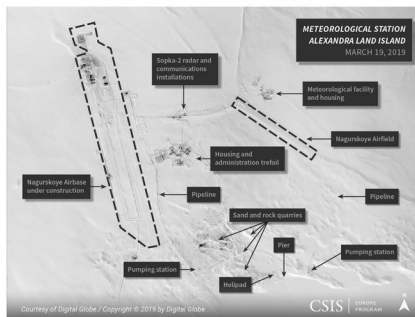
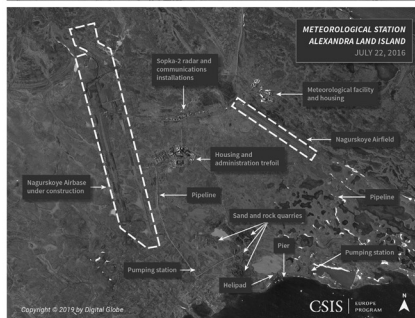
¹During World War II, the Germans maintained a secret weather station on Alexandra Land named Schatzgräber or "Treasure Hunter." Remains of the facility were unearthed by Russian scientists in 2016.

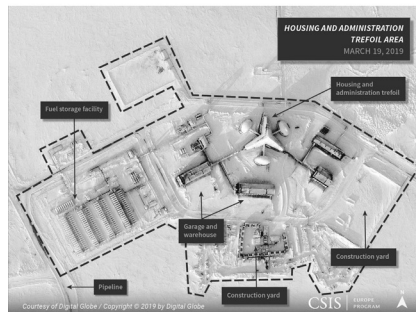
An important shift in Russia's military doctrine in 2008, which elevated the strategic importance of the Arctic, revived Alexandra Land's importance to the Kremlin. The reconstitution of the Nagurskoye airbase and construction of new facilities better secures northern approaches to Russia's coastline, protects its vast mineral and energy resources, and improves monitoring of maritime shipping activity across the NSR. President Putin personally visited Franz Josef Land in April 2010 following a maritime border demarcation agreement in the Barents Sea between Russia and Norway that paved the way for oil and gas exploration along the maritime border.

In 2013, the Russian Defense Ministry announced intentions to reestablish a regular naval and military presence in the Arctic.³ As part of its plan, the meteorological station on Alexandra Land would be supplemented by permanent military facilities including a new airbase, housing and administration trefoil, air traffic control and air defense units and radars, and other support installations.⁴

Construction moved quickly, and in November 2014 units of the Northern Fleet's air defense division deployed to Alexandra Land and were housed in a temporary camp.⁵ The following month, construction of the housing and administration trefoil began. In October 2015, Northern Fleet Commander Admiral Vladimir Korolev stated that construction of the trefoil was 60 percent completed.⁶ By the fall of 2016, the trefoil compound was completed.⁷

In April 2015, it was announced that a new 2,500-meter-long "temporary seasonal airfield covered with ice" would be constructed on Alexandra Land to accept delivery of personnel and cargo.⁸ The following year, it was announced that this new airfield would be extended to a "Class 2 year-round runway [and would] have dimensions of 2.5-kilometers-by-42-meters" and be completed by the end of 2016.⁹ That same month, Russian Defense Minister Sergei Shoigu announced that a group of either Su-34 multirole fighter aircraft or MiG-31 fighters would be based at the new Nagurskoye Airbase, alongside Il-78 tankers.¹⁰ When completed, the airbase and air units would consist of heated hangars for Su-34 or MiG-31 aircraft, an aviation headquarters, a separate radar company, an air traffic control facility, an anti-aircraft artillery battalion, and communications and support subunits. Nagurskoye Airbase would be capable of receiving and basing all types of aircraft, including strategic bombers, and defending itself.¹¹



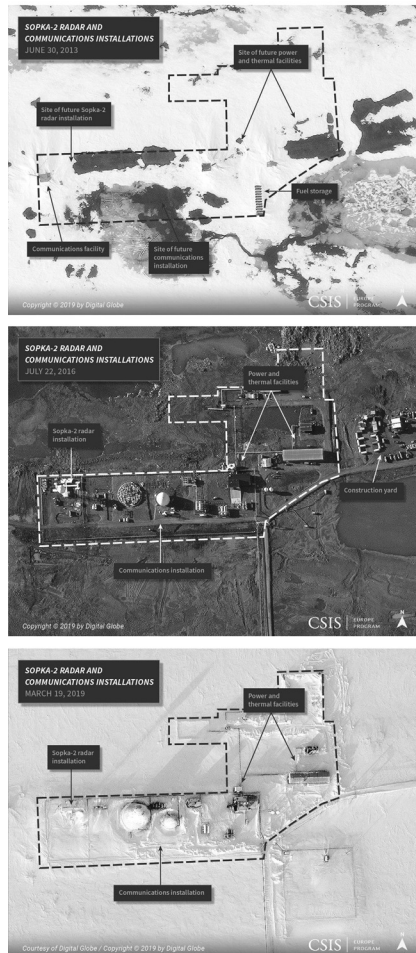


With the upgrade to Nagurskoye Airbase, Russia has established a new air defense division in the Arctic that includes the units on Franz Josef Land (to include Alexandra Land Island) and units on Novaya Zemlya, Severnaya Zemlya, the New Siberian Islands, Cape Schmidt, Wrangel Island, and Tiksi, covering an area of approximately 4,800 km.¹²

ANALYSIS

LOCATION, LOCATION, LOCATION

Alexandra Land's location advances two Russian objectives in the Arctic: (1) it enhances Russian territorial defense and (2) improves monitoring and control over maritime activity across the NSR. As its northernmost military installation, Alexandra Land



pushes Russia's military and forward line of defense further north into the Arctic Ocean, making it a key outpost to observe NATO activity and capabilities. Considering that the four other Arctic coastal states are NATO members, Alexandra Land effectively represents a marker, stymieing what Russia may interpret as NATO expansion in the region. The Sopka-2 radar system improves Russian air and maritime domain awareness in the Arctic and supplements Russia's strategic early-warning radar network to detect U.S. or NATO aircraft and missiles when "flying over the top." Similar to the Sopka-2 radar installation on Wrangel Island, Alexandra Land is part of a larger network covering Russia's northern border in the form of a "protective dome" against foreign aircraft, missiles, and ships.

Alexandra Land is also situated along the NSR. In anticipation of increased maritime activity, the Russian government increasingly seeks to enhance its surveillance, enforcement, and defensive capabilities along the route. There are also growing concerns about potential military activity. In March, the Russian government imposed limits on foreign warships transiting the NSR, requiring 45 days notice for voyages. This new limitation runs counter to international maritime law, as the majority of the international community views the NSR as an international passage, meaning freedom of navigation should be permitted, although it is rarely tested in the Arctic. This is a concerning development that could hinder the conduct of "innocent passage" through the NSR.¹³

DEFENDING AGAINST "OVER THE TOP" THREATS

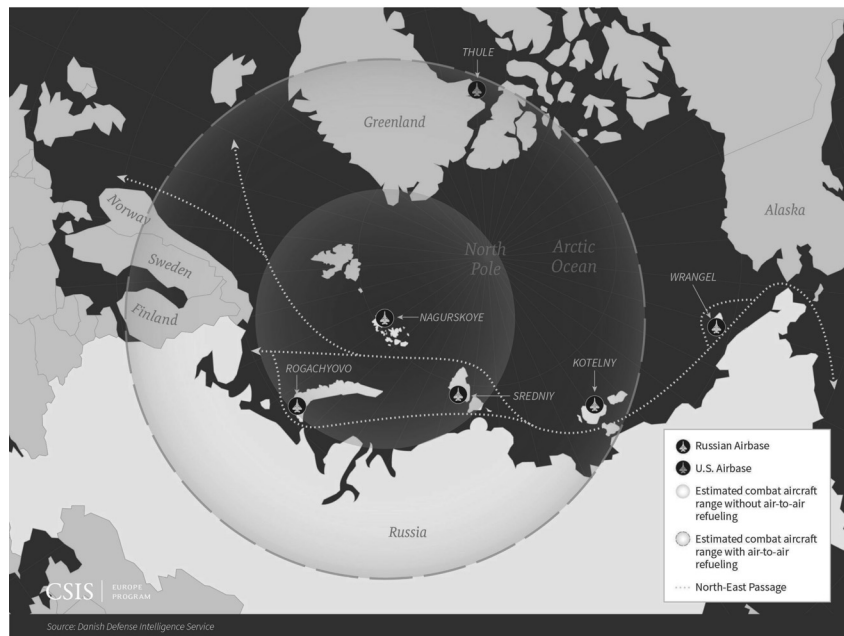
Alexandra Land plays a critical role in protecting the Kola Peninsula, home to the Northern Fleet headquarters at Severomorsk. The Kola Peninsula is a vital center of Russia's military power because of its modernized nuclear submarine fleet, nuclear missiles, and conventional long-range high-precision cruise missiles. Multiple layers of defense consisting of maritime and land capabilities serve two crucial functions: (1) denying access to foreign naval forces and (2) ensuring the survivability and second-strike capability of strategic ballistic missile submarines.¹⁴ The Kola Peninsula is increasingly fortified by Arctic outposts like Alexandra Land, which develops military supremacy out to the Greenland-Iceland-United Kingdom (GIUK) Gap while strengthening Russia's bastion defense capabilities.

In June, displaying its growing military strength in the Arctic, Russia's Northern Fleet tested the Tor-M2DT missile

system, with a missile range of 15 kilometers. According to reports, the Tor-M2DT is likely to be deployed to several remote military installations, including Franz Josef Land. Tests of the new system follow reports of past deployments of notable air defense assets including the S-300 (NATO: SA-10 Grumble) air defense system and the Pantsir-S1 anti-aircraft system. Complimented by the rumored presence of K-300P Bastion-P (NATO SSC-5) coastal defense systems armed with P-800 Oniks anti-ship cruise missiles (NATO: SS-N-26 Strobile) and 4K51 Rubezh (NATO: SSC-3 Styx) anti-ship system, Alexandra Land would be a center point of a developing anti-access/area denial (A2/AD) bubble extending into the international waters of the Central Arctic Ocean and Barents Sea. However, none of the satellite images analyzed capture such equipment.

... BUT WE CAN SPECULATE ABOUT POWER PROJECTION SCENARIOS

While Alexandra Land's primary function is to enhance Russian air and coastal defense, the growing military capabilities on Nagurskoye Airbase suggest that Alexandra Land could be a staging location for future offensive and power projection capabilities. Following the upgrades in 2016 to a "Class 2 year-round runway," Nagurskoye Airbase is now capable of hosting fighter and refueling aircraft, notably Su-34 and MiG-31 fighter jets and Il-78 refueling tankers. Based on a 2018 Danish Intelligence Risk Assessment, Russian aircraft based at Nagurskoye Airbase are capable of reaching the airspace over northeastern Greenland with little prior warning. Supported by air-to-air refueling, Russian combat aircraft could reach Thule Air



Base, a key installation in the U.S. space and missile defense architecture, while simultaneously enlarging Russia's A2/AD bubble into the North Atlantic.¹⁵

The size and scale of recent Russian exercises in the Barents and Norwegian Seas suggests that Russia seeks to practice and test its expanding defense capabilities in the North Atlantic. In August, the Northern Fleet completed a comprehensive naval aviation exercise involving more than 50 aircraft, including fighter jets, bombers, Tu-142 anti-submarine planes, Il-38s, and MiG-31, Su-33, and Su-24 fighter jets in addition to nearly 2,000 ground personnel. The maritime component of the drill included 30 Russian naval vessels, including surface ships, submarines, and supply ships. Norwegian Chief of Defense Haakon Bruun-Hanssen suggested these are exercises designed to block NATO's access to the Baltic Sea, North Sea, and Norwegian Sea, hindering NATO reinforcements to Norway. Importantly, Russian forces for this exercise emanated from Russia's Northern, Baltic, and Black Sea fleets, suggesting that NATO should reconceptualize its understanding of how Russia will defend the Arctic and what resources NATO would draw upon to defend its allies in the face of offensive measures.

CONCLUSION

Alexandra Land and Nagurskoye Airbase increase Russia's air and maritime defense capabilities in the Arctic. The most concerning aspect, however, is Alexandra Land's potential as a staging ground for power projection into the Central Arctic and North Atlantic. The Trefoil compound and its support facilities raise the level of readiness of Russia's Arctic forces potentially to the point where Norway's freedom of action and movement is restricted and potential Allied access to the North Atlantic is cut off. Sending NATO reinforcements to defend Norway would prove challenging, and NATO's freedom of navigation in the Arctic could be reduced.¹⁶ At the moment, however, the satellite imagery does not indicate such an expansion of capabilities is occurring. Future Russian military exercises should provide greater insight into new Russian Arctic capabilities, as well as

Alexandra Land's role in Russia's bastion defense. There are reports of significant quantities of deliveries to Franz Josef Land prior to Tsentr. The United States and NATO must closely monitor and analyze the Tsentr exercise to examine shifts in and changes to Russia's Arctic military posture. ■

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Cover Photo: Wikimedia

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By Matthew Melino, Heather A. Conley, and Joseph S. Bermudez Jr.

MARCH 2020

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THE ISSUE

Fortified air defense units along the Russian Arctic coast were staples of the Soviet Union's national defense strategy for the Arctic. The coastal defense units at Tiksi (Yakutia, Sakha Republic) played an important role in securing Arctic air space and fortifying Russia's northern coast. Geographically, Tiksi is approximately 2,600 kilometers from the United States (Alaska). The Russian government has repeatedly announced ambitious plans to expand Tiksi Airbase to include 11 new structures consisting of a dormitory and administrative buildings, a diesel-run power station, and water and fuel reservoirs. The base was designated to receive and operate a regiment of sophisticated S-400 surface-to-air missiles to enhance air defense, which could later be supplemented by "radiotechnical regiments that monitor the defended airspace."¹ However, current satellite imagery does not show evidence of the S-400 system or the considerable expansion. Russia appears to be significantly behind in its plans for Tiksi, or unable to send permanent equipment as other Arctic bases are of higher priority.

Tiksi's completed development would represent a fusing of Russia's military needs and its ambitious economic plans, specifically as it relates to new construction on Tiksi Airbase and anticipated additional infrastructure. These "dual-use" features combine Russian military presence for territorial defense and power projection with capabilities designed to also address civilian security needs such as search-and-rescue, oil spill response and maritime domain awareness in anticipation of increasing commercial shipping through the Northern Sea Route (NSR). "Dual-use" aspects of Russia's military and infrastructure is increasingly a standard feature in its Arctic presence along the NSR. However, delays and incomplete outposts may suggest financial limitations are restricting to Russia's Arctic ambitions.

BACKGROUND

Since World War II, there have been at least three Russian air facilities on Tiksi—Tiksi North Airbase (abandoned, 72.038300° 128.471993°), Tiksi West Airbase (abandoned, 71.693779° 128.680116°) and the current joint-use Tiksi Airbase and Airport (71.702462° 128.895752°). During the Cold War, Tiksi Airbase maintained an air detachment

from the 37th Air Army of the Supreme High Command, in addition to long-range strategic bombers as well as intelligence collection, communications, and early warning units in the surrounding area. Following the collapse of the Soviet Union, many Arctic military facilities were either abandoned, ceded to local government, or deteriorated due to a lack of maintenance and change of defense priorities. In the case of Tiksi Airbase, a detachment of Tu-95MS

strategic missile-carrying bombers (The North Atlantic Treaty Organization or [NATO] refers to the TU-95 as the Bear Bomber) was withdrawn and replaced by a separate combined air squadron that included An-26 transport aircraft (NATO reporting name Curl), and helicopters for search-and-rescue operations.² But by September 2012, even this air detachment was withdrawn from Tiksi due to significant runway deterioration. The airbase subsequently closed in October 2012 for runway repairs.³

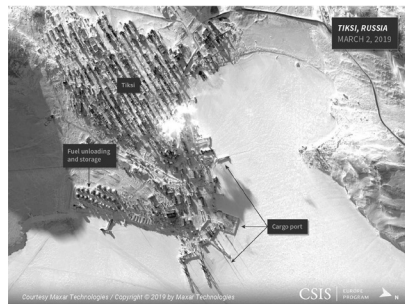
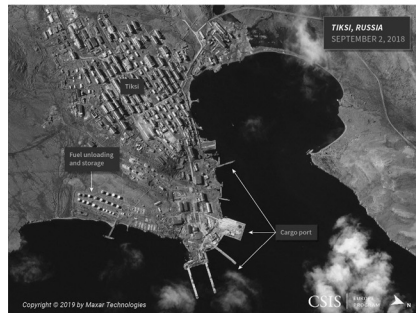
SATELLITE IMAGERY OF TIKSI FACILITIES DOES NOT MATCH OFFICIAL RUSSIAN ANNOUNCEMENTS

On May 6, 2019, Secretary of State Pompeo stated that “Russia has been able to renovate old bases and infrastructure. It claims to have built 475 new military sites, including bases north of the Arctic Circle, as well as 16 new deep-water ports. It secures this presence through sophisticated new air defense systems and anti-ship missiles.” However, the limited developments and minimal military equipment on Tiksi suggest it may not be a key outpost for Russia’s enhanced presence, and instead, merely an aspirational project.

Critical to Russia’s ability to assert air dominance in the Arctic is the refurbishment and construction of airbases capable of hosting civilian and military aircraft. The planned refurbishment of Tiksi Airbase began in 2013 and was to include the development of new military facilities and the deployment of new units in the area. Progress has been very slow to non-existent, and original construction focused solely on runway repairs, allowing the airbase to host a multitude of aircraft. This includes the permanent basing of transport and search-and-rescue helicopters, as well as the periodic deployment of interceptor and transport aircraft, Tu-95MS and Tu-160M (NATO reporting name Blackjack) long-range strategic missile-carrying aircraft, and Il-78 refueling aircraft at the airbase.⁴

By 2014, the Tiksi runway was complete and the base was used by airborne troops for field exercises. A unit of Mi-26 heavy transport helicopters (NATO reporting name Halo) was deployed from the Uprun Airbase, Chelyabinsk, to form a mixed aviation unit with Mi-8/-17 helicopters (NATO reporting name Hip). These helicopters subsequently supported the construction of the new arctic base on Koteln. ⁵ During 2015, it was reported that an S-400 Triumf surface-to-air missile (NATO reporting name SA-21 Growler) regiment had been deployed in the Tiksi area.⁶ The following year, in July 2016, it was announced that Tiksi Airbase would become a permanent base for high-altitude

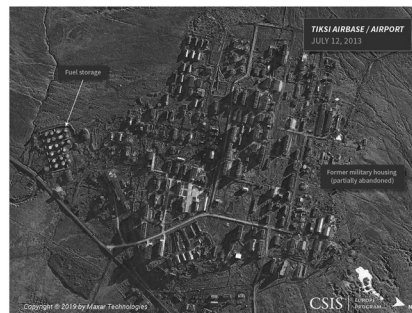




MiG-31 (NATO reporting name Foxhound) interceptors.⁷

In August 2018, Northern Fleet commander Admiral Nikolai Yevmenov announced that a new air [defense] division was established, and troops would deploy to the Novaya Zemlya archipelago and the Arctic towns of Dikson and Tiksi. Their mission, according to Yevmenov, was to ensure the safety of airspace over the NSR.⁸ Five months later, it was reported that the Northern Fleet's new air defense base at Tiksi was 95 percent complete and that it would consist of 11 interconnected structures including a dormitory, administrative building, a diesel-run power station, water and fuel reservoirs, cantina, garages, and more. Reportedly, this base would operate a regiment S-400 surface-to-air missiles and would later be supplemented by "radiotechnical regiments that monitor the defended airspace."⁹

Despite the many announcements, these military systems do not appear in the satellite images analyzed. While this does not rule out the possibility that they will be stationed on Tiksi in the future, it is important to note that Russian statements about Tiksi may be overblown and designed to deter foreign nations from the region. In fact, satellite images acquired between 2013 and 2019 show very little construction. The primary features of the Tiksi area are the town, the port of Tiksi, and the Tiksi Airbase, located 6.5 kilometers to the north. Scattered throughout the area are numerous small fuel storage and communications facilities, including an unusually high number of COMINT and SIGINT facilities, such as an old KRUG II CDAA (direction finding) installation (71.660426° 128.676842°)—which would likely be used to detect U.S. or NATO intelligence. It is unclear from satellite imagery alone how many of these





facilities are currently active.

While minor construction took place, the physical structure and size of the town and port of Tiksi did not change significantly during this time period.

Tiksi Airbase consists of a single runway that measures 3,100-meters-by-60-meters, a single taxiway, civilian airport facilities, and military airbase facilities—both showing only rudimentary maintenance and servicing capabilities. Additionally, no military aircraft hangers are present, meaning in extreme climatic conditions, maintenance and servicing activities could not be conducted in the open.

Despite the occasional reports discussing their deployment, none of the satellite images examined show the presence of Tu-95MS, Tu-160, or similar long-range strategic missile-carrying bombers. Similarly, although it was announced during 2016 that Tiksi would become a permanent base for high-altitude MiG-31 interceptors, satellite imagery provides no evidence of their—or any other fighter/interceptor aircraft—presence at the base. The lack of hangers or extensive maintenance and servicing facilities strongly suggest that it is unlikely that any of these aircraft could be deployed to Tiksi except for temporary or emergency duty for short durations.

Only five of the images of Tiksi Airbase show passenger, transport, or support aircraft. The largest number of these aircraft were observed in an image from July 12, 2013, when an An-22 strategic heavy lift transport (NATO reporting name Cock), three Il-18D transports (NATO reporting name Coot), four Mi-8/-17 helicopters and a single Mi-6 helicopter (NATO reporting name Hook) were





present.¹⁰ Subsequent images show a mixed squadron of five-eight Mi-8/-17 and Mi-26 helicopters which provide transport, search-and-rescue, and anti-submarine warfare (ASW) capabilities.

The 2015 reports of the deployment of an S-400 surface-to-air missile unit to Tiksi are not confirmed by available satellite imagery. If deployment did occur, it was likely a temporary deployment—potentially for Arctic field trials. Late-2018 and early-2019 reports described the construction of a small installation of 11 buildings for an S-400 regiment in the Tiksi area. To date, neither the installation nor S-400 missile systems have been definitively identified in the satellite images examined. In sum, and based on available imagery, much of Russia's plans to bolster and equip Tiksi remain aspirational.

THE PROLIFERATION AND IMPORTANCE OF “DUAL-USE” OUTPOSTS ACROSS THE RUSSIAN ARCTIC

It appears that “dual-use” outposts across the Arctic is a defining characteristic of Russia's military footprint in the region. In 2009, Russia allocated 910 million rubles (approximately €27.1 million) to construct 10 “dual-use” search-and-rescue centers spanning the NSR with refurbished airfields, ports, and advanced communication systems. Although only a handful are complete, the infrastructure enhances capabilities that are critical to defending Russia's Arctic territory and securing the NSR.

RADIO-ELECTRONIC DEFENSE

Perhaps Russia's greatest priority for Tiksi is in its communication and satellite systems. Tiksi is reportedly part of a network of surveillance satellite installations on remote islands running as far east as Wrangel Island – 300 miles from the Alaskan coast. These satellites serve military purposes (supplementing Russia's early warning radar network, intelligence gathering, and ASW) as well as civilian purposes (search-and-rescue, maritime domain awareness, and communications). As a network, these satellites and radars create a “protective dome” to defend and secure Russia's Arctic airspace. These capabilities are further strengthened when integrated with air assets – such as the mixed squadron observed on Tiksi, or the potential future deployment (if these plans are realized) of long-range strategic missile-carrying bombers, and basing of high-altitude MiG-31 interceptors, or S-400 surface-to-air missiles. The completion of this network would allow Russia to assert its control over the NSR, and deter outside threats from the air, land, and sea.



On Tiksi, the presence of COMINT and SIGINT facilities, such as the KRUG II CDAA, are for radio direction finding, intelligence monitoring, and search-and-rescue operations. Its potential reach spans an area stretching several thousand nautical miles off Russia's Arctic coast. If these facilities are active, Russia enhances monitoring of both surface vessel and air activity, and controls the operating space surrounding the NSR. Intelligence collected by the facility would likely be communicated to the Northern Fleet, prompting a quick response to either a civilian incident or military advance by a foreign nation.

The Northern Fleet, and its newly created Center for Radio-Electronic Warfare, is creating a “radio-electronic shield” across the NSR. The network of systems is designed for radio-electronic warfare and includes the Murmansk-



BN, Krasukha-2, and Krasukha-4 that can jam satellite communications, GPS signals, and drone communication. The systems are currently deployed to key outposts and coastal settlements including in the Kola Peninsula, Novaya Zemlya, Severnaya Zemlya, and the New Siberian Islands. The development of these new systems follows reports that civilian aircrafts in Scandinavia often lose GPS signals when flying in the high north. GPS jamming was a major talking point earlier this year when Norwegian officials met with a Russian defense delegation to discuss bilateral relations.

TIKSI PORT

Tiksi's port facilities are also of interest to the Kremlin. The port and its proximity to the Lena River could

serve as a hub for increased movement of goods from the Arctic to mainland Siberia. In 2017, the Russian government budgeted five billion rubles (€78 million) for the reconstruction of the port and other infrastructure projects. The port currently handles an estimated 67,000 tons of goods with the hope of eventually handling 300,000 tons. Updated port facilities could also support an increase in shipping traffic along the NSR, but it is unlikely that these ports would have deep enough drafts to manage commercial container vessels.

Port facilities are also a focal point for Russia's integration of military and civilian assets. This could be viewed as both a cost-saving measure and an effort by the Kremlin to enhance its surface and sub-surface capabilities. Ports associated with these "dual-use" outposts like Tiksi, Dikson, Dudinka, and Pevek would expand Russia's naval reach into an increasingly accessible Arctic Ocean. Russia's powerful Northern Fleet used Tiksi Bay in 2018, conducting its first-ever warship training, which included a coordinated naval attack on an unequipped coast. As "dual-use" outposts continue to come online across the NSR, similar exercises blurring the line between military and civilian activity could occur with greater frequency.

CONCLUSION

Clearly, all that is announced by the Kremlin when it comes to its military posture in the Arctic is not necessarily true. This is especially true regarding Tiksi Airbase today. It appears that Tiksi's value may be its part in a growing radio-electronic warfare element. It is also important to continue to monitor the development of such "dual-use" network of outposts as Tiksi spanning the NSR as far west as Pechenga and Severomorsk in the Barents Sea, and as far east as Provideniya and Anadyr-Ugolny along the Bering Strait. Collectively, these outposts enhance Russia's forward operating presence and flexible response where it can monitor surface and air domains or respond quickly with power project assets across the Arctic region. It will be important to watch the use and integration of these "dual-use" outposts within future snap and large-scale exercises. This will help us better understand how they could operationally fit into Russia's Arctic military strategy. ■

Matthew Melino was an associate fellow with the Europe Program at the Center for Strategic and International Studies (CSIS) in Washington, D.C. Heather A. Conley is senior vice

president for Europe, Eurasia, and the Arctic and director of the CSIS Europe Program. *Joseph S. Bermudez Jr.* is senior fellow for Imagery Analysis at CSIS.

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ENDNOTES

1 In Russian usage, "Radiotechnical" typically refers to radar, intelligence collection, and support assets. "Russia Deploying Air Defense Forces In Arctic To Protect Northern Sea Route," Interfax, March 13, 2019; "S-400 Arctic Air Defense Ring Seen Posing Threat to US Air Dominance," *Svobodnaya Pressa*, January 31, 2019; Staalesen, Atle. "New Arctic Naval Base Built In 6 Months, Barents Observer, January 30, 2019; "New air defense base in Arctic almost ready," Interfax, January 29, 2019.

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10 While the satellite imagery examined for this report is not of sufficient resolution some of these Mi-8 helicopters may be the new Mi-8AMTSh-VA version optimized for Arctic operations. "Russian Federation Ministry of Defense will Acquire Five Arctic 'Terminators' in 2016-2017," TASS, May 25, 2016.



By Heather A. Conley, Matthew Melino, and Joseph S. Bermudez Jr.

MARCH 2020

The Ice Curtain: Bringing Transparency to the Arctic is an ongoing collaborative series between the CSIS Europe Program and NSA.

THE ISSUE

In the past, Russian bases were closed to outside observers, but the Russian government appears eager to show the international community its modern air defense infrastructure and capabilities prior to Russia's annual **International Arctic Forum**. In addition to Temp Airbase, Kotelny is equipped with a state-of-the-art trefoil military compound; communications and Sopka-2 radar facilities; and pads for radar, command and control, and missile launch vehicles. Kotelny is a central element in Russia's growing network of Arctic islands that create a protective dome around its coastline and includes key outposts, such as Wrangel Island. Along with active Russian sub-surface vessels, new anti-air and anti-ship capabilities on Kotelny represent a robust anti-access/area denial (A2/AD) bubble in the Arctic, which could limit the North Atlantic Treaty Organization (NATO) and U.S. air and maritime capabilities in the region.

INTRODUCTION

During the Cold War, Moscow maintained a military observation post and radar station on Kotelny but it, along with other derelict Arctic outposts, was largely abandoned after the dissolution of the Soviet Union. But in 2013, the Russian Defense Ministry announced that it was redeveloping Kotelny Island as part of a larger effort to reestablish a regular naval presence in the Arctic. Increased **maritime patrols** would safeguard Russia's territorial waters and extensive Arctic coastline, protect mineral and energy resources, and monitor shipping along the Northern Sea Route. Principal among these naval assets is its Northern Fleet, the Kremlin's most visible and powerful fleet in the Arctic, which includes its sea-based nuclear deterrent and sub-surface vessels that now

increasingly patrol the region and more specifically the North Atlantic.

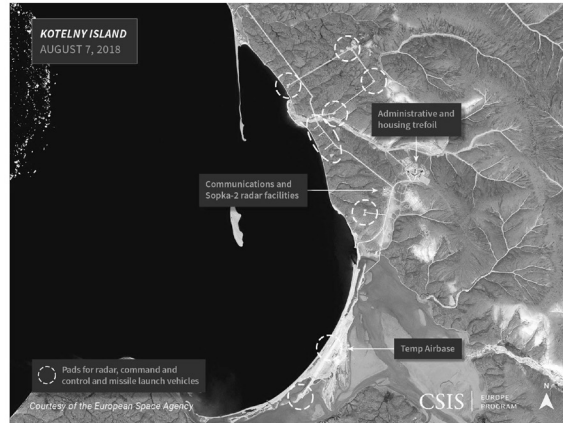
The Kremlin has also enhanced its naval aviation assets in the region and is actively exercising its new Arctic capabilities, flying over **100 Arctic sorties** in 2018 of reconnaissance, maritime patrol, and anti-submarine aircraft. The Northern Fleet's air and air defense units engaged in **2,700 firing exercises including 51 missile launches** in 2017, and **148 exercises** in 2018 accompanied by 157 rocket launches. These exercises increasingly rehearse Russia's complex and combined operations while testing its ability to mobilize rapidly to defend its Arctic coastline. It is for these reasons that Russia's growing toolkit of integrated air and missile defense assets in the Arctic to include the deployment of the Bastion-P coastal defense

system equipped with supersonic P-800 Oniks/Yakhont anti-ship cruise missiles must be assessed for its defense implications to the United States and NATO.

The 15 satellite images examined between 2013-2019, show a concerted program was undertaken since 2014 to construct at least eight—and potentially as many as eleven—specialized weapons pads along the Kotelný coastline and at Temp Airbase. These weapons pads are used by radar, command and control and missile launch vehicles and are uniquely pyramidal in shape, elevated above the tundra for drainage and stability. These pads vary in size and are now being used to support the Bastion-P coastal defense missile system and other air and coastal defense missile systems. Only those satellite images dating from September 2018 show direct evidence of the deployment of the Bastion-P on Kotelný Island, which corroborates Russian reporting of the system's delivery to the island at that time. This construction effort indicates a logical and well-planned Russian project over the past five years to develop air and maritime defenses on an important Arctic island base.

WHY THE KOTELNY BASTION-P DEPLOYMENT IS IMPORTANT

A major upgrade to Russian Arctic coastal defense capabilities (on Kotelný and by extension the Northern Fleet) occurred during 2018 when at least a battery-sized unit of K-300P Bastion-P (NATO reporting name SS-C-5 Stooze) coastal defense missiles was deployed to Kotelný by sea.¹ The Bastion-P system is a modern coastal defense missile system that employs the



supersonic P-800 Oniks/Yakhont (NATO reporting name SS-N-26 Strobile) anti-ship cruise missile. The P-800 has a maximum range of 300 km and is significantly more modern and more capable than the older 4K51 Rubezh



system (NATO reporting name SSC-3 Styx), a longer-range dedicated coastal defense cruise missile system.²

Two Bastion-P TELs subsequently took part in a live-firing exercise on September 26, 2018 as part of the larger

Vostok-2018, considered the largest Russian military exercise since the end of the Cold War.³ It was also the first known live-fire test of the system by the Northern Fleet, which mobilized across the Northern Sea Route (NSR) to participate in the exercises in the Bering Sea and the Sea of Okhotsk. Commander of the Northern Fleet, Admiral Nikolai Yevmenov stated that "... the crew of the Bastion coastal missile system successfully carried out missile firing at a naval target position [in the Laptev Sea] at a range of over 60 kilometers to prove its readiness to effectively fulfill combat duty in the Arctic and protect the island area and the sea coast of Russia."⁴ Both satellite imagery and ground footage released by the Russian Ministry of Defense show that the Bastion-P launchers and a command and control vehicle were positioned on the weapons pad at the southwest end of Temp Airbase for the exercise.

The Bastion-P system is a significant upgrade to Russia's Arctic coastal defense system. While its range is limited and its location on Kotelny Island poses no immediate threat to the United States or neighboring countries, the Bastion-P system projects Russian sovereignty and territorial jurisdiction over the NSR at a time when the Kremlin actively seeks international investment to develop the route. The creation of more robust capabilities could also be in anticipation of a future Russian assertion of jurisdiction over its proposed extended outer continental shelf claims, which are currently under review by the UN Commission on the Limits of the Continental Shelf. Moreover, these enhanced capabilities protect Russian assertion that the NSR is an



A view looking northeast at the two Bastion-P TELs deployed on the large weapons pad at Temp Airbase for a live-firing exercise. Barely visible a command and control vehicle with its antenna raised in the center of the image. The dirt runway of Temp Airbase is seen in the background, September 26, 2018. (Russian Ministry of Defense).



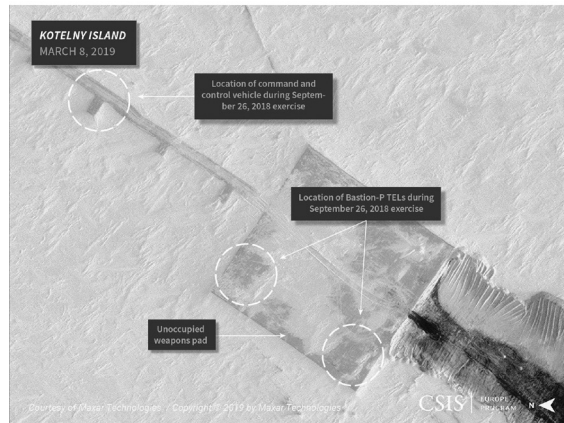
A close-up view of the command and control vehicle with its antenna raised in the center of the image. The administrative and housing trefoil is seen in the background, September 26, 2018 (Russian Ministry of Defense).



A Bastion-P TEL preparing to launch an Oniks missile, September 26, 2018 (Russian Ministry of Defense).



The launch of an Oniks missile from the Bastion-P TEL, September 26, 2018 (Russian Ministry of Defense).



internal rather than an international passage. A January statement from Richard Spencer, the U.S. secretary of the Navy, that the U.S. Navy will consider a freedom of navigation operation (FONOP) in the Arctic could be viewed

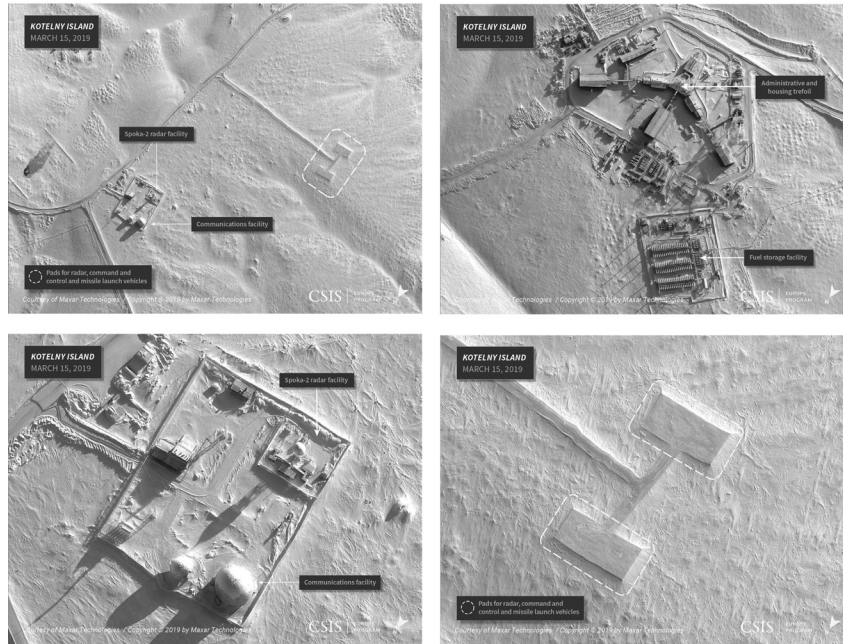
range point defense system capable of engaging aircraft, unmanned aerial vehicles (UAVs), and cruise missiles. Subsequent reports indicate that a battalion level unit

by the Kremlin as justification for a military response. In an ominous and possibly foreshadowing comment, President Putin recently stated that he “wouldn’t like to see the Arctic turning into something like Crimea . . . due to our failure to take timely measures.”

THE MAKING OF KOTELNY

During the first two weeks of September 2013, a Russian Navy flotilla offloaded personnel, heavy engineering equipment, and material to begin construction of the new base on Kotelny. Aside from housing and support facilities, contemporaneous reports state that among the facilities to be constructed were an “air command unit,” medical center, satellite communications facility, naval dock, and a 2,500-meter airfield (then scheduled to be completed by the end of October)—subsequently identified as the Temp Airbase.⁵ All of this was reported to be under the control of the Northern Fleet’s newly established 99th Arctic Tactical Group.⁶

The first mention of any air or coastal defense missile systems deployed to Kotelny occurred during the Vostok-2014 exercise when Russian media announced that “. . . a **Pantsir-S1** coastal missile system [based on Kotelny] opened fire [and] successfully hit a Termit air cruise missile target and proved their readiness to protect Russia’s northern borders.”⁷ The Pantsir-S1 (NATO reporting name SA-22 Greyhound) is a short-



equipped with the system was assigned to the 99th Arctic Tactical Group.⁸ Satellite imagery from 2013-2014, shows that none of the unique pyramidal weapons pads for the system had yet been constructed.

Within a year, the Pantsir-S1 on Kotelny was augmented by a unit equipped with the SSC-3 Styx coastal defense missile system.⁹ Satellite imagery shows that the first of the unique weapons pads—the twin complex 1.8 kilometers southwest of the housing and administration trefoil—was constructed during September 2015. It is likely that it was from here that both Pantsir-S1 and the older SSC-3 Styx systems participated in a live firing exercise later that month.¹⁰

During September-December 2015, three additional weapons pads were built in an area 3 kilometers

northwest of the housing and administration trefoil. This was followed by the early 2016 construction of a conjoined weapons pad 4.7 kilometers northwest of the housing and administration trefoil. Construction of two large weapons pads on Temp Airbase subsequently took place during mid-2017. Concurrently three additional weapons pads were constructed further inland, in a rectangular-shaped pattern, approximately 3.7 kilometers north of the housing and administration trefoil.¹¹

Again, both the Pantsir-S1 and SSC-3 Styx systems participated in live-fire exercises again during 2016 and 2017.¹² These firing exercises were conducted from the new weapons pads along the coast and at Temp Airbase. Satellite imagery from August 31, 2017 supports this assessment as three Pantsir-S1 transporter-erector-



WEAPONS PADS ON KOTELNY (AS OF MARCH 2019)

LATITUDE	LONGITUDE	~SIZE (M)	COMMENT
75.755503	137.541531	111 x 111	Temp Airbase
75.768309	137.573687	100 x 110	Temp Airbase
75.803992	137.620021	65 x 35	Coastal, Twin pads
75.821719	137.579853	40 x 20	Coastal
75.825436	137.573689	40 x 20	Coastal
75.827433	137.568744	40 x 20	Coastal
75.839480	137.541471	48 x 103 / 35 x 35	Coastal, conjoined
75.848271	137.613380	45 x 83	Inland
75.839535	137.636018	51 x 36	Inland
75.831246	137.590688	81 x 39	Inland

launchers (TEL) were observed at the northernmost weapons pad.

A GROWING AND MORE EFFECTIVE RUSSIAN MILITARY PRESENCE IN THE ARCTIC

During the Cold War, the Soviet Union viewed the Arctic as essential to its survivability: protection of its sub-surface strategic nuclear deterrent preserved second-strike capability while also deterring an attack. Twenty-eight years later, Russia's military presence on Kotelny Island demonstrates a complex, layered coastal defense arrangement, which include Temp Airbase, the Sopka-2 radar system, and the Bastion-P and Pantsir-S1 coastal defense systems. Temp Airbase is not a minor installation; its length and size mean its capable of accommodating large

cargo planes such as Il-76 for significant reinforcement. The Sopka-2 radar is part of a larger network covering the entirety of Russia's northern border with penetration capabilities deeper into the central Arctic as seen on Russia's most easterly facing Arctic island, Wrangel Island. As a cueing radar, the Sopka-2 collects data and intelligence to detect activity emanating toward the north. That data could be used to improve Russian domain awareness or direct surface-to-air missiles or guns to engage aircraft or cruise missiles. The addition of the Pantsir-S1 coastal defense system and the accompanying weapons pads reinforce Russia's intent to defend its Arctic territory against foreign aircraft, UAVs, or cruise missiles, along with anti-ship systems (SSC-3 Styx and Bastion-P). Significant Russian improvements in its Arctic air and coastal defense over

the past several years underscore its view of the Arctic as a tactical warfighting domain. In addition to the region's role in Russia's broader nuclear deterrent strategy, the Arctic is now a region to defend and to deny aerial, maritime, or land access to NATO or U.S. forces. Russia's efforts to secure its Arctic territory and coastline through improved air defense capabilities are vital stepping stones to minimize its perceived defense vulnerabilities in the North. ■

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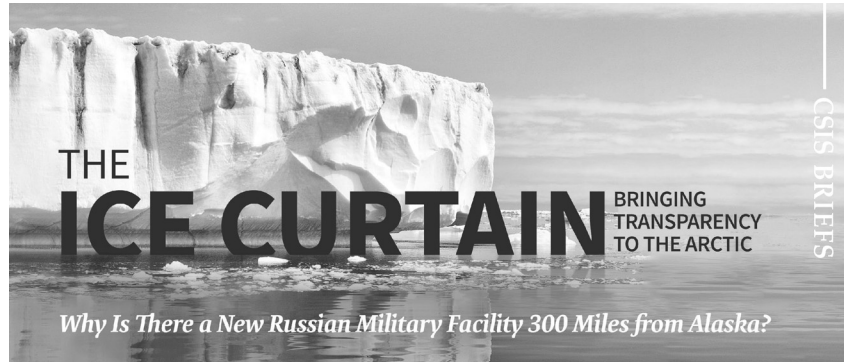
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Cover Photo: Wikimedia

ENDNOTES

- 1 Nikolai Novichkov, "Russian Navy fires Bastion in the Arctic," *Jane's* 360, September 27, 2018, <https://www.janes.com/article/83391/russian-navy-fires-bastion-in-the-arctic>; "Northern Fleet to use Bastion coastal missile system at the Arctic exercise for the first time," Ministry of Defence of the Russian Federation, September 26, 2018, http://eng.mil.ru/en/news_page/country/more.htm?id=12196944@egNews; Aatle Staalesen, "Russia shows off new missile shooting in high Arctic," *The Barents Observer*, September 26, 2018, <https://thebarentsobserver.com/en/security/2018/09/russia-shows-new-missile-shooting-high-arctic>; and "Russia Deploys Coastal Missiles in Arctic Drills," *Moscow Times*, September 25, 2018, <https://themoscowlimes.com/news/russia-deploys-coastal-missiles-arctic-drills-62987>.
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- 6 Ibid. and Bruce Jones, "Russia Plans to Augment its Forces in the Arctic," *Jane's Defence Weekly*, November 13, 2013.
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By Matthew Melino, Heather A. Conley, and Joseph S. Bermudez Jr.

MARCH 2020

The Ice Curtain: Bringing Transparency to the Arctic is an ongoing collaborative series between the CSIS Europe Program and NSA.

THE ISSUE

"... whoever holds the Arctic, holds the world. I think it is the most important strategic place in the world."

These solemn words were uttered in 1935 before a House of Representatives Committee by a retired American general and aviator, Billy Mitchell, who presciently foresaw the Arctic as a vital region for early detection against missile and aviation threats to prevent an attack against the United States. But at the end of the Cold War, the Arctic ceased to be a strategically important place for either the United States or the Russian Federation. But by the 2007-2008 timeframe, Russia began to re-prioritize the Arctic both economically and militarily—in keeping with Vladimir Putin's vision of restoring Russia's status as a great power and harnessing the Arctic's economic potential. Now more than a decade later, Russia has returned to the Arctic militarily with important strategic implications for the United States.

INTRODUCTION

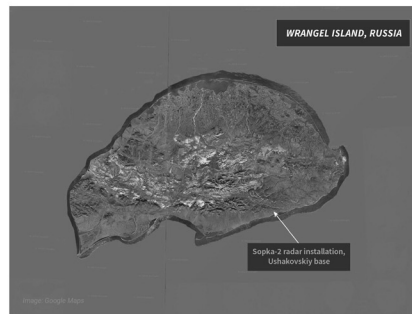
In 2007, the Russian Federation resumed regular air patrols over the Arctic Ocean and penetrated the North American Aerospace Defense Command (NORAD) 12-mile air defense identification zone around Alaska 18 times.¹ Since 2007, Russia has adopted a series of policies and strategies and amended its military and maritime doctrines to include the Arctic region, emphasizing the need to protect Russia's Arctic territory and to project influence and power beyond its Arctic coastlines.^{2,3} In 2012, Russia announced the creation of an Arctic brigade and announced it would establish a missile defense system and deploy fighter aircraft to Novaya Zemlya,⁴ its northwestern archipelago, which separates the Barents and Kara Seas in 2013. By 2014, Russia announced an

ambitious military force posture in the Arctic, which consisted of a new strategic command for the Arctic zone (the Northern Fleet Joint Strategic Command), the reopening of 50 former Soviet Arctic military bases, an increase in Russian special forces in the region by 30 percent by 2015, and a significant infrastructure program, which included 13 air defense radar stations, an aviation training ground, and 10 technical radar and air guidance stations in the Arctic region.⁵

As Russia enhanced its military posture and forces in the Arctic, it concentrated on exercising its new capabilities in the context of territorial defense and power projection. In 2015, the Russian military launched an unannounced large-scale military exercise that involved



more than 45,000 Russian forces, 15 submarines, and 41 warships and practiced full combat readiness in the Arctic.⁶ Russia's Northern Fleet, home to Russia's sea-based nuclear deterrent, conducted 4,700 exercises in 2017. The Zapad-2017 exercise featured missile strikes from its new base on Kotelny Island in the East Siberian Sea, where new facilities were completed along with now modernized bases in Novaya Zemlya and Franz-Josef Land, in the Barents Sea.⁷ In 2018, the Northern Fleet held around 3,800 test combat training exercises, with many designed to enhance both power-projection capabilities as well as protect strategic posts including the New Siberian Islands that are near potential oil and gas reserves and straddle the Northern Sea Route (NSR).^{8,9} Russian anti-submarine aircraft as well as attack and reconnaissance aircraft conducted over 100 Arctic Ocean patrols in 2018.¹¹ The Russian military also announced a new series of Arctic exercises, Tsentr-2019 (August-September), which tested new Russian weapons and air defense systems.¹²



A FOCUS ON REMOTE ARCTIC ISLANDS AND AIR DEFENSE SYSTEMS:

WRANGEL ISLAND AS AN EXAMPLE

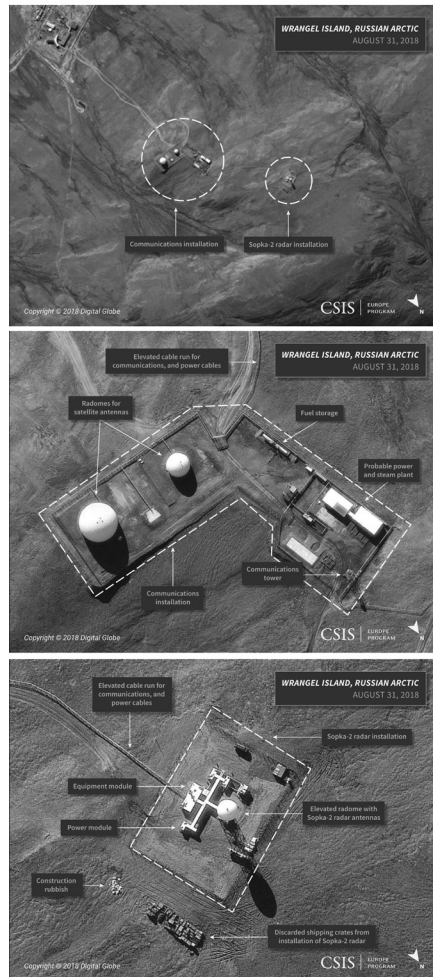
Russia has significantly strengthened its military presence in its northernmost archipelagos by upgrading its bases on Wrangel Island, Kotelny Island, Franz Josef Land, on the shore of the Kara Sea, Alykel, Tiksi, Chokurdakh, Chersky, Kigelyakh, and Taymylyr. Many of these installations have airfields or will be equipped with 2,500-meter runways that can receive Russian fighter aircraft. Similarly, each of these installations has or is scheduled to receive a radar detachment capable of improving domain awareness in Arctic airspace, and many are equipped with modern and sophisticated weaponry including the Rubezh coastal missile systems and the Pantsir-S1 anti-aircraft weapon systems.^{13,14} It has been reported that Russia has deployed S-400 surface-to-air missile systems to the Novaya Zemlya archipelago and to the Yakutian port of Tiksi.¹⁵

Why has Russia stationed air defense assets on remote Arctic islands? Northern Fleet Commander Admiral Nikolay Yevmenov described these assets in August 2018 as a “protective dome” of anti-aircraft missile units strung along the Arctic to defend the airspace above the Russian Arctic.¹⁶ Is this the case?

Wrangel Island—an island nearly 300 miles from the Alaskan coast—is a clear example of Russia’s growing Arctic military footprint and its strategic ambition, which may have implications for U.S. national security. In late August 2014, the Russian navy conducted a preliminary assessment of Wrangel Island in preparation for the establishment of a new naval base which would be “the first-ever naval base on (Wrangel Island).”¹⁷ Satellite imagery shows that actual construction of the new naval base likely began sometime between July 2015 and April 2016 and included the replacement of an abandoned and derelict Cold War era installation at Ushakovskiy.¹⁸ The new base includes a signature trefoil structure (three interconnected buildings designed to withstand extreme cold temperatures) as well as a number of support installations, such as the construction of a Sopka-2 radar installation.¹⁹ According to Russian officials, the installation will control civilian air traffic, provide meteorological data and monitor airspace for potentially hostile targets.

But the Sopka-2 on Wrangel Island is a 3D dual-use S-band air-route radar with a range of 350km. It faces east in an arc stretching from the Beaufort Sea in the north to the Bering Strait in the south, but its 350km maximum range means that its coverage does not extend into either. Additionally,





the location of the Sopka-2 is below the peaks of the island's Gora Sovetskaya mountain to the west and northwest, which results in some terrain masking to avoid potential low- and medium-altitude threats from that direction. The significance of this limitation is unclear as the area to the west may be covered by other radar systems.²⁰

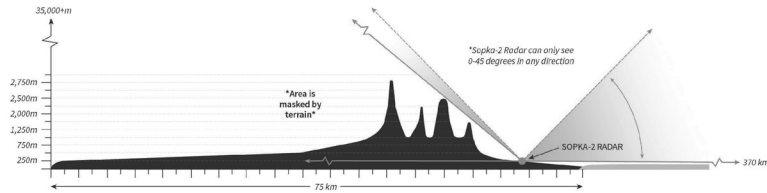
The first indications of the Sopka-2 installation were observed in commercial satellite imagery from May 13, 2016.²¹ The location chosen for the radar site is approximately 1,500 meters north northwest and above the trefoil base for safety reasons and 675 meters north northwest and above the communications facility to minimize interference.

Subsequent imagery from July 21, 2016, shows that the Sopka-2 installation and its elevated radome housing the system's three antennas was externally completed and enclosed by a tall wire fence.²² An elevated cable run—likely carrying data, communications, and backup power cables—was also in place connecting the installation to the communications facility and main base. Although tentative, the radar may not have been operational at this time. A subsequent image from August 31, 2017, shows a neatly organized pile of discarded shipping crates, which possibly contained the internal equipment required to complete the internal installation of the system. Initial tests of the Sopka-2 facility occurred in January during a simulation exercise.²³

IS THIS IMPORTANT?

As one of its most easterly situated radar systems in the Russian Arctic, the Wrangel Island Sopka-2 radar is likely designed to supplement Russia's strategic early warning radar network and to detect U.S. aircraft. When viewed in isolation, an early warning radar system on Wrangel Island has limited strategic value and could easily be discounted. However, when viewed as part of a larger network of state-of-the-art radars covering the entirety of Russia's northern borders, including the Arctic Ocean and Russia's coastline, it may have greater importance. The Sopka-2 is a cueing radar, which means it collects data that could be used to direct more powerful radars located closer to the Russian mainland. The network would fill gaps over the Arctic and when combined with new over-the-horizon radars, would establish a detection field ranging from 900 to 1,200 miles beyond the country's borders.²⁴ Russia's military footprint on Wrangel Island could gather intelligence on, detect, and possibly impact future U.S. military activity in the region.

The Sopka-2 radar's 350 km range and its intelligence gathering capabilities allows Russia to potentially gather intelligence and detect activity originating from U.S.



military installations such as Eielson Air Force Base (AFB) and Joint Base Elmendorf-Richardson as well as Fort Greely army base, a key missile defense site and home to U.S. Ground-based Midcourse Defense interceptors. The pace of U.S. investments at Fort Greely has accelerated since 2013, primarily in response to a series of missile tests by North Korea and includes \$200 million from Congress to add a fourth missile field with 20 additional interceptors over the next four years.²³ The 2019 U.S. missile defense strategy also increases the number of ground-based interceptors at Fort Greely from 44 to 64 over the next several years.²⁴ Eielson AFB is projected to receive 54 F-35s between 2020 and 2022, increasing the capacity of the base in light of its strategic importance to defending the United States in the Indo-Pacific region. Elmendorf AFB is also the headquarters of Alaskan Command (ALCOM) and one of three NORAD regions that defend North American airspace which Russian bombers test from time to time.

As former Air Force Secretary Heather Wilson noted, superiority in the Arctic will depend heavily on airpower, which places renewed emphasis on early warning detection systems and aircraft. At present, it appears that the Wrangel Island radar system tracks regional and local air defense—including the provision of threat information from incoming aircraft—to local and regional surface-to-air missile units and air defense interceptors.²⁵ But as Russia's aerial advancements in the Arctic advance, Russia may achieve integrated air and missile defense superiority. ■

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The Center for Strategic and International Studies' Europe Program and the National Geospatial-Intelligence Agency partnership uses unclassified geospatial imagery and data to produce new, timely, and accurate reporting on Arctic construction and modernization of civilian, dual-use, and defensive infrastructure. For more info, read the **TeaLine Program Explainer**.

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Ms. CONLEY. Thank you.

The challenge, however, is what we do not know is how Russia and China are going to interact together in the Arctic. And again, 2019 showed us increased economic activity, science activity, as well as military activity.

So in my testimony, I am calling for a dedicated Arctic Security Initiative, a budget very similar to the European Deterrence Initiative, which gives us a dedicated multiyear budget to actually enhance our infrastructure needs, but also to enhance our diplomatic, our economic, our scientific presence because, as China and Russia's influence grows in the Arctic through science, economics, and security, the U.S. must be equally present.

And again, I thank this Committee. The U.S. Coast Guard has the leadership. They know what they need. They need the budget to do so.

Thank you.

[The prepared statement of Ms. Conley follows:]

PREPARED STATEMENT OF HEATHER A. CONLEY, SENIOR VICE PRESIDENT, EUROPE, EURASIA AND THE ARCTIC; AND DIRECTOR, EUROPE PROGRAM, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES (CSIS)

Thank you, Chairman Sullivan and Ranking Member Markey, for the opportunity to come before you this morning to discuss America's security strategy for the Arctic and the readiness of our frontline defenders, the United States Coast Guard. My testimony today could be as relevant for the Senate Armed Services Committee as it is for the Committee on Commerce, Science and Transportation, such is the nature of Arctic security today.

It is a particularly fitting and timely moment to take stock of what we have accomplished this year regarding U.S. security policy toward the Arctic and, most importantly, what we must do to secure and increase America's security in the Arctic in 2020 and beyond.

It goes without saying that we are having this discussion today because of the profound transformation of the Arctic region due to climate change. From rapid permafrost thaw and extensive coastal erosion, which is breaking apart and collapsing terrestrial infrastructure to the extraordinary diminishment of the Greenland Ice Sheet and thinning and disappearance of polar ice caps, these changes have propelled the U.S. and all Arctic coastal states to protect and secure their territorial waters, exclusive economic zone (EEZ) and coastlines. This is particularly true for the United States which lacks infrastructure and capabilities to protect and defend its fourth coast.¹

After nearly a decade of study, 2019 will be remembered as the year that the United States formally launched the construction of a heavy polar security cutter, something this Nation has not done for 42 years. 2019 however was marked, as in many previous years, by the release of a plethora of U.S. government Arctic strategies: the U.S. Navy quietly released its Arctic strategy in January, the Coast Guard released its updated strategy in April, and the Defense Department released its mandated study of U.S. defense operations in June. We had anticipated the release of an Air Force Arctic strategy but that has yet to be released. But 2019 will perhaps be most remembered as the year of significant U.S. rhetorical change as Washington now views the Arctic through the lens of great power competition, highlighting the increased military and economic presence of Russia and China in the Arctic. This policy shift was encapsulated in Secretary of State Pompeo's speech in Rovaniemi, Finland in May of this year. And of course, 2019 will be forever known as the year that Washington rediscovered the strategic importance of Greenland which prompted the U.S. to announce that is reestablishing a U.S. consulate in Greenland's capital of Nuuk.

¹"The Arctic of the Future: Strategic Pursuit or Great Power Miscalculation?: Keynote Address," *Center for Strategic and International Studies*, remarks by Admiral Paul F. Zukunft, May 10, 2018. <https://www.csis.org/analysis/arctic-future-strategic-pursuit-or-great-power-miscalculation-keynote-address>.

In 2019, there was good news: The U.S. national security community is now talking more about the strategic importance of the Arctic more than ever before. But there is also bad news: The U.S. government isn't advancing its policies. Said a different way, the U.S. is acting as if it is still 2013 while the Arctic security environment worsens.

The Updated Coast Guard Strategy

It is with this in mind that we must view the Coast Guard's updated Arctic Strategic Outlook. Its updated outlook is perhaps the best of the many U.S. government strategies that describe the new geopolitical realities in the Arctic. Without hyperbole or hype, the strategy clearly states Russia's and China's long-term strategic ambitions for the Arctic which pose challenges to U.S. interests and the United States' ability to maintain unfettered access in the region.

While the Coast Guard accurately describes these new challenges, its strategy, as well as the U.S. government's posture, remains largely the same as it was in 2013. There are no other significant U.S. infrastructure initiatives on the horizon other than the construction of a new polar security cutter which will primarily be used in Antarctica;² there is no dedicated budget or prioritization of infrastructure improvements. There is no deep-water port in the American Arctic and there are no ice-strengthened surface vessels in the U.S. Navy's inventory. There hasn't been a substantial investment in increased U.S. forward operating locations in the Arctic, communication and navigation assets or greater domain awareness. The U.S. could not conduct a freedom of navigation operation in the Russian Arctic today if it wanted to, and without agreement from the Canadian government, it could not traverse the Northwest Passage.

Despite our rhetoric, the current minimalist U.S. presence and posture in the Arctic signals that we consider the region a low priority. But Russia and China both have a long-term strategy and a dedicated budget to achieve their ambitions. Without a significant policy response from the U.S. and its allies, Russia and China will largely shape the region's future.

What makes this perennial U.S. minimalist posture in the Arctic so troubling is that the United States has not one but two security tasks in the Arctic: while the U.S. must always prioritize the protection of its waters and territory in the North Pacific, the narrow Bering Strait, and the U.S. EEZ in the Chukchi Sea, the U.S. also has Arctic security responsibilities in the North Atlantic, North and Barents Seas. Both the North Atlantic/European Arctic and North Pacific/North American Arctic present "avenues of approach" to the homeland that directly impact the security of the United States.³

Prioritizing the Great Powers in the Arctic

Russia. Russia poses the most immediate challenge to U.S. national security interests in both the North Pacific and the North Atlantic and must be the near-term priority. Russia has allocated trillions of rubles over the past decade to Arctic economic and military development, with the government declaring that it will spend approximately \$63 billion by 2020 and \$235 billion until 2035 with significant tax incentives. President Putin has announced that cargo shipments will increase to 80 million tons along the Northern Sea Route (NSR) by 2025 and the Russian icebreaker fleet will expand to 13 heavy icebreakers by 2035—9 of which will be nuclear powered and some will be fitted with cruise missiles—as well as investments in the expansion and upgrading of ports, infrastructure, and search and rescue activities along the NSR.⁴ In the past year, Russia has made several important changes related to the use of the NSR, to include giving the Russian nuclear agency, Rosatom, bureaucratic control over the maritime route, and limiting foreign warships traffic without a 45-day notification and permission by the Russian government.⁵

Like the United States, Russia also has "two Arctics." In Russia's eastern Arctic, Russia has refurbished airfields, search and rescue, and radar stations to improve awareness in the air and maritime domains, which includes Sopka-2 radar systems

² Heather A. Conley and Matthew Melino, "The Implications of U.S. Policy Stagnation toward the Arctic Region," *Center for Strategic and International Studies*, May 3, 2019. <https://www.csis.org/analysis/implications-us-policy-stagnation-toward-arctic-region>.

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on Wrangel Island (300 miles from Alaska) and Cape Schmidt. These systems create a “protective dome” across Russia’s vast Arctic coastline and improve its overall operational picture to detect and track vessels and aircraft. For example, Sopka-2 radars also control civilian air traffic and provide meteorological data to better inform mariners traversing the route. But Russia’s military footprint transforms as one moves toward the European Arctic. The Russian military recently announced that it will increase the number of S-400 missile defense units deployed across the Russian Arctic which tracks with its recent deployment of more sophisticated equipment to defend its air and maritime domains. Kotelný Island and Novaya Zemlya for example are equipped with missile defense systems like the Bastion-P and Pantsir-S1 systems which create a complex layered coastal defense arrangement that secures territory deeper into the central Arctic. Such capabilities strengthen Russia’s power projection capabilities in the Barents Sea and increase its ability to deny aerial, maritime, or land access to NATO or U.S. forces. Perhaps most worryingly is what Russia is practicing (and signaling) in the Arctic through its recent Grom or Thunder 2019 exercise, which engaged Russia’s strategic nuclear forces and involved all four of Russia’s naval fleets, 12,000 troops, and included the launch of two nuclear warheads in the Barents Sea as well as several other ballistic missiles.⁶ This military posture exceeds the Coast Guard’s remit, and while the Coast Guard enjoys a pragmatic relationship with the Russian Federal Security Bureau (FSB) in joint monitoring of the Bering Straits and in the Arctic Coast Guard Forum, this challenge is of a different magnitude.

China. The longer-term challenge to U.S. security interests is China’s growing economic presence in the Arctic which could prelude an eventual military presence. China’s movement into the Arctic was both strategic and opportunistic, taking advantage of Russia’s financial shortcomings after the imposition of Western sanctions in 2014 as well as the precipitous drop in global energy and commodity prices. Beijing has also developed a broader Arctic engagement strategy which includes increased activities with international organizations and robust economic diplomacy with individual Arctic Council states, primarily related to access to Arctic protein sources, maritime access, infrastructure development, and enhanced information and telecommunications access.

By 2015, China had described the Arctic as a new strategic frontier (alongside space and the sea bed) where there was “undetermined sovereignty.” China’s efforts in the Arctic are designed to preserve its unfettered access to the international waters of the Central Arctic Ocean (CAO) and to construct a case for preservations of its sovereign rights to the region by means of discovery and by continual presence and influence. Over a relatively short period (approximately 5 years) of time, China has transformed from a low-key player in the Arctic to a major actor.⁷

China continues to enhance its scientific and industrial footprint across the Arctic. It maintains two research stations, one on Svalbard and one in Northern Iceland. Plans to develop a third in Russia are underway. The Department of Defense’s Annual Report to Congress on Chinese military and security developments presciently warned that Beijing could use the cover of science to gain a military foothold in the region through the utilization of dual-use technologies including satellites.⁸ In January 2018, China unveiled plans to expand its Belt and Road Initiative to the Arctic, establishing a Polar Silk Road across the region.⁹ Shortly after, in September, it launched its first domestically built and second non-nuclear polar class icebreaker, the *Xue Long 2*. This now gives China two polar icebreakers, matching the United States in terms of operational capabilities. Beijing has also announced plans to construct a nuclear-powered icebreaker which would enable China to retain a near permanent presence in the Arctic and could be a precursor to the development of a nuclear-powered aircraft carrier.

The U.S. can develop a specific security policy vis-à-vis Russia’s military posture, and it can develop specific policies for China’s dual-use economic and scientific posture in the Arctic. But what U.S. policymakers are not equipped to address is the

⁶Thomas Nilsen, “Cruise missiles played key role in Putin’s strategic war games,” *The Barents Observer*, October 18, 2019. <https://thebarentsobserver.com/en/security/2019/10/cruise-missiles-played-key-role-putins-strategic-war-games>.

⁷Anne-Marie Brady, “China’s Expanding Antarctic Interests: Implications for New Zealand,” *Small States and the New Security Environment*, Policy brief no.2, June 3, 2017, <http://www.canterbury.ac.nz/media/documents/research/China%27s-expanding-Antarctic-interests.pdf>.

⁸Blake Hounshell, “Pompeo aims to counter China’s ambitions in the Arctic,” *Politico*, May 6, 2019. <https://www.politico.com/story/2019/05/06/pompeo-arctic-china-russia-1302649>.

⁹Philip Wen, “China unveils vision for ‘Polar Silk Road’ across Arctic,” *Reuters*, January 28, 2018, <https://www.reuters.com/article/us-china-arctic/china-unveils-vision-for-polar-silk-road-across-arctic-idUSKBN1FF0J8>.

convergence of China and Russia's economic and military interests in the Arctic. Over the past 24 months, we have witnessed an acceleration of Russian and Chinese cooperation, which has enhanced cooperation related to the Yamal LNG-1 and 2 Projects, in which the Chinese National Petroleum Corporation (CNPC) has invested heavily and in which Chinese firms own 29.9 percent of the projects.¹⁰ The economic relationship continues to expand, and President Putin has suggested that the NSR, as part of China's Maritime Silk Road, would create a "global and competitive route that connects Northeastern, Eastern, and Southeastern Asia with Europe."¹¹ The two are also engaging in military affairs, as 3,200 Chinese troops and 900 weapons units participated in Russia's large-scale Vostok-18 exercise.¹² While Chinese and Russian navies and land forces have exercised together annually since 2015, in July 2019, the first Sino-Russian joint air patrols occurred over the Korean Peninsula. If such joint actions were to occur in the Arctic, it would be very concerning to U.S. security interests.¹³

What Needs to be Done in 2020

The Coast Guard frequently uses the following equation for the Arctic: presence = influence. This is absolutely correct: the U.S. must increase its physical presence in 2020 diplomatically, militarily, scientifically, and economically, primarily through public-private partnerships. Such a holistic approach must include the reorganization of the U.S. government related to Arctic issues; an increase in U.S. Arctic diplomatic presence and activity, strengthening science, research, and economic opportunities; and the development and positioning of increased U.S. security assets across the circumpolar Arctic.

While it is encouraging that the U.S. is restoring its consulate in Greenland, the U.S. must enhance its Arctic diplomacy with all of our closest allies in the Arctic and regionally, to include Canada, Denmark, Norway, Sweden, Finland, Iceland, and the United Kingdom. The U.S. should initiate annual meetings of the foreign and defense ministers of Arctic allies to cooperatively discuss and address emerging challenges in the region. Similarly, the U.S. should push for more frequent meetings of the five Arctic coastal states to discuss pertinent issues like the future management of the high seas in the Central Arctic Ocean.

From a security and defense perspective, the U.S. must budget the necessary resources to enhance its presence in the North American and European Arctic. Just as the U.S. has responded to Russia's military posture in Eastern Europe through a series of bilateral defense enhancements funded in part by the European Deterrence Initiative (EDI), the U.S. should create an Arctic Security Initiative or ASI. The ASI would fund greater exercises and training in the Arctic to include search and rescue, pollution response, and maritime domain awareness activities, as well as the work of the Arctic Coast Guard Forum. Funds could also be used for the development of a layered homeland defense design; the increased deployment of strategic forces with short-duration rotational deployment of bombers; an investment in upgraded sensors for indicators & warnings; and unmanned undersea vehicles and anti-submarine warfare equipment; Arctic infrastructure, such as reinforcing existing reception facilities along Greenland's west coast, limited reception facilities and/or sensor capabilities along Greenland's east coast to enhance ASW capabilities in the GIUK gap; and enhancements to Thule AFB such as upgrades to the early warning missile defense radar in Greenland as well as the eventual modernization of NORAD's air, radar, and satellite systems could also be viewed as an element of enhanced Arctic air and maritime awareness or preparedness.

The U.S. must also leverage its strength in Arctic science. This includes our robust and world-renowned scientific network of institutions and scholars. The budget for U.S. Arctic science and research should increase, particularly as it relates to observational research infrastructure and expanded research campaigns in the Alaskan Arctic. Crucial to these efforts is the inclusion of indigenous voices whose

¹⁰ Elena Mazneva, "From Russia With Love: A Super-Chilled Prize for China," *Bloomberg*, October 26, 2017, <https://www.bloomberg.com/news/articles/2017-10-26/china-to-get-first-yamal-lng-cargo-as-russia-says-thank-you>.

¹¹ Atle Staleesen, "Putin steps up talks with Beijing over Arctic shipping," *The Barents Observer*, April 30, 2019, <https://thebarentsobserver.com/en/2019/04/putin-steps-talks-beijing-over-arctic-shipping>.

¹² Danila Galperovich, "Analysts: Russia's Vostok '18 Troop Numbers, 'China Alliance' Claims Questionable," *VOA* September 11, 2018, <https://www.voanews.com/europe/analysts-russias-vostok-18-troop-numbers-china-alliance-claims-questionable>.

¹³ Andrew Osborn and Joyce Lee, "First Russian-Chinese air patrol in Asia-Pacific draws shots from South Korea," *Reuters*, July 22, 2019, <https://www.reuters.com/article/us-southkorea-russia-aircraft/first-russian-chinese-air-patrol-in-asia-pacific-draws-shots-from-south-korea-idUSKCN1UI072>.

knowledge and experience in the region are invaluable. Internationally, the U.S. should use the recent Agreement on Enhancing International Arctic Scientific Cooperation to establish other norms, code of conduct, and regulations. Doing so promotes transparency related to scientific collection, data monitoring, and analysis. The U.S. should consider the creation of an Arctic Science Infrastructure Fund (ASIF). Such a program would increase the number of U.S. research stations in the Arctic. Currently, the U.S. has only three: two in Alaska and one in Greenland.

As science drives our understanding of future developments in the region, sustainable economic activity should follow. The U.S. must actively facilitate public-private partnerships with other industries to identify and fund new infrastructure including a deep-water port, search-and-rescue stations, refurbished hangars for air assets, and improved telecommunications systems which could be incentivized through the Arctic Security Initiative. Doing so would improve observational coverage and domain awareness while promoting safer economic activity. Internationally, the U.S. should promote greater trade and investment between the North Atlantic/European Arctic region (which includes New England, Canada's maritime provinces, Iceland, Denmark and the UK) and the North Pacific/North American region (which includes Alaska and Canada's northwest territories).

And finally, organizationally, it is time for the U.S. government to demonstrate—clearly and on a daily basis—that the Arctic is strategically important to the U.S. The establishment of several senior positions in the national security community is required. New positions should include a Senior Director for the Arctic at the National Security Council, the re-naming of the Assistant Secretary of State for European, Eurasian and Arctic affairs, the establishment of a Deputy Assistant Secretary of Defense for Northern European and Arctic Affairs in the Office of the Secretary of Defense, and the creation of a senior civilian leader position in the Department of Homeland Security that is tasked with focusing on America's fourth coast.

Any nation can write an Arctic strategy, but a strategically minded and purpose-driven great maritime power will budget for and implement the strategy while also successfully engaging its allies. The United States has proven repeatedly it can write many strategies, but it has not proven it can shape and influence the Arctic in the future. Russia and China are implementing their strategies and shaping the region, unfortunately to their preferred interests and outcomes.

If we hold this hearing again at the end of 2020, what will the U.S. have accomplished to enhance its security in the Arctic?

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Heather A. Conley

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Heather A. Conley is senior vice president for Europe, Eurasia, and the Arctic and director of the Europe Program at CSIS. Prior to joining CSIS as a senior fellow and director for Europe in 2009, Conley served four years as executive director of the Office of the Chairman of the Board at the American National Red Cross. From 2001 to 2005, she was deputy assistant secretary of state in the Bureau of European and Eurasian Affairs with responsibilities for U.S. bilateral relations with the countries of Northern and Central Europe. From 1994 to 2001, she was a senior associate with an international consulting firm led by former U.S. deputy secretary of state Richard L. Armitage. Ms. Conley began her career in the Bureau of Political-Military Affairs at the U.S. Department of State. She was selected to serve as special assistant to the coordinator of U.S. assistance to the newly independent states of the former Soviet Union, and she has received two State Department Meritorious Honor Awards.

Ms. Conley is frequently featured as a foreign policy analyst and Europe expert on CNN, MSNBC, BBC, NPR, and PBS, among other prominent media outlets. She received her B.A. in international studies from West Virginia Wesleyan College and her M.A. in international relations from the Johns Hopkins University School of Advanced International Studies (SAIS).

Senator SULLIVAN. Thank you, Ms. Conley.
Ms. Goodman.

STATEMENT OF SHERRI GOODMAN, SENIOR FELLOW, POLAR INSTITUTE AND ENVIRONMENTAL CHANGE AND SECURITY PROGRAM, WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS; AND SENIOR STRATEGIST, THE CENTER FOR CLIMATE & SECURITY

Ms. GOODMAN. Thank you, Mr. Chairman, Senator Markey, Senator Cantwell. It is a pleasure to be here with you today. And I want to also endorse your creating a Senate Coast Guard Caucus. I think it is very timely.

I have over 30 years of experience as a security professional serving as the first Deputy Under Secretary of Defense for Environmental Security. I am also the founder and former executive director of the CNA Military Advisory Board comprised of senior retired generals and admirals, including Coast Guard, that since 2007 has continually assessed the security implications of climate change, which we characterize as a threat multiplier.

My bottom line for you today, my BLUF (Bottom Line Up Front), four points.

First, climate change is a threat multiplier, reshaping the strategic operating environment for the Coast Guard in the Arctic, and around the world. As we convene in Washington at the end of 2019 with the global climate summit currently taking place in Madrid, what is happening in the Arctic is the clearest evidence of how rising temperatures, melting sea ice, and collapsing permafrost are reshaping the security landscape in which the Coast Guard and our military forces now operate. The opening of a new ocean is occurring within our lifetimes, and most dramatically in the last 2 decades. The Arctic Ocean is increasingly accessible and navigable, though still treacherous and unpredictable, exposing a new maritime border for the U.S.

Just yesterday, as was mentioned, NOAA released its annual Arctic report card confirming near record high air and ocean temperatures and melting of the Greenland ice sheet, low sea ice extents, and shifts in the distribution of commercially valuable marine species. And what happens in the Arctic does not stay in the Arctic. Greenland's ice storage keeps our coastal cities like Miami and Houston above water. Changing weather patterns in the Lower 48 from the polar vortex creating extreme weather events to disruptive storms that wreak havoc in prime agricultural regions have all Americans feeling the effects of Arctic climate change.

Second, in the Arctic, a changing climate is emboldening our competitors and adversaries, primarily Russia and China, creating new risks and complicating navigating conditions for the Coast Guard and our military.

The changing climate is enabling great power competition in the Arctic today. While it has historically been a region characterized by cooperation and diplomacy, we have recently seen a zone of increased tensions over valuable energy and mineral resources and access to shipping routes.

China is aiming to use Russia's Northern Sea Route to gain access to European shipping opportunities. China has declared itself

to be a near-Arctic state and intends to build a Polar Silk Road that will stretch from Shanghai to Hamburg. China is upgrading its icebreaking and related capabilities and strategically deploying scientists across the region.

Meanwhile, Russia seeks to monetize the Northern Sea Route as a new access maritime road from Asia to Europe. Militarily, Russia has been upgrading its bases along the Northern Sea Route and exerting increasingly aggressive behavior against our high north allies. And just last month, Russia tested a hypersonic missile for the first time in the Arctic and plans to launch their first weaponized icebreaker by 2023.

The increased presence of Russian and Chinese vessels in the Arctic near the U.S. presents other risks as well. Among the new risks in a rapidly changing Arctic and one that keeps me up at night is a potential nuclear shipping incident in Arctic waters. Russia's nuclear safety record is deeply concerning, from Chernobyl to the Kursk submarine to recent incidents this year.

To help prepare for future such incidents, we need to conduct more exercises like the scenario demonstration we recently held with Coast Guard, Department of Defense, and others demonstrating how a table-top exercise can be used for emergency response in the Arctic of 2050. This exercise used as a triggering event an Arctic maritime incident that takes place in the year 2050 in which a Chinese-owned LNG tanker collides with its Russian nuclear-powered icebreaker in a winter storm, not an unrealistic future planning scenario.

Third, we have a responsibility to prepare for changing Arctic conditions and the Coast Guard needs to enhance its operating capabilities in the Arctic from additional icebreaking capability, improved domain awareness, communications, and research.

The U.S., unfortunately, has fallen behind in equipping our forces to operate safely and securely in the changing Arctic. The three components we need are speeding the deployment of icebreaking capability in the form of the polar security cutter, aviation assets and autonomous systems; improving Arctic domain awareness and communications capabilities, including mapping and charting, and ensuring the U.S. maintains its competitive edge in Arctic research and development.

And finally, Mr. Chairman, leadership in Arctic security is essential—and I thank you very much for your leadership—to America's overall security and strategic interests and must be a whole-of-government and partnership effort, including our allies, communities, private sector, and others that serve to strengthen the rules-based order and support Arctic resilience for the future.

[The prepared statement of Ms. Goodman follows:]

PREPARED STATEMENT OF SHERRI GOODMAN, SENIOR FELLOW, POLAR INSTITUTE AND ENVIRONMENTAL CHANGE AND SECURITY PROGRAM, WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS; AND SENIOR STRATEGIST, THE CENTER FOR CLIMATE & SECURITY

Chairman Sullivan, Ranking Member Markey, and distinguished Members of the Subcommittee:

Thank you for the opportunity to testify before you today. My name is Sherri Goodman. I am a Senior Fellow at the Polar Institute and the Environmental Change & Security Program of the Woodrow Wilson International Center and a Sen-

ior Strategist at the Center for Climate & Security. I have over 30 years of experience as a security professional. I served as the first Deputy Undersecretary of Defense (Environmental Security). I am also the Founder and former Executive Director of the CNA Military Advisory Board, comprised of senior retired generals and admirals—including Coast Guard—that since 2007 have continuously assessed the security implications of climate change, which we characterize as a “threat multiplier.”

As we convene in Washington at the end of 2019, with a global climate summit currently taking place in Madrid, what is happening in the Arctic is the clearest evidence of how rising temperatures, melting sea ice, and collapsing permafrost are reshaping the security landscape in which the U.S. Coast Guard, and our military forces, now operate. The opening of a new ocean is occurring within our lifetimes, and most dramatically within the last 2 decades. The Arctic Ocean is now an increasingly accessible, navigable, maritime border for the US. The Arctic region is warming at 2–3 times the global average, according to the latest Intergovernmental Panel on Climate Change (IPCC) report. And what happens in the Arctic doesn’t stay in the Arctic. Greenland’s ice storage keeps our coastal cities, like Miami and Houston, above water. Changing weather patterns in the lower 48 states, from the polar vortex creating extreme weather events to disruptive storms that wreak havoc in prime agricultural regions, have all Americans feeling the effects of Arctic climate change.

My Bottom Line Up Front (BLUF) today is:

1. *Climate change is a threat multiplier, reshaping the strategic operating environment for the Coast Guard in the Arctic, and around the world.*
2. *In the Arctic, a changing climate is emboldening our competitors and adversaries (Russia and China), creating new risks and complicating navigating conditions for the Coast Guard and our military.*
3. *We have a “Responsibility to Prepare”¹ for changing Arctic conditions, and the Coast Guard needs to enhance its operating capabilities in the Arctic, from additional ice breaking, to improved domain awareness (mapping and charting), communications and research capabilities.*
4. *Leadership on Arctic security is essential to America’s overall security and strategic interests, and must be a whole of U.S. government and partnership effort including allies, communities, private sector, and others, that serves to undergird the rules-based order and support Arctic resilience.*

#1: CLIMATE CHANGE IS A THREAT MULTIPLIER, RESHAPING THE STRATEGIC OPERATING ENVIRONMENT FOR THE COAST GUARD IN THE ARCTIC, AND AROUND THE WORLD.

The recent IPCC Special Report on Oceans and Cryosphere in a Changing Climate found that climate change is evident in the furthest reaches of the globe from the highest mountain peaks to the deepest oceans.² Greenland is now melting from the top down. Here are the key findings that shape the strategic operating environment for the Coast Guard and others operating in the Arctic region:

- *“Arctic sea ice extent in September (when sea ice extent is at its minimum) has declined about 13 percent per decade (during the satellite era from 1979 to 2018), changes likely unprecedented in at least 1,000 years. The Arctic’s older, thicker sea ice, which acts as a bastion against melting of other sea ice, has almost completely disappeared. Only about 10 percent of sea ice is at least five years old.*
- *Ice sheets and glaciers are losing ice around the world. Between 2006 and 2015, Greenland’s Ice Sheet lost 278 gigatons (Gt) of mass per year. Antarctica’s Ice Sheet lost 155 Gt per year, and glaciers around the world (beyond Greenland and Antarctica) lost 220 Gt a year. Combined, the ice loss between Greenland, Antarctica and other glaciers not part of ice sheets was 653 Gt per year. For context, a single gigaton of water would fill about 400,000 Olympic pools.³*

¹Werrell, Caitlin and Francesco Femia. “The Responsibility to Prepare and Prevent.” The Center for Climate and Security. October 2019. <https://climateandsecurity.org/2019/01/31/interview-with-sherri-goodman-a-responsibility-to-prepare/>

²Maddox, Marisol. “Two Divergent Paths for Our Planet Revealed in New IPCC Report on Oceans and Cryosphere.” New Security Beat. November 18, 2019. <https://www.newsecuritybeat.org/2019/11/divergent-paths-planet-revealed-ipcc-report-oceans-cryosphere/>

³Walbolt, Kristen. “10 things: All about ice.” NASA’s Jet Propulsion Lab. March 28, 2018. <https://sealevel.nasa.gov/news/114/10-things-all-about-ice>

- *The Arctic has warmed more than double the global average in the last two decades.* During the winters of 2016 and 2018, surface temperatures in the central Arctic were 6 degrees C (10.8 degrees F) above the 1981–2010 average.
- *From 2007 to 2016, permafrost temperatures increased by about 0.3 degrees C (0.5 degrees F), a record level of warming for permafrost.* Warming of permafrost can be a ticking time bomb. Arctic and boreal permafrost contains 1440–1600 Gt of carbon. When it melts, that carbon is emitted into the atmosphere, fueling more warming.”⁴

Arctic communities have already experienced disruptions to their freshwater supply, infrastructure, transportation, tourism and cultural traditions, due to a melting cryosphere. Many species dependent on cold temperatures, ice, and snow are at risk, with some facing extinction. These changes will worsen as warming continues.

Indeed, the Coast Guard’s Strategic Outlook identifies that “the warming of the Arctic has led to longer and larger windows of reduced ice conditions,” and that “from 2006 to 2018, satellite imagery observed the 12 lowest Arctic ice extents on record.”

#2: IN THE ARCTIC, A CHANGING CLIMATE IS EMBOLDENING OUR COMPETITORS AND ADVERSARIES (RUSSIA AND CHINA), CREATING NEW RISKS AND COMPLICATING NAVIGATING CONDITIONS FOR THE COAST GUARD AND OUR MILITARY.

The Arctic has emerged as a region of geostrategic competition, primarily because rising temperatures, melting sea ice, and collapsing permafrost now grant access to this region previously locked in ice most of year. Indeed, climate change is enabling great power competition in the Arctic today. While the Arctic has, since the end of the Cold War, been a region characterized by cooperation and diplomacy, it has more recently become a zone of increased tensions over valuable energy and mineral resources, and access to shipping routes. The retreating and thinning of Arctic ice have given rise to exponential growth in economic and military activities, including shipping, resource extraction, and other commerce. The Coast Guard Strategic Outlook stresses that “The Arctic maritime domain will continue to open and increased activity will create more demand for Coast Guard services. Near-term variability will result in a dynamic operating environment that exposes mariners and Arctic communities to unpredictable levels of risk.” Rapid Arctic change is feeding into China’s and Russia’s strategic ambitions, both regionally and globally.

As I stated in an article in *Foreign Policy* last year, “China has large ambitions throughout the Arctic.”⁵ This includes the advancement of both commercial and military objectives. For instance, China is aiming to use Russia’s Northern Sea Route to ship goods and other materials to and from ports in Europe. This will shorten travel times compared to traditional routes through the Straits of Malacca and Suez Canal, offering China a new strategic advantage in terms of global trade and freedom of navigation. In January 2018, this ambition was formalized in China’s first public Arctic policy, wherein China declared itself to be a “near Arctic State,” and articulated its intention to build a “Polar Silk Road” that will stretch from Shanghai to Hamburg, first across the Northern Sea Route, and potentially later, across the central Arctic Ocean.⁶ In the long term, China foresees using the even shorter Transpolar Sea Route across the very top of the Arctic, when that opens in a few decades due to melting sea ice. This route, which might be available for several months each year, would save China from having to depend on Russian-controlled waters. As Li Zhenfu, director of Dalian Maritime University’s research Center for Polar Maritime studies, noted, “[w]hoever has control over the Arctic route will control the new passage of world economics and international strategies.”⁷

⁴Levin, Kelly and Ezra Northrop. “4 Things to Know About the IPCC Special Report on the Ocean and Cryosphere.” World Resources Institute. September 25, 2019. <https://www.wri.org/blog/2019/09/4-things-know-about-ipcc-special-report-ocean-and-cryosphere>

⁵Goodman, Sherri, and Elisabeth Freese. “China’s Ready to Cash In on a Melting Arctic.” *Foreign Policy*. May 1, 2018. <https://foreignpolicy.com/2018/05/01/chinas-ready-to-cash-in-on-a-melting-arctic/>

⁶State Council Information Office of the People’s Republic of China. “Full Text: China’s Arctic Policy.” The State Council of the People’s Republic of China. January 26, 2018. http://english.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm

⁷Jakobson, Linda. “China Prepares for an Ice-Free Arctic.” *Insights on Peace and Security*. March 2010. <https://www.sipri.org/sites/default/files/files/insight/SIPRIInsight1002.pdf>

China also is deepening its Arctic presence through foreign direct investment in several Northern European Arctic States.⁸ China is exploiting climate change and the very real need for Arctic-based infrastructure investment to assert itself as a key partner in economic development and scientific exploration. This presence enhances their own domain awareness, and investments could plausibly be leveraged to influence policy to be more desirable for China's long-term strategic interests.⁹

In a recent article, Coast Guard Commander, William Woityra, points out that mistrust of China's actions and intentions in the Arctic is firmly rooted in a pattern of behavior that they have displayed, which shows that "When it is convenient, and when there are economic incentives to cheat, China has a history of turning a blind eye to the illegal activity of its industries, or tacitly supporting them."¹⁰

Russia has been increasing its military presence and assertiveness in the Arctic—and a significant amount of it is proportionate to their vast Arctic territory—but their ambitions have political, military and commercial dimensions. On the political side, Russia has the longest Arctic coastline of any Arctic coastal state, and Russian identity has historically been tied to the Arctic. Expanding Arctic development, as ice and permafrost melt, is therefore likely to enjoy broad public support from a nation that identifies with its Arctic heritage. Commercially, approximately 20 percent of Russia's GDP is derived from Arctic activities, primarily energy, industrials and mining.¹¹ Russian President Vladimir Putin has set ambitious cargo shipping goals, which would quadruple the volume to be shipped through the Northern Sea Route from 20 million tons to 80 million tons by 2024.¹² Though this cargo increase still represents a small portion of total global shipping, it is still a lofty goal for an environmentally sensitive region which does not yet have fully developed emergency response capabilities. Russia seeks to monetize the Northern Sea Route as a new access route from China to Europe which, as the ice melts, will presumably be available for several months each year. This could cut up to 15 days off the current route via the Suez Canal and the Strait of Malacca. It is noteworthy that President Putin has stated that he sees the Northern Sea Route as a future "global, competitive transport artery" that is "the key to the development of the Russian Arctic and the regions of the Far East."¹³

Militarily, Russia has been upgrading its bases along the Northern Sea Route and exerting increasingly aggressive behavior against our High North allies and partners. Russia has violated Swedish¹⁴ airspace, simulated attacking northern Norway¹⁵ and tested electronic warfare capabilities, including the jamming of GPS systems during the NATO exercise Trident Juncture, and in days since, as well.¹⁶ Russia claims its military buildup is primarily for economic reasons, presenting the Northern Sea Route as a maritime toll road through the Arctic, and seeking to monetize the route by requiring transit vessels to pay a "toll" for military escort through the shallow waters close to the Russian coastline. However, it is clear that Russia would be able to use these forces and capabilities for other purposes as well. Just

⁸ Rosen, Mark E and Cara B. Thuringer, "Unconstrained Foreign Direct Investment: An Emerging Challenge to Arctic Security." CNA. November 2017.

⁹ Goodman, Sherri and Marisol Maddox. "China's Growing Arctic Presence." China-US Focus. November 19, 2018. <https://www.chinausfocus.com/finance-economy/chinas-growing-arctic-presence>

¹⁰ Woityra, William. "China Can't Be Trusted in the Arctic. Proceedings. December 2019. Vol. 145/12/1,402.

¹¹ Devyatkin, Pavel. "Russia's Arctic Strategy: Aimed at Conflict or Cooperation? (Part I)." The Arctic Institute. February 6, 2018. <https://www.thearcticinstitute.org/russias-arctic-strategy-aimed-conflict-cooperation-part-one/>

¹² Staalesen, Atle. "It's an order from the Kremlin: shipping on Northern Sea Route to reach 80 million tons by 2024." The Barents Observer. May 15, 2018. <https://thebarentsobserver.com/en/arctic/2018/05/its-order-kremlin-shipping-northern-sea-route-increase-80-million-tons-2024>

¹³ Staalesen, Atle. "Russia's Putin to turn Northern Sea Route into global shipping artery." Eye on the Arctic. May 15, 2018. <https://www.rcinet.ca/eye-on-the-arctic/2018/05/15/arctic-shipping-russia-policy-international-kremlin/>

¹⁴ Sweden: Russian Military Planes Briefly Violated Airspace." Associated Press. January 24, 2019. <https://apnews.com/097a3fd978f14f4e9a7f4e5cb4d1d600>

¹⁵ Nilsen, Thomas. "11 Russian Fighter Jets Made Mock Attack on Norwegian Arctic Radar." The Barents Observer. February 12, 2019. <https://thebarentsobserver.com/en/security/2019/02/11-russian-fighter-jets-made-mock-attack-norwegian-arctic-radar>

¹⁶ Staalesen, Atle. "GPS Jamming on Agenda as Russian Defence Delegation Sat down for Talks in Oslo." The Independent Barents Observer. March 18, 2019. <https://thebarentsobserver.com/en/security/2019/03/gpsjamming-agenda-russian-defence-delegation-sits-down-talks-oslo>

last month Russia tested a hypersonic missile for the first time in the Arctic,¹⁷ and they plan to launch their first weaponized icebreaker, *Ivan Papanin*, by 2023.¹⁸ In short, China and Russia are opportunistically expanding their power and influence in direct response to a melting Arctic, and this will have significant consequences for U.S. interests.

The increased presence of Russian and Chinese vessels in Arctic waters near the U.S. presents other risks as well. Among the new risks in a rapidly changing Arctic, one that “keeps me up at night,” is a potential nuclear shipping incident in Arctic waters. Russia’s nuclear safety record is deeply concerning, from Chernobyl, to the Kursk submarine sinking in 2000, to the 2019 failed recovery of the Skyfall missile and the nuclear submarine which caught on fire. These incidents reveal a Russian tendency to not only withhold critical incident information about the extent and severity of radioactive contamination but to actually cover the incidents up in an attempt to evade accountability. This irresponsible practice has implications for Coast Guard and partner agency mission planning in responding to a crisis in the Arctic.

To help prepare for future such incidents, a scenario demonstration was conducted earlier this year by the Council on Strategic Risks, Sandia National Labs and the Wilson Center’s Polar Institute at the Arctic Futures 2050 conference. With Coast Guard and Alaskan Native community participation, we demonstrated “how a tabletop exercise can be used to bring science, indigenous and policy communities together to develop information, ideas and proposed actions to drive future research directions, policy initiatives and planning for emergency response in the Arctic of 2050. This exercise used as a triggering event an Arctic maritime incident that takes place in the year 2050 in which a Chinese-owned LNG tanker collides with its Russian nuclear-powered icebreaker escort in a winter storm.”

Key takeaways from the exercise include:¹⁹

- “The initial operational response to any major Arctic shipping incident will follow well established search and rescue protocols and will be led by the United States Coast Guard.”
- “If a nuclear incident of this type occurs, it is likely to become an incident of national significance and an incident command structure will be established. A nuclear accident in shallow water has the potential to become a very serious incident.”
- “Important predictive capabilities for situational awareness and informing response decisions does not currently exist for winter Arctic conditions.”
- “The U.S. Arctic currently lacks multiple facets of both operational and research infrastructure needed to provide key elements of both short and long-term response to a major winter-time incident.”
- “There must be a strong indigenous voice and participation in the response effort. Arctic indigenous communities have important knowledge to inform response decisions and must be part of response decisions.”
- “This incident has the potential to rapidly become a major international incident. Communication lines with Russian (and other countries’) institutions will be important. Confidence Building Measures (CBM) could help to prepare both the U.S. and Russia for a future contingency.”

#3: WE HAVE A RESPONSIBILITY TO PREPARE FOR CHANGING ARCTIC CONDITIONS AND THE COAST GUARD NEEDS TO ENHANCE ITS OPERATING CAPABILITIES IN THE ARCTIC, FROM ADDITIONAL ICE BREAKING, TO IMPROVED DOMAIN AWARENESS (MAPPING AND CHARTING), COMMUNICATIONS AND RESEARCH CAPABILITIES.

As former Secretary of Defense Mattis stated in 2018, “We need to up our game in the Arctic.” While the Coast Guard has a long and storied tradition of Arctic operations, for which I have deep respect, in the climate era we also need to enable the Coast Guard to “up its game in the Arctic,” to meet its essential missions. As the

¹⁷ Devitt, Polina. “Russia Tests Hypersonic Missile in Arctic, TASS cites Source.” Reuters. November 30, 2019. <https://www.reuters.com/article/us-russia-arctic-missiles/russia-tests-hypersonic-missile-in-arctic-tass-cites-sources-idUSKBN1Y40BB>

¹⁸ “Russian Shipyard Launches Missile-Carrying Icebreaker.” The Maritime Executive. October 28, 2019. <https://www.maritime-executive.com/article/russian-shipyard-launches-missile-carrying-icebreaker>

¹⁹ Goodman, Sherri, Peter Davies, Jim Townsend, Marisol Maddox. “Inclusive Planning for Changing Arctic Futures: Demonstrating a Scenario-Based Discussion.” Council on Strategic Risks. September 5, 2019 <https://councilonstrategicrisks.org/2019/09/19/planning-for-a-changing-arctic-a-scenario-based-discussion-paper/>

Coast Guard Strategic Outlook states: “The United States is an Arctic Nation, and the United States Coast Guard has served as the lead Federal agency for homeland security, safety and environmental stewardship in the Arctic region for over 150 years.”

Among the U.S.’s emerging needs in a changing Arctic is a strategic deep-water port. Currently, the closest deep-water port to the U.S. Arctic is 800 miles away in Kodiak, Alaska. That is inadequate in the climate era with increased navigation, tourism, and other sea-based traffic and the accompanying risks for search and rescue. An Arctic deep-water port is a strategic initiative that the U.S. government, engaging the private sector in a financially meaningful way, needs to plan for future maritime safety and other operations.

I am pleased that the Committee has included in the Coast Guard Authorization Act a provision to prepare a report on the Arctic capabilities of the Armed Forces, including identifying gaps in Department of Navy capabilities to protect Coast Guard assets during Freedom of Navigations operations. This capability is becoming more important in a changing Arctic.

The U.S. has fallen behind in equipping our forces to operate safely and securely in a changing Arctic. There are 3 key components to Coast Guard’s operational capability in the Arctic. Each one requires additional support:

1. *Speed the deployment of additional ice breaking capability* in the form of the “polar security cutter, aviation assets and autonomous systems. Today, Coast Guard has limited ice breaking capability that must fulfill missions at both poles, including Antarctica. As the Strategic Outlook diplomatically states: “This national fleet does not currently have the capability or capacity necessary to assure access in the high latitudes.” The Administration and Congress have authorized one new polar security cutter; however, the Coast Guard needs at least 6, of which 3 are “medium” and 3 are “heavy,” according to its own requirements. And, from an acquisition standpoint, it is financially preferable to conduct a multiple buy, as a single vessel will have very high unit costs. At least one vessel in the Polar Security Cutter fleet should be science-ready so they are able to continue serving as a platform for scientific research that is critical to domain awareness and detection of changes over time.²⁰ Additionally, the Coast Guard needs modern aviation capability for search and rescue, as well as the autonomous systems that are able to substantially enhance a variety of Coast Guard mission sets, from illegal fishing detection to mapping and charting.
2. *Improve Arctic Domain Awareness and Communications capabilities.* Given the rapidly changing Arctic environmental and operating conditions, it is essential that we improve U.S. Arctic, including maritime, domain awareness capabilities. MDA is a diverse set of capabilities, some of which are within the Coast Guard’s budget, but many of which are supported by other agencies, and which also need to be harnessed from local communities with direct observations of the changing Arctic conditions. As the Coast Guard Strategic Outlook states, Arctic domain awareness requirements include:
 - a. Information about national defense and security;
 - b. Information on vessel crew, passenger and cargo carried;
 - c. Pollution detection and tracking capabilities;
 - d. Weather and environmental observations, including ice reconnaissance;
 - e. Assessment of living marine resources; and,
 - f. Assessment of human activity and infrastructure.

Consider again the possible nuclear shipping incident with a Russian nuclear-powered icebreaker and a Chinese LNG vessel in the Bering Strait. Information on all of the above will be essential in responding to such a crisis should it occur. That is why we need to act today to increase our MDA and communications capabilities in the Arctic which includes improving national communications infrastructure for broadband and satellite coverage to support security as well as commercial, recreational, and subsistence-based activities.

In that regard, I am pleased that the White House has recently announced an intent to develop a national strategy on mapping, exploring and characterizing the U.S. Exclusive Economic Zone (EEZ) and the shoreline and near-shoreline

²⁰ Congressional Research Service, “Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress.” Congressional Research Service. October 4, 2019. <https://fas.org/sgp/crs/weapons/RL34391.pdf>

areas of Alaska. Some of our current Arctic charts date back to the 1800s and are wholly inadequate for today's needs. Only around 4 percent of Arctic waters off the coast of Alaska have been charted to modern standards.²¹ As the recent White House Memorandum stated, "Data and information about the ocean help to advance maritime commerce, domestic seafood production, healthy and sustainable fisheries, coastal resilience, energy production, tourism and recreation, environmental protection, national and homeland security, and other interests. Such activities contribute more than \$300 billion per year of economic activity, 3 million jobs, and \$129 billion in wages."²² Equally important, improved mapping and charting will help us prepare to operate in a changing Arctic, and to improve our predictive capabilities for better decision making.

3. *Ensure the U.S. maintains its competitive edge in Arctic research and development.* For decades, the U.S. has supported extensive research on the Arctic, from marine to terrestrial systems, from space to ecosystems. This research, conducted by leading universities across the Nation as well as Federal agency laboratories, is a core component of America's competitive edge in the Arctic. The Coast Guard's icebreakers are host to the science missions conducted aboard to gather direct observations and data about Arctic conditions. America's scientific enterprise, and research and development capabilities, have long supported both our overall security posture and our global engagement strategies, as well as enabling us to better understand the natural world. Nowhere is this more important than in Arctic research. Today, China, Russia, and others are increasing their research capabilities both within and about the Arctic. Research helps us better understand the pace of Arctic climate change and prepare for this changed future. For example, as global fish stocks migrate as waters warm toward the poles, we need to better understand how to manage emerging and potential fisheries, and growing potential for illegal and unregulated fishing. The Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean signed in 2018 by multiple nations, including the US, Russia, China, and others is a good example of acting with the precautionary principle in situations in which we do not yet have sufficient knowledge to make decisions about sustainable management of a fishery in this long ice-covered area.²³ Over the next decade, however, many nations will be seeking to develop this knowledge, and we need to ensure there is sufficient scientific knowledge to support sustainable management and prevent some of the worst outcomes of climate change.

The proposed High Arctic Research Center (HARC) facility at Oliktok Point is a great example of a physical location that would greatly complement the development of homeland security and defense missions in the Arctic and support a re-established leadership position in the region for the United States. The proposed Center, "could serve as a physical launch pad for scientists, giving them year-round, multi-domain access for research, development, Arctic technology testing, and domain awareness. . . . Research and extensive real-time observations in the Arctic could help researchers collect data that would fill critical gaps in monitoring, providing real-time information, enhancing forecasting, and creating better simulations for planning purposes to serve security and commercial enterprises."²⁴ The High Arctic Research Center would enable testing and demonstration of technologies for multiple Coast Guard missions.

²¹ Cole, Dermot. "Outdated navigational charts are an Arctic maritime disaster in the making." *Arctic Today*. September 10, 2018. <https://www.arctictoday.com/outdated-navigational-charts-arctic-maritime-disaster-making/>

²² "Memorandum on Ocean Mapping of the United States Exclusive Economic Zone and the Shoreline and Nearshore of Alaska." The White House. November 19, 2019. <https://www.whitehouse.gov/presidential-actions/memorandum-ocean-mapping-united-states-exclusive-economic-zone-shoreline-nearshore-alaska/>

²³ "Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean." <https://www.mofa.go.jp/mofaj/files/000449233.pdf>

²⁴ Goodman, Sherri, Peter Davies, Marisol Maddox, Clara Summers. "Research in a Changing Arctic Must be Prioritized." *New Security Beat*. October 8, 2019. <https://www.newsecuritybeat.org/2019/10/research-changing-arctic-prioritized/>

#4: LEADERSHIP ON ARCTIC SECURITY IS ESSENTIAL TO AMERICA'S OVERALL SECURITY AND MUST BE A WHOLE OF U.S. GOVERNMENT AND PARTNERSHIP EFFORT, INCLUDING ALLIES, COMMUNITIES, PRIVATE SECTOR, AND OTHERS, THAT SERVE TO UNDERGIRD THE RULES-BASED ORDER AND SUPPORT RESILIENCE.

The Coast Guard is not alone in the Arctic. The keys to American leadership on Arctic Security are partnerships and unity of effort. This term refers to an inclusive approach that marshals all elements of capability, including the joint and inter-agency community, state and local government, industry, non-profit and academic organizations. Key partnerships for the US, in particular the Coast Guard, in the Arctic include:

- *Native Alaskan Communities:* Those who live in the region are often best able to “ground truth” observations and will know what’s happening long before many in Washington do. They observe trends and recognize patterns that may not be distinguishable to others. That is why it is essential to “co-produce” knowledge with those closest to the Arctic domain. I am pleased that both the Coast Guard and other interagency partners have been including the Native Alaskan community in developing both research approaches and improving domain awareness. As the Coast Guard Strategic Outlook states: “Alaska Natives are a critical layer of security in the Arctic.” The Native Alaskan communities are also on the frontlines of climate disruption, from coastal erosion occurring at many villages, to permafrost thaw disrupting traditional livelihoods, to harmful algal blooms (HABs) harming fish stocks and megafauna, to extreme weather storms disrupting the critical supply chain of fuel and food delivery. These changing conditions increase demands for Coast Guard support and response and stretch scarce resources even further.
- *Arctic Coast Guard Forum:* Another important security layer in the Arctic is the partnership the Coast Guard has with the Arctic Coast Guard Forum. Appropriately characterized as a bridge between “diplomacy and operations,” the Arctic Coast Guard Forum enables the Coast Guards of the 8 Arctic nations both to strengthen working relationships, conduct exercises and combined operations, and coordinate emergency response, which becomes more necessary as climate challenges mount.
- *Innovation and Technology:* The U.S. has always been a technology and innovation leader. As the Arctic changes, we need to harness that capability to advance low-carbon and sustainable systems for Arctic operations, observations and planning. For example, wind and solar-powered ocean drones are now helping to map the Arctic. Other types of autonomous systems and advanced technologies will help keep America at the forefront of Arctic, low carbon and resilience innovation in the Arctic.
- *International agreements and institutions* that are the backbone of the rules-based order: America’s security in the Arctic depends on key international organizations and agreements. They are even more important in an era of great power competition.
 - *Arctic Council:* The Arctic Council provides an important intergovernmental forum for the 8 Arctic nations, Indigenous People’s organizations, observer states and non-governmental organizations to engage on a wide range of Arctic issues (other than military security). It has also developed important agreements on Search and Rescue, Oil Spill Preparedness and Response, and Scientific Cooperation, that serve to strengthen cooperation in uncertain times.
 - *Law of the Sea Convention:* The Law of the Sea Convention (UNCLOS) continues to be an important legal framework for the Coast Guard, the U.S. military and others operating in the region, despite the fact that the United States has not yet ratified it.
 - *International Maritime Organization (IMO):* The IMO’s Polar Code, adopted in 2014, establishes important standards for design, construction, equipment, operation, training and environment protection and safety for ships operating in polar regions.

Recommendations

To summarize my recommendations above, here are the key areas where Congressional support and action is needed:

1. Advancing the acquisition of polar security cutters, and structurally equip them to carry out scientific research.

2. Increasing MDA capabilities in conjunction with other agencies.
3. Supporting continued Arctic research and development, demonstration, test and evaluation across multiple agencies.
4. Mapping and charting Alaskan waters and near shoreline for maritime safety.
5. Reducing further climate risk through sustainable and low-carbon approaches across all domains using a Responsibility to Prepare and Prevent approach.

CONCLUSION: ARCTIC LEADERSHIP FOR THE 21ST CENTURY

As the Coast Guard Strategic Outlook appropriately states:

“Arctic Security requires leadership and cooperation across multiple national security areas of interest, including border security, economic security, environmental security, food security, freedom of navigation, geopolitical stability, human safety, national defense, natural resource protection and assertion and protection of U.S. sovereign rights.”

America’s leadership on climate security is the other essential element to advancing America’s Arctic interests in the 21st century.

The globally-devastating Second World War precipitated the creation of an international system led by the United States, designed to protect the sovereignty of states against external aggression and decrease the likelihood of conflict between nations. This is the world order we are trying to preserve today. However, the rapid rate of climatic change, combined with other global threats, and the increasing stress on security that follows means that this system must adapt—and adapt quickly. The U.S. should lead that effort, just as it led the effort to ensure global stability after the Second World War.

Fortunately, the difference between today and major global disruptions of the past is that we can spot impending disasters earlier and more easily. Though the risks are unprecedented, our foresight is unprecedented as well. Technological developments have given us predictive tools that enhance our ability to anticipate and mitigate threats. In short, we have the ability to make our communities, institutions and individuals more resilient to a broad range of threats. This foresight underscores a responsibility to advance resilient solutions that are commensurate to the threat. That is our “Responsibility to Prepare and Prevent,” which is most evident in what our Coast Guard needs to do to continue operating safely and securely in the changing Arctic. If we don’t, we will either have to watch our adversaries take the lead, or failing that, bear witness to an increasingly unstable world.

Senator SULLIVAN. Thank you, Ms. Goodman.
Mr. Sfraga.

STATEMENT OF DR. MICHAEL SFRAGA, DIRECTOR OF GLOBAL RISK AND RESILIENCE PROGRAM; DIRECTOR OF THE POLAR INSTITUTE, WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS

Dr. SFRAGA. Mr. Chairman, thank you very much. Senator Markey, thank you. Senator Cantwell, thank you for your interests.

I am here today to provide a bit of context for the Arctic, providing key issues that face the United States in the Arctic.

As noted, we are witnessing the opening of a new ocean, and it is a region the U.S. Coast Guard has operated in for over 150 years. And the importance of these operations will increase in the coming months, years, and decades. Viable and visible U.S. presence in the Arctic is critical to the nation’s interests. Presence is important. Presence is mandatory. Presence is influence.

The United States Coast Guard’s 2019 Arctic Strategic Outlook is a perfect filter through which my testimony should be viewed. They specifically outlined three areas of effort: to enhance their capability to operate effectively in a dynamic Arctic domain; to

strengthen the rules-based order; and to innovate and adapt to promote resilience and prosperity in the Arctic.

The Arctic, as you noted, is experiencing rapid change. There are risks. There are realities. There are opportunities. So I tried to design a framework called Navigating the Arctic's 7Cs, to give us seven buckets through which we can think about our future Arctic. These Cs are: climate, commodities, commerce, connectivity, communities, cooperation, and competition. I think the Coast Guard's Strategic Outlook does a very good job of providing us a road map through these Cs.

Senators, you have already covered, as have my colleagues here, the issue of climate, so I will not review what you have already noted. I simply will say that Congress should support the Coast Guard's request for additional Arctic research so that they better understand the domain in which they are to operate.

Commodities is the second C. With a coastline of 34,000 miles, 2,500 of which are in the Arctic, there is significant potential for economic development in the United States and to enhance our nation's Arctic security. But we worry about the growing interests not only for our challenges but also opportunities. We worry about them in terms of Arctic tourism. We think about moving fish stocks north. We think about the real threat of an oil and gas spill, and we about the many challenges our Coast Guard faces to address these many issues.

We think the Congress should support the U.S. Coast Guard's search and rescue requirements, as noted in their Strategic Outlook.

The third C is commerce. Increased access to a variety of resources is an opportunity and a risk, as my colleagues have outlined. There has been a fivefold increase in commercial activity along the northern sea route, primarily driven by resource development. If the State of Alaska or the Federal Government decides to develop Alaska's LNG prospects, the Coast Guard will need the assets to enable the Nation to not only be protected from oil spills, but to manage this facility or facilities on Alaska's North Slope.

The Coast Guard needs significant domain awareness. The Memorandum on Ocean Mapping of the United States Exclusive Economic Zone and the Shoreline and Nearshore of Alaska is an encouraging step. Without robust maritime domain awareness, however, conducting safe and secure shipping is daunting challenge.

So Congress should support a comprehensive and appropriately funded Arctic domain awareness and ocean mapping strategy.

Four, connectivity. We do not have a digital divide, a data divide, or an infrastructure divide in America's Arctic. We have a digital, data, and infrastructure abyss. Closing this abyss will require innovative solutions with persistent public/private investment with all Federal agencies participating. When you think about infrastructure in the Arctic, in America's Arctic, think about this in contrast. China has pursued investments in various Arctic nations' infrastructure, including an approximate 40 percent stake in the first Yamal LNG facility, as well as their recently opened Power of Siberia pipeline which connects China and Russia's energy network.

Meanwhile, the United States does not have one single Arctic port.

Congress should invest in a dual-use facility and capabilities in Alaska starting with a multi-use port and advancing development of enhanced integrated Internet communications and connectivity throughout the region.

Five, communities. The indigenous communities of Alaska are no the forefront of a collapsing landscape. Dozens of Alaskan villages are threatened. Their landscape is their rhythm of life. The Coast Guard has supported these communities throughout the last decade.

So the U.S. Coast Guard should continue to support Alaska's indigenous communities through initiatives like the Coast Guard's Cities and Communities Program.

Six, cooperation. Continued participation and leadership by the United States in the Arctic Council, the Arctic Economic Council, and the Arctic Coast Guard Forum is in our nation's interest. These entities shape and reinforce the rules-based governance structure for the Arctic Ocean and all Arctic nations.

My recommendation is that the Coast Guard continue to lead in this effort.

And finally, Mr. Chairman, seven, competition. The great competition between the United States, China, and Russia should be considered in each country's broader approach and national mindset. In the Arctic and elsewhere, China plays the game "Go," characterized by a long-term methodological strategy to exert influence and power in a calculated fashion. Russia plays the game "Survivor," attempting to sustain an economy crippled by Western sanctions and a declining population with an over-reliance on natural resource development for both domestic and international markets. And finally, the United States plays the game "Twister," trying to balance global leadership roles in the Atlantic Ocean, Pacific Ocean, South China Sea, Mediterranean Sea, Indian Ocean, and elsewhere against the challenges presented by a new and accessible ocean.

Congress should move with urgency to see our polar security cutter fleet funded and in service sooner rather than later.

And in conclusion, Mr. Chairman, the Arctic has emerged. It is no longer an isolated or remote region. It is part of the geopolitical, economic, social, physical, and security landscape globally. So I hope these Arctic 7Cs, this framework, helps us think through the future Arctic for the United States.

Thank you, sir.

[The prepared statement of Dr. Sfraga follows:]

PREPARED STATEMENT OF DR. MIKE SFRAGA, DIRECTOR, POLAR INSTITUTE, AND
DIRECTOR, GLOBAL RISK & RESILIENCE PROGRAM, WOODROW WILSON
INTERNATIONAL CENTER FOR SCHOLARS

Introduction

Good morning Chairman Sullivan, Ranking Member Markey, and distinguished members of the Subcommittee, my name is Mike Sfraga. I am the Director of the Polar Institute and the Director of the Global Risk and Resilience Program at the Woodrow Wilson Center, the Nation's think tank. I am honored to testify on the subject "Expanding Opportunities, Challenges, and Threats in the Arctic: A Focus

on the USCG Strategic Outlook.” My role today is to provide a contextual overview of the key Arctic issues facing the US, and other Arctic and non-Arctic nations.

Mr. Chairman, we are witnessing the opening of a new ocean: a fourth accessible, maritime border for the United States. The Arctic Ocean joins the Atlantic Ocean, Gulf of Mexico, and the Pacific Ocean as a critical geographic component of our country’s maritime ring of security and opportunity. Spanning nearly five and one half million square miles, the Arctic Ocean covers an area roughly 1.5 times the size of the United States and nearly half the size of the Continent of Africa. It is a region that the U.S. Coast Guard (USCG) has operated in for over 150 years, and the importance of these operations will only increase in the coming months, years, and decades. *Viable and visible U.S. presence in the Arctic is critical to the Nation’s interests: presence is important; presence is mandatory, and presence is influence.*

As the primary surface presence of the United States in the Arctic, and the first responder to any incident that falls under their 11 statutory missions, the USCG must be empowered to fulfill the needs of this country. As the U.S. Coast Guard’s 2019 Arctic Strategic Outlook states, “The Arctic maritime domain will continue to open and increased activity will create more demand for Coast Guard services. Near-term variability will result in a dynamic operating environment that exposes mariners and Arctic communities to unpredictable levels of risk.”

The United States Coast Guard 2019 Arctic Strategic Outlook is a perfect filter through which my testimony should be considered, as is the Department of Homeland Security’s Strategic Plan for Fiscal Years 2020–2024. The DHS Strategic Plan champions “Relentless Resilience” for *all threats and hazards*, which requires a whole of government approach. The USCG 2019 Arctic Strategic Outlook targets three lines of effort to further the Department’s goals: (1) *enhancing their capability to operate effectively in a dynamic Arctic domain*, (2) *strengthen the rules-based order*, and (3) *innovate and adapt to promote resilience and prosperity in the Arctic*.

The Arctic, including Alaska, the state by which the United States is an Arctic nation, is experiencing rapidly evolving threats—and opportunities—that we must recognize and address. To re-conceptualize the realities, risks, and opportunities in the Arctic, I designed a framework called *Navigating the Arctic’s 7Cs*.

The 7Cs are: (1) Climate, (2) Commodities, (3) Commerce, (4) Connectivity, (5) Communities, (6) Cooperation, and (7) Competition. To effectively protect the homeland by addressing the challenges and opportunities of a transformed Arctic, the USCG must thoroughly consider how it *Navigates the Arctic’s 7Cs*; their 2019 Arctic Strategic Outlook provides a good roadmap to do so.

1. Climate

Global Warming is real, rapid, and palpable. According to NASA, September Arctic Ocean ice extent has decreased from about 3 million square miles in 1980 to less than 2 million square miles as of September of this year. Arctic sea ice extent in September (when it is at its lowest) has declined almost 13 percent per decade since 1979.¹ The Arctic is warming more than twice as fast as the global average. The UN’s World Meteorological Organization recently noted a surge in carbon emissions and stated the gap between global targets and true emissions is “glaring and growing,” and must be halved by 2030 to have a chance of limiting global warming to 1.5 degrees C. “In order to have a 66 percent probability of avoiding global warming beyond 1.5 degrees C, the IPCC says we can release no more than 113 billion additional tons of carbon. That’s only about ten years of emissions at the current rate.”²

The recent IPCC Special Report on Oceans and Cryosphere in a Changing Climate documented the melting of high mountain glaciers and polar ice sheets significantly jeopardize the planet’s freshwater supply. Another recent study declares 9 major climate tipping points have been triggered, 5 of which are directly related to Arctic change: 1. the destabilization of the Greenland ice shelf, 2. reduction in Arctic sea ice, 3. thawing of permafrost, 4. slowdown of Atlantic circulation, 5. fire and pest outbreaks in boreal forests.³

Associated sea ice decline has many implications for the United States, including: a more accessible border along Alaska’s coastline; increased risk to mariners; stronger and more frequent storms; threats to coastal communities due to coastline and permafrost degradation, and; shifting subsistence patterns. For the first time in history, warming water temperatures have led to such a precipitous decline in Pacific cod stock that the North Pacific Fisheries Management Council announced they will

¹“Arctic Sea Ice Minimum.” NASA: Global Climate Change. <https://climate.nasa.gov/vital-signs/arctic-sea-ice/>

²“Special Report: Global Warming of 1.5” IPCC. <https://www.ipcc.ch/sr15/>

³“Climate tipping points—too risky to bet against.” Nature. <https://www.nature.com/articles/d41586-019-03595-0>

close the Gulf of Alaska cod fishery for the 2020 season.⁴ Sea ice decline also opens new and expanded opportunities: a more accessible resource base; increased shipping and commerce; and increases in tourism and recreational activities.

Global warming is the preeminent driver of change in the Arctic and requires a rapid yet responsible evolution of the USCG's posture, strategy, and operations. It also requires the U.S. government to provide necessary resources to the USCG so they can execute their mission, and for applicable Federal agencies to shoulder a share of the responsibility. Indeed, a "whole of government" strategy and approach is required. But in order to more effectively meet their mission in the Arctic, the USCG must have accurate, reliable, and sustained information about the Arctic environment in which they are to operate. The need for additional, sustained, and appropriately funded research and observation systems cannot be over emphasized.

Recommendation: Support the *Arctic Strategic Outlook's* call for additional Arctic research and associated funding. A perfect starting place is adoption and resourcing of the United States Arctic Research Commission's Report on the Goals and Objectives for Arctic Research 2019–2020. Nine recommendations that enhance the Nation's ability to "Observe, Understand, and Forecast Arctic Environmental Change" are identified in the document.

2. Commodities

The rapidly changing climate is opening resource development opportunities throughout the Arctic, including Alaska. With a coastline of nearly 34,000 miles, 2,500 of which are in the Arctic,⁵ Alaska has significant potential for economic development at the community, state, and Federal levels. The subsequent 1,000,000 square miles of the U.S. Arctic Exclusive Economic Zone⁶, currently extending 200 nautical miles out from the Alaskan coastline, provides a vast landscape full of opportunities to satisfy global commodity markets, ensure our Nation's energy security, while simultaneously presenting a significant challenge to the Coast Guard's mandate to uphold American sovereignty. The U.S. Coast Guard is responsible for managing and regulating the Nation's maritime borders and all actions within them—including those actions that promote economic prosperity and threaten U.S. sovereignty and its economic independence.

As an Alaskan, I am well aware of the importance of the Alaskan seafood industry to the state; averaging \$3 billion a year in critical revenue. As the Arctic continues to warm, fish stocks may move farther north, which may enhance the industry's profits while presenting challenges as well. The possible migration north of fish stocks will further stretch fisheries enforcement assets. The Coast Guard conducts patrols in the Bering Sea to counter illegal, unregulated, and unreported (IUU) fishing; however, the northern migration of these living resources may require the Coast Guard to patrol more extensive swathes of territory and increase the frequencies of such patrols. Protecting these resources and preventing international IUU fishing in the region will become more important in the coming years and decades.

Arctic tourism will further complicate the Coast Guard's mission in the North. From mobile "hotel" tents positioned at the North Pole, to a boom in Arctic cruise adventures, thousands of people traveling a once inaccessible landscape pose myriad challenges for all Arctic nations. In 2016, the *Crystal Serenity* carried 1,700 people through the Northwest Passage, making it the first large scale cruise ship to do so.⁷

Considering the USCG's Search and Rescue (SAR) mission and operations, an austere scenario should be considered. If a cruise ship accident occurred along the North Slope of Alaska, the first city with any capacity to assist in the disaster would be Utqiagvik, formerly known as Barrow. The city has a population less than 4,500, and its one hospital, the Samuel Simmonds Memorial Hospital, is a state-of-the-art institution with a *20-bed general medical facility*⁸. This number of beds could not handle a large-scale disaster in the Arctic and would require the Coast Guard to transfer victims to Fairbanks or Anchorage—a distance of 502 and 720 miles, re-

⁴ George, Kavitha. "Extremely low cod numbers lead feds to close the Gulf of Alaska fishery for the first time." Alaska Public Media. December 6, 2019. https://www.alaskapublic.org/2019/12/06/extremely-low-cod-numbers-linked-to-the-marine-heatwave-lead-feds-to-close-the-gulf-of-alaska-fishery-for-the-first-time/?fbclid=IwAR0NP-Z6BydPZ3Uo2LgO1lciKixtZp5duLJGf4_tGtMqKYojFRnQgbcDZu

⁵ <https://coast.noaa.gov/data/docs/states/shorelines.pdf>

⁶ 2019 USCG Arctic Strategic Outlook

⁷ <https://thinkprogress.org/arctic-biggest-cruise-ship-ever-ea7b71e9844f/>

⁸ https://www.ihs.gov/sites/alaska/themes/responsive2017/display_objects/documents/hf/Barrow.pdf

spectively. However, the Coast Guard has neither the air nor sea assets to address a disaster on this scale; the tyranny of distance is amplified in the Arctic.

According to Cruise Industry News' 2019 Expedition Market Report, "expedition" cruising is the fastest growing market in the entire shipping industry.⁹ A cruise crisis, which becomes more of a concern grows with the predicted growth of special, Arctic designed expedition ships [the number currently in operation is predicted to increase from 80 to 108 vessels by 2022¹⁰] requires an increase in all phases of search and rescue operations. As noted by the USCG 2019 *Arctic Strategic Outlook*: "as cruise ship and transpolar aviation traffic grows, so does the potential need for mass rescue operations in remote and icy waters. The current state of response capabilities makes this one of the most challenging of all possible scenarios." Proper prevention and management measures could mitigate the risk of these accidents and their environmental and economic impacts.

Response capabilities regarding non-living resource emergencies must also be expanded and enhanced. The Arctic is estimated to hold 13 percent of the world's undiscovered oil, 30 percent of the world's undiscovered natural gas, and 20 percent of the undiscovered natural gas liquids. The increased availability of these resources caused by continued and rapid Arctic Ocean sea ice decline has reenergized the global commodity market's interest in the Arctic. This interest is predicted to endure—particularly as geopolitical tensions continue to multiply in resource heavy areas around the world.

Recommendation: Support and address the U.S. Coast Guard's SAR requirements as noted in USCG 2019 *Arctic Strategic Outlook*, with particular attention given to robust asset allocation along the Bering Strait and North Slope of Alaska.

3. Commerce

Increased access to a wide array of natural resource commodities has led directly to an increase in shipping and related activities in the Arctic, most notably in the Russian Arctic. There has been a five-fold increase in commercial activity along Russia's Northern Sea Route (NSR) since 2014, primarily driven by its regional resource extraction and subsequent transport systems to domestic and international markets. According to Business Index North, 22,022 voyages with 20.1 million tons of freight transited the NSR in 2018—twice the tonnage of 2017. The number jumped again to 30 million tons in 2019¹¹. In the month of September this year, there were 50 voyages that originated from, or traveled to, international destinations using the Northern Sea Route.¹²

Russia derives an estimated 20 percent of its GDP and 30 percent of its exports from the Arctic—and aims to quadruple the cargo to 80 million tons per year by 2024 by enhancing and expanding their Arctic infrastructure. Russia's Yamal Peninsula, an epicenter of this commerce, is now emblematic of globally integrated Arctic. China owns an approximate 40 percent stake in the Yamal 1 LNG project. Arctic-specific LNG tankers built in the shipyards of South Korea transport LNG along the NSR, down the Bering Strait to Asian—Chinese markets. This is the new Arctic; an expanding global economic system that stands in stark contrast to the lack of activity in America's Arctic.

The success of the Yamal 1 project has spurred the construction of a second Russian LNG facility. Novatek is Russia's largest LNG producer—and majority owner of the Yamal 1 complex. They recently reached a final investment decision (FID) of \$21.3 billion for their Arctic LNG Yamal 2 facility.¹³ Novatek is partnering with French, Chinese, and Japanese companies on this project, with continued interest from Saudi Aramco. The facility is expected to be complete within the next five years.¹⁴

An integrated commercial system linking the Yamal facilities and other oil and gas developments along Russia's Arctic Coast will enhance Russia's position as a source for much needed energy resources. The recently proposed Sakhalin Energy Transfer Facility, located on Sakhalin Island, could make delivery of Russian LNG to Asian markets more viable and cost effective. Russia's *Power of Siberia* pipeline, the first pipeline to send Russian gas directly to China, launched operations on De-

⁹ <https://www.cruiseindustrynews.com/flip/expedition19/mobile/index.html#p=2>

¹⁰ <https://thebarentsobserver.com/en/travel/2018/05/arctic-cruise-ship-boom>

¹¹ <https://www.arctictoday.com/rosatom-looks-to-make-7-billion-investment-in-arctic-shipping-service/>

¹² <https://arctic-lto.com/nsr-shipping-traffic-activities-in-september-2019/>

¹³ <https://www.lngworldnews.com/arctic-lng-2-partners-make-fid/>

¹⁴ <https://www.bloomberg.com/news/articles/2019-09-05/russia-s-novatek-gives-green-light-to-arctic-lng-2-project>

ember 2nd of this year, ushering in greater connections between the two countries' markets.¹⁵

The United States should take note of this growing Russian Arctic infrastructure network and its ever-growing relationship with Asian markets. Renewed interest in America's Arctic as a source of energy security has spurred conversation about the need for, and feasibility of, a year-round or seasonal energy and transit complex along Alaska's North Slope. Although much work would need to be done, a Public Private Partnership may be of interest as the U.S. looks to secure its own energy sources and take advantage of vast LNG assets along Alaska's coast and the ever-increasing LNG markets throughout Asia. Yet, for LNG development and shipping to occur in and around Alaska, it must be economically reasonable, safe, reliable, regulated, and have a significant U.S. Coast Guard presence.

The United States has a well-functioning Marine Transportation System (MTS), and it is at the core of the Nation's economic prosperity. The U.S. Coast Guard maintains the safety, security, and efficiency of the MTS, providing stable regulations that enables \$5.4 trillion in economic activity per year. While challenging, an extension and variation of the MTS could be established in America's Arctic. The USCG *Arctic Strategic Outlook* describes such an expansion that would require an adaptation of MTS management tools, as well as innovative policies and technologies that are Arctic-appropriate. This can only be accomplished with the support and partnership of public and private sector entities and would be a tangible, actionable step the U.S. can take to prepare for future opportunities.

In preparation for greater U.S. commercial presence in the Arctic, the U.S. Coast Guard has taken steps toward improving navigational safety and environmental protection. A rare partnership with Russia has led to an agreement, entered into force one year ago, that establishes two-way shipping routes, promotes safe commerce, and takes into account subsistence patterns in the Bering Strait and Bering Sea. Additionally, the *Memorandum on Ocean Mapping of the United States Exclusive Economic Zone and the Shoreline and Nearshore of Alaska*¹⁶, issued on November 19 of this year, provides encouraging steps towards expediting shoreline and nearshore mapping capabilities for Alaska and its Arctic region. This is a critical component of any future, integrated, U.S. Arctic strategy that considers our homeland security, national security, economic security, as well as social and political security in a dynamically changing landscape.

The timing of the memorandum highlights how modern aids to navigation will be crucial in integrating the Arctic into the broader U.S. MTS and enhancing economic development. Less than 5 percent of the U.S. maritime Arctic is charted to modern international standards; we lack the basic information crucial to understanding our Arctic domain. Without robust maritime domain awareness (MDA), conducting safe and secure shipping for economic development remains a daunting challenge. As noted by the USCG *Arctic Strategic Outlook*, "MDA favorable to supporting economic growth and resource management requires information on vessels, crews, passengers and cargo carried (if applicable); pollution detection and tracking capabilities; weather and environmental observations, including ice reconnaissance; an assessment of living marine resources activity; and an assessment of human activity and infrastructure".

As noted, the U.S. Coast Guard's capabilities for MDA are stretched thin in the Arctic because there does not exist sufficient access to reliable, redundant, robust Internet connectivity. The result of which inhibits data gathering, information sharing between local, state, and Federal agencies and all facets of observational capabilities. This reality stifles commerce, SAR, national and homeland defense requirements, and limits Alaska communities to engage in state, national and international opportunities. Moreover, without reliable data gathering and dissemination, expansive and reliable infrastructure development and maintenance would be nearly impossible to realize.

Recommendation: A comprehensive and appropriately funded ocean mapping strategy should be developed and executed to advance all facets of U.S. interests and include the development of an Arctic MTS.

4. Connectivity

There are many ways to describe connectivity in the Arctic context. We tend to think of connectivity as just an Internet connection, but we should focus on a broader application of connectivity—addressing both digital and physical infrastructure.

¹⁵ <https://www.gazprom.com/projects/power-of-siberia/>

¹⁶ <https://www.whitehouse.gov/presidential-actions/memorandum-ocean-mapping-united-states-exclusive-economic-zone-shoreline-nearshore-alaska/>

As noted in my past testimonies, we do not have a digital or information divide in America's Arctic—we have a digital and information abyss. This abyss is not just a U.S. Coast Guard issue, but a real problem that jeopardizes our national and homeland security and one that must be met by the collective and integrated family of Federal agencies. To be clear, telecommunications and information infrastructure in the Arctic requires a coordinated and leveraged approach involving governance and operations expertise from local, state, and Federal entities.

Closing this *abyss in the Arctic, and specifically for the U.S. Coast Guard* will require innovative solutions that maintain levels of flexibility and scalability, coupled with persistent public-private investment. Joint efforts with local communities, state agencies, and other Federal institutions—including scientific and research organizations—would result in more reliable communication solutions.

These solutions should incorporate investments in, and funding for, “ice-breaking ships, such as the Polar Security Cutter, aviation assets, unmanned or autonomous systems, and trained personnel” capable of operating in the harsh and remote arctic environment, as stated in the *2019 Arctic Strategic Outlook*. If these investments are not made, the United States will continually fall behind other arctic nations. To date, the U.S. is the only Arctic State that has not made a comparable investment to these resources—it is also quickly being surpassed in this field by non-arctic states

China's proclaimed “Polar Silk Road” is designed to “facilitate connectivity and sustainable economic and social development of the Arctic”—by constructing and investing in infrastructure for arctic resource development, transportation hubs, and shipping routes.¹⁷ Already, China has pursued investments in various Arctic nations' infrastructure. The “near-arctic state” owns approximately 40 percent stake in the Yamal 1 facility and is considering financing port facilities in Arkhangelsk (Russia)¹⁸ and Kirkenes (Norway).¹⁹ The China Communications Construction Company [CCCC] bid on a contract for the construction of three Greenland commercial airports, located in Nuuk, Ilulissat, and Qaqortoq, at a cost upwards of \$550 million.²⁰

The country's dynamic investment interests also range from financing research centers like the Northern Lights Research Facility in Iceland, to pursuing investments in undersea fiber-optic cables such as the Arctic Connect cable system.²¹ A CNA report estimates that China's proposed investments amounted to “over \$1.4 trillion in the economies of the Arctic nations (including Finland and Sweden)” between 2005 and 2017.²²

Russia is also bolstering its dual-use Arctic assets. Their extensive lattice of ports, air bases, commercial hubs, a floating nuclear power plant off the Arctic coast City of Pevek, and SAR resources have been a component of civilian-government, as well as military activities, including recent tests of new weapons systems and increased troop deployments.

Meanwhile, the U.S. does not have a major deep-water port along 1,500 nautical miles of its Arctic coastline: from Dutch Harbor to Alaska's North Slope. As the *Arctic Strategic Outlook* states, “the closest Coast Guard Air Station to the Arctic is located in Kodiak, AK. This is approximately 820 nautical miles south of Utqiagvik, AK—a distance comparable of that from Boston, MA to Miami, FL.”

Without a viable deep-water port or string of ports—in the U.S. Arctic—commerce, SAR, and national security interests will not be met. The June 2019 National Defense Authorization Act includes “requirements to locate and designate ‘one or more’ U.S. strategic ports in the Arctic.” The U.S. must recognize and invest in the potential for dual-use facilities and capabilities in Alaska, starting with a multi-use port.

Of particular interest should be the development of a deep-water port along the Bering Strait. There have been numerous reports and recommendations made as to scale, scope, and location of such a port. Nome, Port Clarence, and other location options are all in need of review and final decision sooner rather than later. But in the spirit of leveraging and integrating U.S. national assets for the security of our nation, linking the development, construction, and complementary mission sets of future Arctic-related infrastructure seems the most prudent strategy.

¹⁷ http://english.www.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm

¹⁸ <https://www.globaltrademag.com/china-russia-collaborating-arctic-port/>

¹⁹ http://www.xinhuanet.com/english/2018-03/10/c_137029125.htm

²⁰ <https://www.defensenews.com/global/europe/2018/09/07/how-a-potential-chinese-built-airport-in-greenland-could-be-risky-for-a-vital-us-air-force-base/>

²¹ <https://www.capacitymedia.com/articles/3824070/cinia-moves-full-speed-ahead-with-arctic-connect>

²² https://www.cna.org/CNA_files/PDF/COP-2017-U-015944-1Rev.pdf

Therefore, the committee should continue to support a Bering Strait, dual-use port as well as an emerging interest in reconstituting and upgrading the former U.S. Naval base in Adak, in the Aleutian Islands. Here, an upgraded Naval installation would serve to secure and protect the Nation's maritime, homeland, national, and commercial security requirements, while providing a dual use port for the U.S. Coast Guard. The two port concepts are not mutually exclusive. Rather, I argue it is in the Nation's best interest to enhance and develop both.

Combining and leveraging military, national and homeland security, and other Federal and state government capabilities and assets will better prepare the U.S. for our new Arctic, while requiring a reconceptualization of how the United States views its Arctic and the critical role the region will play in the Nation's future. Developing such a component of a more cohesive U.S. Arctic strategy is not only beneficial, but necessary for U.S. leadership in the region. The 2017 U.S. National Security Strategy mentions the Arctic once, and the country has yet to put forward a document of integrated Arctic strategies, or guidelines for integration between various agencies such as DoD, DHS, DOE, and DOS.. Although there are seams of cooperation, for the most part, each entity carries out its own strategy in the Arctic (if it has one) even though cooperation is a key component in the region.

Recommendation: Advance the development of a port, or preferably a string of ports, along the North Slope of Alaska, Bering Strait, and Aleutian Islands that will provide dual use capabilities to meet the needs of the U.S. Coast Guard, national and homeland security entities, as well as other federal, state, local, and commercial interests. Advance the development and implementation of enhanced, integrated Internet and communications connectivity throughout the region and leverage public-private partnerships where feasible.

5. Communities

The people of Alaska, and more specifically the Indigenous peoples of Alaska are on the vanguard of a changing, dynamic, shifting, melting landscape. For many Alaskan communities the land is their life, their identity, their culture, and the source for most of their food. Nearly three dozen Alaskan communities have been identified by a 2009 Army Corps of Engineers report²³ as being seriously threatened by environmental change and in need of relocation; this number is likely to grow. These communities are stressed on many levels yet they have adapted and thrived in this landscape for thousands of years. But the changes are happening too fast, too dramatically, and too unpredictably to navigate with any certainty.

Alaskan communities live at the forefront of environmental change, and the consequential risks that develop as a result of those changes. For them, an oil spill represents not just an environmental disaster but a threat to the stability of the ecosystems upon which their livelihoods, food security, and cultural identities depend. Continued engagement between the USCG and Alaskan communities should be applauded and expanded through the Marine Safety Task Force initiative. The MSTF conducted safety and environmental protection missions (surveying and checking, for instance, bulk fuel storage facilities—a life sustaining resource throughout remote Alaska) in over 100 Alaskan communities.

The USCG is a leader in the Arctic, and their Coast Guard Cities and Communities program—five of which are in Alaska (though none in the Arctic region)—demonstrate their enduring commitment to cultivating relationships with communities with whom they collaborate. As noted in the *Arctic Strategic Outlook*, “the Coast Guard has been part of life in many Arctic communities for over 150 years as a neighbor, law enforcer, and life saver. Alaskan Natives have been partners and teachers, and we continue to benefit from their traditional wisdom and deep understanding of the Arctic domain.” Traditional Knowledge will play a key role in the future viability of these communities and will be important components of the U.S. Coast Guard's formulation of strategic, operational, and tactical decision-making.

Recommendation: The U.S. Coast Guard should further utilize Traditional Knowledge and expertise to enhance their missions throughout Alaska. Traditional Knowledge will remain an important component of a larger strategy to understand better a changing landscape and inform both strategies and tactics to address these changes; including the importance of community-based physical monitoring and detection.

6. Cooperation

Continued participation and leadership by the U.S. in the Arctic Council, the Arctic Economic Council, and the Arctic Coast Guard Forum is in our Nation's interest. These entities shape and reinforce a rules-based governance structure for the Arctic

²³ <https://www.poa.usace.army.mil/Portals/34/docs/civilworks/BEA/AlaskaBaselineErosionAssessmentBEAMainReport.pdf>

Ocean and indeed, the eight Arctic nations. They help to identify and conduct research and policy measures that strive to understand, mitigate, and address the impacts of a warming Arctic. The Arctic region is the only place, aside from the International Space Station, where the U.S. and Russia have maintained long-term cooperation, even in times of high tension. Because the Arctic Security Forces Roundtable has been on hold since the Russian annexation of Crimea, the Arctic Coast Guard Forum plays a more important role in maintaining open lines of communication between the U.S. and Russia.

It is important that on shared security concerns related to oil spill response, protecting marine living resources, shipping, and SAR, the U.S. continues to work collaboratively with Russia and the other Arctic nations. As previously noted, the U.S. and Russia have worked successfully together to create IMO-approved, designated shipping routes through the Bering Strait in order to reduce risk to mariners.

There were two incidents of concern this past summer in the Russian Arctic which underscore the need for the U.S. to work proactively and collaboratively with allies and partners to minimize risk of nuclear contamination, identify knowledge gaps, and develop a greater capacity to minimize harm from any event involving radioactive material. Such incidents also make clear the need for open lines of communication.

Recommendation: The U.S. Coast Guard must continue to shape and lead the efforts of the Arctic Coast Guard Forum, play a key role in the future of the Arctic Economic Council as it encourages continued, sustained, and responsible development of the North, and engage where appropriate with the United States Senior Arctic Official and her Arctic Council team at this consensus driven, Arctic focus organization.

7. Competition

The *Arctic Strategic Outlook* notes U.S. adversaries seek to weaken “the international order that underpins a free and open maritime domain.” It also states that “clear and universally held norms, coupled with transparency, can dissipate” the “cloud of ambiguity” under which they are operating.

When exploring the competition dynamic in the Arctic, specifically between the United States, China, and Russia, we should consider each country’s broader approach and national mindset. In the Arctic, and elsewhere, *China plays the game “Go,”* characterized by a long-term, methodical strategy to exert influence and power in a calculated fashion. Meanwhile, *Russia plays the game “Survivor,”* attempting to sustain an economy crippled by western sanctions and a declining population with an overreliance on natural resource development for both domestic and international markets. Finally, the *United States plays the game “Twister,”* attempting to balance its global leadership roles in the Atlantic Ocean, Pacific Ocean, South China Sea, Mediterranean Sea, Indian Ocean, and elsewhere, against the challenges presented by a new, accessible Arctic Ocean.

Military ties between Russia and China are growing stronger in the Arctic. This is evidenced by an increase in joint military exercises between the two countries including the Russia-based *Tsentr-2019* exercise. The exercise included approximately 128,000 military personnel and helped further develop China, India, and Pakistan’s operational capabilities in the high North region. The exercise included 1,600 troops under PLA Western Theater Command.²⁴ This reality should be considered in juxtaposition to the 2018 NATO Trident Juncture Exercise that included 50,000 NATO troops and partners; 20,000 of which were American troops.

In October of this year, Russian Federation President Vladimir Putin announced Russia would assist China in developing a *missile defense system* to strengthen China’s ability to counter attacks from cruise and ballistic missiles.²⁵ In mid-November of this year, Russia used a MiG-31K interceptor jet to test the Kinzhal (Dagger) *hypersonic missile* for the first time in the Arctic; the Finnish Government along with other Scandinavian countries took particular note of the test.²⁶ And as is well documented, Russia continues to revitalize Cold War bases while developing new assets along the NSR from Franz Joseph Land to Wrangell Island; the latter a virtual stone’s throw from Alaska.

²⁴ “Chinese troops participate in Tsentr-2019 drills” China Military. http://eng.chinamil.com.cn/view/2019-09/25/content_9635742.htm

²⁵ Guardian staff and agencies. “Russia is helping China build a missile defence system, Putin says.” The Guardian. October 3, 2019. <https://www.theguardian.com/world/2019/oct/04/russia-is-helping-china-build-a-missile-defence-system-putin-says>

²⁶ Devitt, Polina. “Russia tests hypersonic missile in Arctic—TASS cites sources.” Reuters. November 30, 2019. <https://www.reuters.com/article/us-russia-arctic-missiles/russia-tests-hypersonic-missile-in-arctic-tass-cites-sources-idUSKBN1Y40BB>

The *Arctic Strategic Outlook* notes the lack of “investments in ice-capable surface maritime security assets” on the part of the U.S. that “limits the ability of the Coast Guard, and the Nation, to credibly uphold sovereignty or respond to contingencies in the Arctic. It also diminishes America’s position as the partner of choice for allies and partner nations.” As a reminder, China, the self-declared “Near-Arctic State” currently has four icebreakers and is developing two new vessels, one of which is planned to be nuclear powered. Russia has 53 operational icebreakers, with six under construction and 12 more planned. One of these will be a weaponized icebreaker with an electronic warfare platform, an anti-aircraft missile system, cruise missiles, and a helicopter launch pad.²⁷

Presence, both operational and strategic, is critical to U.S. power projection in the Arctic region. The USCG is the critical, visible leader in this area as they try to meet their mission to counter new regional competition from both Russia and China. Yet, the U.S. Coast Guard has only one medium icebreaker *The Healy* that services the Arctic region, and one heavy icebreaker, the *Polar Star*, which is already well past its expected service life and serves our Nation’s Antarctic mission sets.

The *Arctic Strategic Outlook* highlights the need for six polar security cutters to more effectively carry out its array of current and future mission sets in Polar Regions. The recommendation from the National Academies of Sciences, Engineering, and Medicine (NASEM) report on acquisition and operation of polar icebreakers noted the “USCG should follow an acquisition strategy that includes block buy contracting with a fixed price incentive fee contract and take other measures to ensure best value for investment of public funds.”²⁸

A block buy would likely make the contracts more competitive and lucrative, while bringing into service quicker these national assets. As noted in the *Arctic Strategic Outlook*, the Coast Guard requires the most advanced information possible on the Arctic environment and plays a critical role in the Nation’s scientific effort at both ends of the globe. Therefore, it is imperative that all Polar Security Cutter fleet designs include structural and functional capabilities to support both Arctic and Antarctic research efforts as informed by the scientific community.

Recommendation: Fully fund and commission 6 Polar Security Cutters. In addition, and to further leverage national assets in the Arctic, support the creation and full funding of the proposed Ted Stevens Arctic Center for Security Studies, which would be the first DoD Regional Center in the Arctic. This Center would address specific matters relevant to Arctic security and our Nation’s defense, as well as leverage and complement the outstanding work conducted by the existing DHS supported Arctic Domain Awareness Center; a DHS Center of Excellence, in Anchorage, Alaska. The two Arctic-focused entities would be visible, tangible, and valuable steps toward a more “whole of government” approach to the Arctic as well as critical tools to inform and guide a more comprehensive Arctic strategy with necessary policy, training, and presence.

And as a final note on the changing Arctic and our national security, a convergence of the Arctic’s 7 Cs currently unfolding in Greenland. Greenland is experiencing the dramatic effects of global warming (in fact, just this week, a recent study in *Nature* noted the Greenland ice sheet’s total losses nearly doubled each decade to an average of 254 billion tons lost annually—an increase that puts another six million people globally at risk of flooding); the promise of significant stores of strategic minerals and fisheries; foreign interest in developing ports and complementary infrastructure; a desire to be connected to regional and global markets; communities trying to adapt to a rapidly changing landscape; an active and important voice, in partnership with the Kingdom of Denmark, in the Arctic’s future; and is situated in one of the most geographically, geopolitically, and geostrategically important locations in the world. In short, Greenland is emblematic of the emerged Arctic.

Conclusion

Mr. Chairman, I often hear the Arctic referred to as an *emerging issue*. Mr. Chairman, *the Arctic has emerged*. As I have explained, it is no longer an isolated or remote region; rather it is an integrated component of our global political, economic, social, physical, and security landscape. The region is experiencing rapid and dynamic change and these *seven unique drivers*, the Arctic’s 7Cs, help frame for this committee, and perhaps others, these pressing global issues in a way that can help to better understand and address our future Arctic.

²⁷ Perisic, Kyle. “Russia reveals weaponized icebreaker it plans to use to control the Arctic.” American Military News. November 1, 2019. <https://americanmilitarynews.com/2019/11/russia-reveals-weaponized-icebreaker-it-plans-to-use-to-control-the-arctic/>

²⁸ “Acquisition and Operation of Polar Icebreakers: Fulfilling the Nation’s Needs” <https://docs.house.gov/meetings/PW/PW07/20170725/106311/HHRG-115-PW07-20170725-SD004.pdf>

This testimony was shaped and informed with the input and assistance of my Wilson Center colleagues Mr. Jack Durkee, Ms. Marisol Maddox, and Ms. Bethany Johnson.

Senator SULLIVAN. Great. Thank you, Mr. Sfraga. And I want to thank all the witnesses for their outstanding and informative testimony.

I am pleased to have the Chairman of the Full Committee, of the Commerce Committee, and I think he would just like to say a few words on the importance of this topic as well.

Mr. Chairman.

**STATEMENT OF HON. ROGER WICKER,
U.S. SENATOR FROM MISSISSIPPI**

Senator WICKER. Thank you, Mr. Chairman. And also thank you to Senator Markey. You have both exercised great leadership in this area, and I look forward to working with you in the future.

And I am glad to be here at today's hearing to evaluate the Coast Guard's strategic presence in the Arctic and its ability to meet current and future challenges in the region.

Our next panel will include Admiral Ray, and I appreciate his leadership as Vice Commandant.

The Coast Guard is continuously deployed around the world on all seven continents and in every ocean. The Coast Guard is also providing and operating the U.S. polar-capable fleet. Presently the Coast Guard operates one heavy icebreaker, the POLAR STAR, and one medium icebreaker, the Healy. During my visit to Alaska in August with Admiral Ray and Chairman Sullivan, I had the privilege of sailing aboard the HEALY while it was underway in the Arctic Ocean. However, the Coast Guard currently lacks the capability or capacity to assure access in the high latitudes.

But help is on the way. We are finally building the first new U.S. polar icebreaker in over 2 decades, and I hope we are only getting started.

My visit to Alaska also included a stop at Dutch Harbor, the closest U.S. deepwater port in the Arctic. Dutch Harbor is over 800 miles from the strategically important Bering Strait. I observed how a lack of critical port infrastructure in the Arctic significantly limits both the Coast Guard's response time and its operational capability in the region.

Icebreaking capacity and infrastructure are just two of the many challenges facing the Coast Guard in the Arctic. We are hoping to address these and other challenges in the Coast Guard Authorization Act, legislation sponsored by Chairman Sullivan, which we are working on with our House delegates, and we hope we are seeing the finish line on that piece of legislation.

So thank you, Mr. Chairman and Mr. Ranking Member.

Senator SULLIVAN. Thank you, Mr. Chairman. And it was great having you and Admiral Ray in Alaska this summer. It was really a wonderful trip, and I know we will be able to talk about that more on the second panel.

I am going to start the questioning here. You know, Mr. Sfraga, you talked about I think you said a digital or Internet abyss. I want to talk about what I mentioned in my opening statement, what the Chairman mentioned in his opening statement, which is

essentially an infrastructure abyss. Again, my opening statement highlighted this idea that we really do not have any capability with regard to a strategic port. This is not a call for a giant Navy base or Coast Guard base. It is simply right now the ability to actually just have an icebreaker or a national security cutter or a Navy destroyer pull up to a port in America's Arctic. Right now, with the exception of Dutch Harbor and Anchorage, we cannot do that.

Is that acceptable to you and should part of the DOD and Coast Guard plan not be to at least have what I have been calling a series of strategic Arctic ports in the region, which in the Lower 48, every community would find that to be a no-brainer? And yet, we still struggle with the Pentagon, with the Coast Guard on this issue of a strategic Arctic port that can just handle shipping. Can I get each of your views on that, how important it is, and whether or not you agree with what I just stated? We will start with you, Ms. Conley.

Ms. CONLEY. Senator, we absolutely need a deepwater port in the American Arctic.

Senator SULLIVAN. At least one. I think several.

Ms. CONLEY. I will start with one.

Senator SULLIVAN. We have several on the East Coast. Right? Why would we not have it in the Arctic?

Ms. CONLEY. Indeed. You know, let us think about how long it took us to get the polar security cutter. It took over a decade of talking and studying. We cannot wait 10 years for this infrastructure.

But I think we have to do it in a smart way. We have to think about public-private partnerships. We have to do this efficiently.

Senator SULLIVAN. Do we not need to do it quickly?

Ms. CONLEY. Absolutely. This is why there has to be a dedicated Arctic security initiative or infrastructure budget that gives impetus, that sends strong messages to our private sector partners that there is sustained funding. We have to do this. We have to stop writing studies and reports that are not tethered to resources and an implementation plan. We cannot wait any longer for this.

Senator SULLIVAN. Ms. Goodman, do you have a thought on this issue of infrastructure?

Ms. GOODMAN. Mr. Chairman, yes, I agree we should have a strategic port in the Arctic, and we should use this opportunity because we need the infrastructure in the Arctic also to understand—and amending Heather's very brilliant concept of an Arctic security initiative, it should have an environmental security component as well. And we should use it as a way to understand what it takes to build a resilient port, resilient to changing conditions, changing more rapidly than we expect in the region.

Senator SULLIVAN. A great point. Excellent.

Mr. Sfraga, infrastructure, a series of ports like we have on the East Coast.

Dr. SFRAGA. I agree, a string of ports. I think we need a string of ports from the North Slope along the Bering Strait, use our Adak Naval Base—

Senator SULLIVAN. I mean, what good is an icebreaker and national security cutter if you cannot actually pull up in a port in the Arctic, which you cannot right now?

Dr. SFRAGA. Agreed, especially when we see increased traffic along the Bering Strait by Russia, China, and other nations. So to me a string of ports makes total sense. I think you need sort of a Manhattan Project for the Bering Strait for this string of ports. Let us resource them. They are all different. The North Slope needs something. The Bering Strait needs something. The Aleutians need something. And if you had one concerted effort funded, strategized. As Heather said, we have studied this over and over again. We kind of know what we need. I think it needs to be resourced, but one effort, DOD, DHS, Commerce, and come together and build the string of ports finally.

Senator SULLIVAN. Let me ask just very quickly because I do want to be efficient on our timing here. Ms. Conley, you have studied the National Security Strategy, the National Defense Strategy, which I think has very strong bipartisan support in the Congress. But can you describe how important the Arctic is to U.S. national security and how increasingly we are falling behind with regard to what the new National Security Strategy talks about, great power competition?

Ms. CONLEY. Thank you, Senator. Yes. In many ways we understood the strategic imperative of the Arctic in the Second World War and, of course, during the cold war. And at the end of the cold war, we forgot. We absolutely let it atrophy. Of course, Russia did as well. But around the 2007–2008 period, Russia made a strategic decision to reconstitute in part its military footprint and put its budget, its ambitions, and its forward-looking policies in place. And a decade later, we are seeing the manifestation of that in increased nuclear exercises in the Arctic and combined operations.

China discovered the strategic importance of the Arctic around the 2010–2011 time-frame, and they are bearing the fruits of their strategic ambitions.

We continue to believe that we can just hold this minimalist position, do the bare minimum, and it is going to be OK. And I want to challenge that notion. We talk about great power competition in the National Security Strategy and the National Defense Strategy, but those documents are basically silent on the Arctic. And now that we have placed this in context, we have to put our actions behind our rhetoric. So whereas Secretary Pompeo laid out a great power competition framework, and then opening up our consulate in Nuuk is the only response to that, the message is that we are rhetorically interested in great power competition in the Arctic, but we are not interested in putting our budget where our mouth is.

Senator SULLIVAN. I am just going to ask you one final yes or no on this. Again, I am going to turn this over to Senator Markey here.

The Armed Services Committee on a provision I wrote required the Secretary of Defense to put forward an Arctic strategy. It was a good attempt. It needs to be much more fulsome. But they talked about we are going to protect our sovereignty by doing freedom of navigation operations in the Arctic.

Does the U.S. military have the capability to do a freedom of navigation operation in the Arctic? Yes or no.

Ms. CONLEY. No. Neither the Navy nor the Coast Guard could do a freedom of navigation operation in the Arctic today.

Senator SULLIVAN. That is good to know.

Dr. SFRAGA. No, sir.

Ms. GOODMAN. No, sir.

Senator SULLIVAN. Senator Markey.

Senator MARKEY. Thank you, Mr. Chairman.

Again, let me just put it out there again that between 1992 and 2019, Arctic sea ice shrank by nearly one million square miles, larger than the entire area of Alaska. One million square miles. And the Arctic is warming twice as fast as the global average. So this is only going to accelerate and create an even greater number of issues that we have to deal with. And we are far behind in dealing with it.

And all of it just comes back to the Oxford English Dictionary naming climate emergency as the 2019 word of the year. And they could have used the Arctic as the definition of the climate emergency, receding ice, raging wildfires, melting permafrost, endangered Arctic communities, and the global climate system.

Ms. Goodman, as you mentioned in your testimony, what happens in the Arctic does not stay in the Arctic. Melting ice sheets are now the largest contributor to sea level rise, and the slowdown of the Gulf Stream due to warmer Arctic waters is raising sea levels in the northeast United States. Scientists have also linked warmer Arctic temperatures to more extreme winter weather in the eastern United States.

Ms. Goodman, how does climate change in the Arctic affect the Coast Guard's operations, facilities, and readiness in States in more southern latitudes on the Atlantic, including Massachusetts?

Ms. GOODMAN. Well, thank you, Senator Markey.

The Coast Guard now has to respond more frequently to these extreme weather events, more search and rescue missions all around our coastline, as well as we see fish stocks moving. So there are more challenges in managing fisheries today. We see the Coast Guard deployed ever more frequently for many different missions. The Homeland Security mission essentially has become quite intense, and the Coast Guard has had to not only up its game in the Arctic, but it has to up its game along our eastern seaboard as well.

And the challenge is, as you both know, it is often under-resourced to do its job. As we often say in the Department of Defense, a strategy without budget is hallucination.

Senator MARKEY. Exactly.

And again, the strategy has to be to deal with climate change. That is what the Coast Guard is living every single day, and if their resources are not increased, then their capacity to deal with the consequences—

Ms. GOODMAN. Right. And they are really on the front lines of dealing with the changing climate along our coast every day.

Senator MARKEY. Absolutely.

The Coast Guard must do all it can to defend its facilities against the effects of climate change. As I mentioned in my opening statement, I worked to include language in this year's Coast Guard reauthorization that asked the Coast Guard to assess which of its installations are the most vulnerable to climate change as the rest of the Department of Defense has done. The Department of Defense

report found that climate change threatens more than two-thirds of our operational critical military installations.

Ms. Goodman, what can we learn from the Department of Defense reports as we work to make sure the Coast Guard is climate-ready in the Arctic and at all of its facilities?

Ms. GOODMAN. Well, Senator Markey, we need to climate-proof our bases and our installations, Coast Guard as well as military. The NDAA this year includes several requirements, one for military installation resilience planning, which I think is important and could also be potentially applied to the Coast Guard. It also updates the Uniform Facilities Code to enable defense facilities to be better prepared for extreme weather events, flooding, sea level rise, wildfires, and other climate conditions. And again, that provision may potentially also apply to the Coast Guard. Again, it will have to be resourced, but it will enable us to help provide resilient infrastructure for the future.

Senator MARKEY. You organized a group of admirals and generals to speak out on this issue in 2007, and I actually had General Gordon Sullivan be the first witness before a hearing which I conducted in April 2007 on this issue warning of the danger of climate change to our national security.

The numbers of admirals and generals in that group are now exponentially larger. Are they not?

Ms. GOODMAN. Oh, many. We have over 60 members who have participated.

Senator MARKEY. Admirals and generals.

Ms. GOODMAN. Admirals and generals, including Coast Guard officers, and still very active today.

Senator MARKEY. So the issue is not getting smaller. It is getting larger largely because it is unaddressed in terms of what the consequences will be.

Ms. GOODMAN. Right. As we have said with respect to Coast Guard operations as well, this issue and climate change across our spectrum of operations and facilities still deserves more attention and more investment.

Senator MARKEY. Does the Coast Guard need additional data or resources to update its facilities to make them more resilient to climate change?

Ms. GOODMAN. Absolutely it needs more data, but there are things that it can do now with the data it has as it plans for future operations.

Senator MARKEY. And if I may, Mr. Chairman, I just want to ask Mr. Sfraga a quick question, which is that the BP oil spill was the worst environmental disaster in American history, resulting in the death of 11 crew members and injuring 17 others. Oil spewed into the ocean for nearly 3 months despite the presence of helicopters and a variety of vessels able to respond. We also had reliable weather and ocean current data and a robust communications network. None of that is the case in the Arctic.

Mr. Sfraga, can you describe what an oil spill would look like in the Arctic and our current capacity to respond?

Dr. SFRAGA. Senator Markey, I can describe it by saying not good. We simply do not have the assets and the resources for an oil spill or an LNG tanker disaster in the Arctic. Like you men-

tioned, the Gulf of Mexico, private corporations, public entities, personal vessels—this was an all-out onslaught to not only save lives but also to protect the environment.

We have none of that in the Arctic. And that is why I think you need to combine the search and rescue, spill mitigation, and emergency clauses within a port or facilities along the Arctic. We do not know how oil, ice, and the Arctic Ocean interact. To have a devastating oil spill in the Arctic in the ice would be monumental not just to contain it, but what it would do for the environment. So we do not have, A, the basic research to really give us a good idea of what would happen in that domain. Two, we do not have the assets. As Senator Sullivan pointed out, you have got over 800 miles from Kodiak to the North Slope of Alaska just to get there to see what might happen.

So I am quite concerned. That keeps me up at night, as well as a disaster with a potential cruise ship. So it would not be like we had in the Gulf of Mexico. It would be 180 degrees from that.

Senator MARKEY. And it could wind up being days before an inadequate response could be put in place.

Dr. SFRAGA. That is correct, sir, and that is why I think having ports is far more than just hooking up ships. Having ports provides us capacity and capabilities needed to protect the environment for any development from the U.S. side, but also we must think about the increased traffic coming from the northern sea route down the Bering Strait that has nothing to do with our government at all.

Senator MARKEY. And the damage to the Arctic ecosystem could be—

Dr. SFRAGA. Significant.

Senator MARKEY. Catastrophic.

Dr. SFRAGA. Yes. And what is problematic there, one final note, is I would say it would be catastrophic. But in reality, the basic research—we still cannot give you a definitive answer on that, but I would say that it would not be good.

Senator MARKEY. Thank you, sir.

Dr. SFRAGA. Thank you.

Senator SULLIVAN. One final question. Admiral Ray is going to be testifying next, so we are going to bring him up.

You know, I mentioned we are starting to build the first icebreaker. I think everybody recognizes this is important and the final progress that we are making. The NDAA actually has the authorization and schedule for six. The Coast Guard announced that the first couple of these would be home-ported in Seattle. I know Senator Cantwell is very pleased with that, which makes sense because that is where the current icebreakers are.

I would just ask, as we talk about ports and infrastructure, you want, obviously, these capabilities near where the action is. Let us assume we build six on time in the next 5 to 6 years. Does it not make sense to home-port the next three in the part of America that is the Arctic? Would you agree with that, each panelist?

Ms. CONLEY. Senator Sullivan, I think we have to remind ourselves that these are also for Antarctica. In fact, that heavy polar security cutter is likely going to spend most of its time in Antarctica.

Senator SULLIVAN. No offense to my colleague from Florida, but you would not want to home-port these in Miami.

Ms. CONLEY. No. But I am just saying I think sometimes we think these are only for the Arctic.

Senator SULLIVAN. Well, I actually think, to be perfectly honest, the Coast Guard is the Coast Guard. And their mission—I know they have an Antarctica mission, but I think we need to take care of our home first, our coasts first. So, this is a discussion I have been having with the Coast Guard about prioritization. This is not, as you mentioned, when there is not a lot of activity in the Arctic. There is great power competition in the Arctic. There is a lot going on in the Arctic. The Coast Guard needs to recognize that. We are going to talk to Admiral Ray about that. So, the Antarctic in my view is an important mission, but it certainly does not rise to the importance of protecting America, which is their primary mission.

Ms. CONLEY. I do not disagree. And this is why we have the need for six icebreakers. If we consider, as Sherri noted, that Russia is weaponizing icebreakers, that China is now proposing to build a nuclear-powered icebreaker which can maintain long-term presence potentially in the Arctic, we need a more significant presence closer—

Senator SULLIVAN. So just to answer my question, would it make sense to home-port the additional ones in the place in America where they are needed?

Ms. CONLEY. They need to be closer to the Arctic and to the economic activity there, which means they have to be in the American Arctic.

Senator SULLIVAN. Ms. Goodman, do you have a view on that?

Ms. GOODMAN. Senator, I do think we need to be able to home-port at least one or more of the new icebreakers in the American Arctic.

I also want to stress that I think that continuing presence in Antarctica is important for America's global leadership.

Senator SULLIVAN. No. I am not saying it is not important. I do not want to be misinterpreted there. I agree with you. I just think we need the capability to guard our own shores, and that is why we need at least six. And I think we need more than six, but six is good.

Mr. Sfraga, do you have a view on that?

Dr. SFRAGA. Senator, yes, I think six is a good start. I do think at least a couple of these icebreakers need to be home-ported in the State of Alaska or near to the Arctic. I do think it should be in the State of Alaska. How that pans out is up to the Coast Guard.

Senator SULLIVAN. No. It is actually not just up to the Coast Guard. It is the point of hearing here. It is up to Congress working with the Coast Guard.

Dr. SFRAGA. Six is a good start. How they are allocated is up to Congress. But I do think at least two of those need to be in the Arctic.

Senator SULLIVAN. Great. Thank you.

Well, listen, you have been a great panel, and we are going to have additional questions for all of you I am sure. Thank you for your leadership. Thank you for your outstanding testimony. And all of you have really, really played a great role, and I think getting

the Congress and the Executive Branch to finally wake up to our challenges you are seeing is very bipartisan. It is bipartisan not just on this committee, but on the Armed Services Committee. But your leadership and your expertise is going to be continued to be needed by the Congress, by the Coast Guard, by the military. And I really want to thank you for the outstanding service you have provided our Nation already and the testimony today. We anticipate having the three of you back in front of these committees on a very regular basis, as long as I am around this place. So thank you very much.

Ms. CONLEY. We call ourselves the "Arctic Musketeers." So you have got the three of us.

[Laughter.]

Senator SULLIVAN. We will excuse you and now have the Vice Commandant of the Coast Guard for our next witness.

[Pause.]

Senator SULLIVAN. Admiral Ray, welcome, sir. The committee is very, very pleased to have you here. You have 5 minutes for your opening statement, and we, of course, will submit for the record a longer written statement, if you would like that, as well. The floor is yours.

**STATEMENT OF ADMIRAL CHARLES W. RAY, VICE
COMMANDANT, UNITED STATES COAST GUARD**

Admiral RAY. Thank you and good morning, Mr. Chairman. I appreciate you having me here. Ranking Member Markey, good to see you as well, sir. Thank you for having me.

And thanks for forming up the Coast Guard Caucus, sir. I look forward to working with you moving forward.

Senator SULLIVAN. About time. Right? I mean, holy cow. But we are glad to have done it.

Admiral RAY. Far be it for me to tell you how to form up caucuses, but I am proud you got one.

Senator SULLIVAN. And it is very bipartisan. A lot of Senators already have joined.

Admiral RAY. Yes, sir.

I appreciate the opportunity to testify before you today, and I ask that my written testimony be submitted for the record.

Senator SULLIVAN. Without objection.

Admiral RAY. Yes, sir.

On behalf of Admiral Schultz and the entire service, I would like to thank this subcommittee for your unwavering support for our Coast Guard. Today I will discuss our strategy to uphold American sovereignty and advance national security interests and promote economic prosperity in the rapidly evolving Arctic.

As you state in your opening statement, sir, for over 150 years, the Coast Guard has been America's primary maritime presence in the Arctic, and we have seen the impact of increased accessibility, human activity, and geostrategic competition.

This past August, Senator Wicker and I had the opportunity to witness the increased accessibility firsthand, as we flew 40 miles north of Utqiagvik to land aboard Healy as she operated in an open Arctic Ocean. As a result of the opening of this new ocean, commercial opportunities abound from energy production, surging

cruise industry, expanded environmental tourism, centuries old subsistence activities are being altered. Hundreds of fishermen must go further away from traditional fishing and hunting grounds. Illegal unreported and unregulated fishing is increasingly a threat with the obvious potential to negatively impact Alaska seafood industries and the U.S. economy.

As we have seen many times in history, when there are new opportunities for resources, the potential for competition increases. Nations seek to shape the security environment, expand their influence, and advance their own interests. As has been stated several times, Russia has the world's largest icebreaker fleet, and more importantly, they use this, expand their infrastructure to bolster military activities, grow their economic investments along the northern sea route. From that position of strength, they have the ability to exert influence and compete pretty effectively below the level of armed conflict.

As has been stated, China, a non-Arctic state, is also investing heavily in the region. This year they took delivery of their first domestically built icebreaker, and they are a shipbuilding country. And they are currently designing a nuclear-powered icebreaker. China is also pursuing economic investments, oil, gas, and rare earth minerals, as was mentioned by the earlier panel. And I think their encroachment on the Arctic is emblematic of what they have done all over the world. Left unchecked, their actions risk fracturing the Arctic's kind of rules-based governance.

To address these expanding operational challenges and threats to national security, Coast Guard, as has been stated, released our Arctic Strategic Outlook last April. It builds on successes we had from our 2013 strategy and highlights the value that the Coast Guard delivers as part of a whole-of-government solution to our Arctic challenges.

Outlook reaffirms our commitment to American leadership in the Arctic, establishes three lines of effort, as the Senator said, will enhance our capability to operate effectively in the Arctic domain, strengthen rules-based order, innovate and adapt to promote resiliency and prosperity.

As has been stated many times by the earlier panel, we must maintain a physical presence in the Arctic. It begins with icebreakers, and I thank this subcommittee, sir, for all your support for that. It has been a long haul, but we are a lot better off than we were just a couple of years ago.

Our presence includes operations in communities, ports, and waters across the region. Through Arctic Shield, it is scalable year-round. And just as we have in many other missions in other parts of the world, we will use our extensive authorities and unique capabilities to continue to cultivate a global coalition of like-minded partners. We will work with Federal, State, and local communities to strengthen interoperability and secure U.S. sovereign rights.

In the past year, the Coast Guard cooperated with the Department of Defense in the Arctic expeditionary capabilities exercise the Senator referred to in both Seward and Adak. We participated in a mass rescue exercise with the Arctic Coast Guard Forum in Finland, and we hosted the North Atlantic Coast Guard Forum.

In addition to physical presence on the seas to meet the needs of the nation, we must have reliable technical capabilities that include communications, maritime domain awareness, and navigation. After Senator Wicker and I left Healy in August, they sailed north of 75 degree north, and they were off the grid for 27 days, no comms, except for a sat phone. Addressing limited factors require a whole-of-government.

So I am confident with the support of this committee, we will rise to these challenges.

Thank you for the opportunity to testify and I look forward to your questions.

[The prepared statement of Admiral Ray follows:]

PREPARED STATEMENT OF ADMIRAL CHARLES W. RAY, VICE COMMANDANT,
UNITED STATES COAST GUARD

Introduction

Good morning Mr. Chairman and distinguished Members of the Subcommittee. It is my pleasure to be here to discuss the U.S. Coast Guard's strategy and operations to safeguard national security interests and advance safe, secure, and environmentally responsible maritime activity in the Arctic Region.

The Coast Guard has been operating in the Arctic Ocean since 1867, when the United States purchased Alaska from Russia. Since that time, the state of affairs in the Arctic has evolved significantly. The environment is experiencing unprecedented levels of change. The ice is receding; storms are increasing in frequency and magnitude; the coast is eroding; and permafrost is thawing. Alaskan residents are striving to sustain their culture and way of life while residents and non-residents alike are pursuing emerging opportunities. For the Coast Guard, the demand signal for our services is expanding along with the operational environment, exacerbating the tyranny of distance of the region. The types of commercial activity are morphing, from oil and gas exploration a few years ago to the recent surge in cruise ship activity and expanding environmental tourism. These rapid changes in types and location of activity, along with the changes in the physical environment, magnify the challenges in executing the Service's mission to advance safety, security, sovereign rights, and stewardship across the Arctic.

Simultaneously, the geopolitical environment is rapidly changing as state and non-state actors seek to advance their own interests in the Arctic. Allies, partners, and competitors alike increasingly compete for diplomatic, economic, and strategic advantage. The National Defense Strategy describes a world no longer at either peace or war but rather one of enduring great power competition.

Shaping and influencing this continuum requires a mixture of diplomatic, informational, military, economic, financial, intelligence, and law enforcement efforts to achieve and sustain national strategic objectives. As the only U.S. Armed Force with both military and law enforcement authorities, combined with membership in the intelligence community, the Coast Guard moves seamlessly to bridge the layers in this competition continuum. Specifically, the Coast Guard's constabulary function and broad authorities serve as a beneficial bridge between the hard-power lethality of the Defense Department and soft-power diplomacy of the State Department. This strategic versatility is well suited for operating in ambiguous environments requiring a flexible blend of diplomatic, information, military, economic, financial, intelligence, and law enforcement elements of statecraft. This makes the Coast Guard a unique agency to cultivate strong international relationships and better build a coalition of Arctic partners based on mutual interests and values that strengthen regional stability and enhance prosperity across the region. In collaboration with our Federal partners, the ultimate goal is for the Coast Guard to be the preferred, transparent partner in the Arctic.

Our recently published 2019 Arctic Strategic Outlook reaffirms the Service's commitment to American leadership in the region through partnership, unity of effort, and continuous innovation, and establishes three lines of effort to achieve long-term success. First, we will enhance capability to operate effectively in a dynamic Arctic domain; second, we will strengthen the rules-based order; and third, we will innovate and adapt to promote resilience and foster prosperity. Our strategy aligns with the Nation's needs and interests to secure the Arctic, which requires significant investment and a whole-of-government approach across multiple Departments, agen-

cies, and Services. The Coast Guard's value in this whole of government approach is our experience, leadership, model behavior, and ability to compete below the level of armed conflict. Therefore, strengthening the Coast Guard empowers the Nation to secure the Arctic against threats and shape the region as a safe, cooperative, and prosperous domain.

National Security Interests in the Arctic Region

The United States is an Arctic nation with extensive sovereign rights and responsibilities, and our national security interests in the Arctic are significant, in part due to the reemergence of great power competition in the region. As access to the region evolves, many Arctic and non-Arctic nations aspire to assert or expand their role in governing the region; the dynamic operational environment continues to present risks and opportunities for a broad spectrum of stakeholders. To safeguard our national interests, the United States must plan for a robust, year-round maritime presence commensurate with the expanding interest in the Arctic's strategic value, in its natural resources, and in its potential as a transportation corridor between Asia, Europe, and North America. If we are not vigilant and proactive, other non-Arctic nations will outpace us in assuring their strategic interests in the Arctic in ways that may adversely affect the United States' interests.

Actions and intentions of Arctic and non-Arctic states shape the security environment and geopolitical stability of the region. In particular, our two near-peer competitors, Russia and China, are demonstrably intent on exploiting the maritime domain to advance their interests. Twenty percent of Russia's landmass is north of the Arctic Circle, and both onshore and offshore resource (minerals, oil, and gas) development is crucial to the Russian economy. Russia is also advancing the growth of the Northern Sea Route (NSR) for trans-Arctic shipping and other commercial opportunities.

The NSR continues to set new shipping records, last year reaching 19.7 million tons of goods transported along the route. Natural resource extraction is the main contributor to these increases, predominantly oil and gas shipments from their Yamal facilities. If their energy projections come to fruition, then transport volumes on the NSR could reach 100 million tons per year by 2030.

From a military perspective, Russia's long Arctic coastline, once stripped of sea ice in the future, will be both vulnerable, and able to support naval fleets readily deployable between the Atlantic and Pacific. The Russian government is currently rebuilding and expanding military bases that had previously fallen into disuse. These renewed capabilities include air bases, ports, weapons systems, troop deployments, domain awareness tools, and search-and-rescue response. Additionally, Russia has the world's largest number of icebreakers. With over 50 icebreakers that include four operational, nuclear-powered heavy icebreakers, and plans to build an additional seven nuclear powered icebreakers, Russia maintains the capabilities, capacities, experienced crews, and infrastructure necessary to operate and surge into the Arctic year-round.

China has recently taken an active role in Arctic development, pursuing economic investments with every Arctic nation in key strategic areas, such as oil and gas development, ports, railways, and infrastructure. It has purchased numerous resource deposits throughout the region, including uranium, energy, and rare-earth elements. With the release of their Arctic Policy paper in January 2018, China declared itself a nation intrinsically tied to the Arctic, and signaled their intention to play a security and governance role in the region. China has directed Chinese companies and government agencies to become more involved in Arctic affairs, and is rapidly developing its ability to operate in the region. This year, China launched its first home-built icebreaker and has begun designing an even more powerful and potentially nuclear-powered Polar icebreaker expected to have twice the icebreaking capability of its newest vessel. With three icebreakers China will have greater access than the United States currently has to the Arctic, its ports, and its resources. The concern with Chinese activities in the Arctic is the potential to disrupt the cooperation and stability in the region. Around the globe, China uses coercion, influence operations, debt-trap diplomacy, and implied military threats to persuade other states to heed China's strategic agenda. China views the Arctic as a component of its One Belt, One Road initiative, recently dubbed the Polar Silk Road. China's ambitions and outreach are fraught with risk, often times diminishing the sovereignty of states and fracturing the rules-based governance currently employed in the region.

National security interests extend to the local level as well. For example, economic, environmental, and human security and stewardship are also linked to the changes and expanding activity in the Arctic. Significant increases in natural resource extraction in the U.S. Arctic have not yet materialized, but industries continue to explore opportunities so that they are positioned to leverage economic pros-

pects as they emerge. Current industry growth in the Arctic includes a significant increase in cruise tourism and transpolar flights, which could potentially increase search and rescue missions and risk to the pristine environment. Additionally, we have observed steady but measured growth of shipping through the Bering Strait over the past ten years, across all sectors of industry. As the Arctic continues to experience longer and larger periods of reduced or ice-free conditions, commercial interest and exploitation will grow. A recent U.S. Committee on the Marine Transportation System report projects that by 2030, vessel traffic through the Bering Strait could increase to more than 370 transits, which is roughly three times the 2008 traffic levels. This potential rise will increase the demand for the Coast Guard to monitor, protect, and regulate increased maritime activity, such as de-conflicting shipping corridors in U.S. waters with subsistence hunting and fishing communities.

Food security is another significant issue for Arctic residents and our Nation as a whole. The Bering Sea provides more than half of the wild-caught fish and shellfish in the United States, and the wildlife for subsistence harvesting. Alaska is ranked seventh in the world in global fish exporters, and their seafood industry accounts for almost \$6 billion a year in total economic activity. Additionally, approximately 70 percent of the U.S. Arctic population relies on subsistence hunting and fishing for survival, the vast majority of which comes from the sea. Thus, changes occurring in the Arctic Ocean are increasing the risk to food security for the globe, from shipping that disrupts migration patterns, to increased risk of pollution incidents, to growth in illegal, unreported, and unregulated fishing as fish stocks migrate.

As human activity continues to increase in the Arctic region, challenges associated with legal and illicit activity plus state and non-state actors are likely to increase. In the face of this competition continuum, the Coast Guard's value proposition is even more critical in the Arctic and around the globe. The Service upholds freedom of the seas and the rules-based order by setting and enforcing standards of behavior in the maritime domain.

Balancing National Security Interests Across the Globe

The Coast Guard possesses a broad suite of authorities and capabilities unique from the other armed services and traditional instruments of national defense. As previously noted, the Coast Guard's authorities expand beyond traditional military and intelligence roles, to include law enforcement and regulatory roles. This combination, along with a multitude of steady-state international bilateral agreements, offers a distinct compliment to conventional defense forces in the ongoing struggle to compete below the level of armed conflict.

Coast Guard international engagements complement more traditional U.S. military posturing. Regular and persistent Coast Guard presence and peaceful engagements support regional stability while positioning the United States as the global maritime security partner of choice. The Coast Guard operates around the world in accordance with over 60 international bilateral agreements, to include 11 with Oceania nations.

Furthermore, the Service is also party to and, in many cases, serves in a leading capacity within a variety of multilateral forums including the North Pacific Coast Guard Forum, Arctic Coast Guard Forum, South East Asia Maritime Law Enforcement Cooperation, and the Africa Maritime Law Enforcement Partnership. This combination of access, authorities, and international acceptance, offers an indispensable opportunity of regional support and stability in this new era of competing influence.

As the world's preeminent coast guard, the U.S. Coast Guard is logically the most suited to build partner capacity in maritime law enforcement, search and rescue, marine safety, fisheries management and conservation—all of which are traditional Coast Guard missions. These missions, incidentally, are in growing demand across the globe. Illegal, Unreported and Unregulated (IUU) fishing, in particular, is a priority issue impacting global stability, in the Atlantic, across the Pacific, and even in Antarctica, where many economies heavily depend on local fish stocks as a primary source of protein and personal income.

The Service, through its internationally recognized maritime law enforcement expertise and a multitude of bilateral and related ship rider agreements, offers viable options to augment partner nation law enforcement capacity to patrol their respective exclusive economic zones. These efforts are essential to preserving, protecting, and defending critical regional and migratory fish stock sustainability and economic vitality while simultaneously countering the malign influence and predatory practices of globally-spread powers such as China.

The Coast Guard in Alaska and the Arctic Region

The Coast Guard has been an active leader in the Arctic for over 150 years. Our latest 2019 Arctic Strategic Outlook reaffirms our commitment to American leadership in the region and articulates the ends, ways, and means to promote and safeguard national security in the Arctic. This includes waging a campaign for safety, sovereign rights, and stewardship through cooperation, addressing competition below the level of conflict, and preparing for conflict should it arise. The following highlights some of the initiatives that have particular impacts on our national and international security, but these activities must be part of an integrated, whole-of-government approach to security in the Arctic.

Strategic Leadership

As many nations and other stakeholders across the world aspire to expand their roles and activities in the Arctic, the Coast Guard is working collaboratively through international bodies to address the emerging challenges and opportunities in the region. One example is our support to the Arctic Council, which is a high-level international forum focused primarily on environmental protection and sustainable development issues in the Arctic region. The Council is composed of the eight Arctic nations, six Arctic indigenous groups, observer nations (including China), and non-governmental organizations that have observer status. The Coast Guard plays a significant role in supporting our Nation's existing engagement in Arctic Council activities through representation on two standing working groups—Emergency Prevention, Preparedness & Response (EPPR), and Protection of the Arctic Marine Environment (PAME).

Under the EPPR working group, the Coast Guard leads the U.S. Government delegation and serves as Chair of the Marine Environmental Response Experts Group. Within PAME, the Coast Guard participates in the Shipping Experts Group where we support projects such as mitigation of risks associated with the use and carriage of heavy fuel oil by vessels in the Arctic. The Coast Guard also served on the Council's Task Force on Arctic Marine Cooperation and has been active in other task forces that established the 2011 Arctic Search and Rescue Agreement, the 2013 Oil Spill Prevention and Response Agreement, and the 2015 Framework for Oil Pollution Prevention.

The Coast Guard has also supported Arctic safety through other international bodies such as the International Maritime Organization (IMO). The Coast Guard was instrumental in the IMO's development and adoption of the International Code for Ships Operating in Polar Waters (Polar Code) to cover the design, construction, equipment, operational, training, and environmental protection matters relevant to ships operating in the Polar regions. In 2017, the Coast Guard completed a rule-making process to issue Polar Ship Certificates to U.S. vessels. We also developed and promulgated guidance to industry and our Captains-of-the-Port on how to ensure compliance with the Polar Code.

Additionally, in November 2017, the Coast Guard collaborated with the Russian Federation to jointly develop and submit a proposal to the IMO to establish a system of two-way routes in the Bering Strait and Bering Sea. The Coast Guard also submitted an associated proposal to establish "Areas to be Avoided" in three environmentally sensitive areas. The objective was to advance the maritime transportation system in the region; promote the safe, responsible flow of commerce; and de-conflict the commercial uses of the waterways with subsistence activities. The IMO adopted these measures at the 99th session of its Maritime Safety Committee, and the provisions entered into force in December 2018. These are but two examples of the Coast Guard being proactive in addressing emerging international and domestic maritime concerns in the Arctic.

Last, the Arctic Coast Guard Forum (ACGF) is a bridge between diplomacy and operations. Formally established in October 2015, the ACGF operationalizes all of the elements of our Arctic strategy as well as the objectives of the Arctic Council. It is a unique, action-oriented maritime governance forum where the Coast Guard and our peer agencies from the other seven Arctic nations strengthen relationships, identify lessons learned, share best practices, carry out exercises, conduct combined operations, and coordinate emergency response missions. In April 2019, the ACGF conducted its second live exercise, POLARIS, which incorporated six ships and five aircraft from the ACGF member nations to respond to a simulated cruise ship in distress near Finland. The exercise was a successful demonstration of combined operations with the eight ACGF nations and highlights the criticality of coordination in maritime environmental response and the responsibility to ensure search and rescue resources are prepared to respond.

Coast Guard Operations in the American Arctic

Operation ARCTIC SHIELD is the Coast Guard's year-round planning and operational endeavor that provides a flexible, mobile, and scalable presence in the Arctic domain. In 2019, ARCTIC SHIELD (AS19) operations advanced national and Coast Guard strategic goals by aligning operations to mitigate real-world threats and leverage opportunities of strategic interest.

To promote regional resilience and strengthen the maritime transportation system, the Coast Guard spearheaded a Marine Safety Task Force (MSTF) to conduct missions in the remote regions of their Area of Responsibility (AOR). Employing active and reserve surge personnel, the MSTF deployed to and engaged with 102 local communities to perform marine safety and marine environmental protection missions in villages not on the road system in the Arctic and Western Alaska. In addition to the summer surge support, a major contributor to the MSTF success has been its partnerships: the Civil Air Patrol transportation saved valuable resources and allowed personnel to transit more seamlessly between remote villages.

The MSTF teams inspected over 60 percent of the region's 380 regulated bulk oil facilities—a massive improvement over the prior annual average of 12 percent. Frequent inspections and proactive communications between the Coast Guard and facility operators will reduce the environmental risk to remote communities, help remote villages build capacity to respond, and set baselines for resilience and awareness as their environment rapidly changes.

From July to October, MH-60 helicopters and crews deployed to Forward Operating Location Kotzebue and to Utqiagvik to conduct Coast Guard missions. This year, those helicopters completed 25 SAR cases, saved 13 lives, and assisted 28 others in an environment harsher than anywhere else the Coast Guard operates. Additionally these assets improved the Coast Guard's maritime domain awareness in the Arctic and provided critical support to Federal and state personnel studying marine mammals. The Coast Guard partnered with DoD to leverage their strategic lift capabilities to deploy the assets to Kotzebue and the North Slope. Additionally, when the helicopters made the unplanned shift to Utqiagvik in September, the Coast Guard leveraged a longstanding positive partnership with the North Slope Borough to gain critical hanger space and logistical support on short notice. The Coast Guard would not have been able to complete its scheduled deployment to the Arctic and provide SAR coverage to North Slope mariners without the efforts and support from both. The Coast Guard departed Utqiagvik on October 31, 2019, but subsistence whale hunting is still ongoing today. This highlights the changing operational environment not only for the Coast Guard but also for Arctic residents. The lengthened "shoulder" seasons of open water are beyond the period in which the Coast Guard has the resources to be present. Without the Coast Guard's highly mobile expeditionary forces, risk to mariners and coastal residents will escalate as maritime activity and traffic expands throughout the vast Arctic.

AS19 exercised the Coast Guard's expeditionary capability by deploying a team from our Deployable Specialized Forces in California to conduct shore based law enforcement operations for the Kotzebue salmon state fishery that consists of nearly 100 small open skiffs. The enforcement operation reinforced several years of extensive marine prevention outreach, education, and training with these fishers. Planning and executing this mission highlighted the logistical and administrative challenges involved in supporting mission execution in the Arctic. This deployed law enforcement team provided 3 weeks of on-water presence and contacted 59 commercial fishing vessels and conducted 27 boardings with 5 voyage terminations. The operation bolstered community support from the mayor and local fishermen and rallied the community to improve their own safety and survivability at sea.

In the absence of a consistent law enforcement presence in the region, the Coast Guard must develop and exercise expeditionary capability to project surface forces into the Arctic as the weather patterns are less predictable and maritime activity continues to evolve. This team's employment points to the urgent need to modernize assets, infrastructure, and platforms to effectively operate and provide presence in the Arctic.

In 2020, operations will be supported with cutter, aircraft, and shoreside presence across Western and Northern Alaska. Specific activities include establishing a regional SAR response capability, conducting boardings to promote fishing vessel safety, facility and vessel inspections, gold dredge fleet inspections, maritime safety compliance enforcement, and ice rescue training.

Planned activities also include testing and improving oil spill preparedness and response capabilities, conducting a commercial aircraft crash-related mass rescue exercise, and completing a joint maritime pollution contingency exercise with international partners. Year-round outreach efforts will continue to deliver education and awareness services to Arctic communities and outlying native villages.

As presence equals influence, the Coast Guard must continue to evaluate options to advance our 2019 Arctic Strategic Outlook as well as national interests in the region. The resurgence of nation-state competition over the past 5–10 years has coincided with the dramatic changes in the physical environment of the Arctic. This reality has elevated the Arctic's prominence as a strategically competitive space. The Coast Guard, and the Nation, have limited means to respond to, intercept, or collect information on vessels operating in the Arctic region.

Icebreaking Capacity and Acquisition Status

The ability for the United States to lead in the Arctic, both strategically and operationally, hinges on having the capabilities and capacity (presence) to protect our national sovereignty and safeguard our homeland security interests. The foundation of the Coast Guard's operational presence and influence is U.S. icebreakers, whose purpose is to provide assured, year-round access to the polar regions for executing national security missions within existing Coast Guard authorities. Our heavy icebreakers must be fully interoperable with DoD, international allies, and partners to optimally carry out national maritime homeland defense and homeland security missions. Thus, they will include sufficient space, weight, and power to conduct the full complement of multi-mission activities that support our Nation's current and future national security interests in the Arctic.

The 2010 High Latitude Mission Analysis Report (HL MAR) identified the need for six new polar icebreakers (at least three of which must be heavy) under the assumption that, in the future, the Coast Guard would be required to perform nine of its eleven statutory missions year-round in the Arctic, and meet all icebreaking needs in support of the United States Antarctic Program.

In 2017, the Coast Guard's Center for Arctic Study and Policy completed an addendum to the HL MAR. The objectives were to provide a broad overview of changes in the polar regions over the last seven years and to provide specific information for use in determining potential impacts on mission areas in the polar regions. This addendum provides confidence in the original findings and encourages the sustained reliance on its initial recommendations on the Nation's need for six icebreakers, three of which must be heavy icebreakers.

The current Coast Guard icebreaker capacity is one heavy polar icebreaker, CGC POLAR STAR—commissioned in 1976, and one medium icebreaker, CGC HEALY—commissioned in 2000. The primary differences between heavy and medium icebreakers are endurance and power. The Coast Guard considers a heavy icebreaker to be one that can break at least six feet of ice at a continuous speed of three knots and operate year-round in the Arctic, with the necessary systems and endurance to protect its crew in the event it has to “winter-over” in substantial ice conditions. Conversely, medium icebreakers are designed to operate seasonally in the Arctic.

Due to the strong support of the Administration and Congress, the FY 2019 appropriation included full funding for the acquisition of our first Polar Security Cutter (PSC), and some long lead time materials for the second. This investment sends a strong message that the Nation is serious about our interests in the Arctic. In April of this year, the joint Coast Guard and Navy Integrated Program Office (IPO) awarded VT Halter Marine Inc., of Pascagoula, Mississippi, a fixed price incentive (firm) contract for the detail design and construction of the lead PSC. We are as close as we have been in over 40 years to recapitalizing our icebreaking fleet, and continued investment will ensure we meet our Nation's growing needs in the rapidly evolving and dynamic polar regions.

The Coast Guard also understands that we must maintain our existing heavy and medium icebreaking capability while proceeding with recapitalization. Construction on the first PSC is planned to begin in 2021 with delivery planned for 2024; however, the contract includes financial incentives for earlier delivery. Maintenance of POLAR STAR will be critical to sustaining this capability until the new PSCs are delivered. Robust planning efforts for a service life extension project on POLAR STAR are already underway and initial work for this project will begin in 2020, with phased industrial work occurring annually from 2021 through 2023. The end goal of this process will be to extend the vessel's service life until delivery of at least the second new PSC.

Shore Infrastructure

In addition to having the necessary platforms to maintain our presence in the Arctic, the Coast Guard maintains a robust shore infrastructure laydown in Alaska. Shore facilities support all Coast Guard operations and personnel, as well as provide required infrastructure to support the needs of the Service's operational communities. Investments in shore infrastructure are critical to modernizing the Coast Guard and equipping our workforce with the facilities required to meet mission.

With approximately 10 percent of the Coast Guard's real property inventory located in Alaska, the need for proper capital investments is all the more critical given the vast distances between shore facilities in that region. We are currently building waterfront facilities and shore infrastructure to support the delivery of six new Fast Response Cutters (FRC) and two Offshore Patrol Cutters (OPC) to Alaska, as well as the critical housing and family support facilities to accommodate the additional personnel and their families to operate and maintain these new assets. Additionally, over the last few years, we have built a new hangar to support forward deployed helicopters in Cold Bay, 20 new housing units in Kodiak, as well as new facilities in Kodiak to enable our transition from C-130H to C-130J aircraft.

Conclusion

These efforts reaffirm our commitment to the region and our need for capabilities, capacity, and infrastructure to protect our national security and economic security interests in the region. Arctic operations must be balanced with competing demands for Coast Guard focus both at home and abroad. However, the Coast Guard must remain flexible and scalable to adapt to the rapidly evolving geopolitical and operational Arctic environments.

Regardless, the Coast Guard will continue to lead across the National and international landscape to build a coalition of like-minded partners in order to shape the Arctic domain as an area of low tension, high attention, and great cooperation while preserving our national interests and rights. This leadership and collaboration across the national and international spectrum will enable us to reinforce positive opportunities and mitigate negative consequences in the Arctic region. Failing to increase and focus our Nation's leadership in the Arctic will result in other powerful nations taking the lead in a region with critical geostrategic value.

We understand the significant investment required to secure the Arctic, and we appreciate and embrace the trust the Nation has placed in the Service. Thank you for the opportunity to testify before you today and for all you do for the men and women of the Coast Guard. I look forward to answering your questions.

Senator SULLIVAN. Well, thank you, Admiral. And I want to thank you again for coming up to Alaska with Chairman Wicker. It was a great visit. You have a lot of fans in Alaska. I can tell you that.

And I do want to mention, as the Chairman and Ranking Member not just of this subcommittee, which has oversight of the Coast Guard, but also as the new leaders of the Coast Guard Caucus, we made a commitment. I certainly have. I will let Senator Markey speak for himself here. But on this issue of pay for the members of the Coast Guard, if there is another government shutdown, we have a provision currently in the Coast Guard bill that we are drafting, working with the House, very bipartisan that is in there that would prevent that from happening. So you would be treated—the great men and women of the Coast Guard—just like the men and women of the Army, Navy, Air Force, and Marines. We cannot allow that. If there is another government shutdown, we cannot allow that to happen.

Now, I am hearing there is some resistance to this in parts of the Congress. I am not sure where, but we are committed to working with you and other members to make sure there is parity. Parity. Outrageous that last year members of the Coast Guard were doing operations all over the world shoulder to shoulder with marines and sailors, and the Coast Guard men and women were not getting paid. We need to fix that. We are committed to fixing that. It is in the bill right now, and I want to call out any colleagues of mine who are trying to block that because I think most Americans found that outrageous that your men and women were not getting paid.

So I am assuming you support that provision.

Admiral RAY. If I may, sir, since last January when the government started back up after the 35-day shutdown, I have traveled from Puerto Rico to Alaska, from Boston to Houston, and every place I meet with Coasties—every place, without fail—they say, Admiral, what are you doing because young Coasties think I can do anything? And I quickly let them know it requires a change in law. What are you doing to ensure that that does not happen again? And they understand it. They are smart and they get it when I explain to them how the process works.

But the thing I care about over the long haul is in the short term, it is a readiness issue. When I got people worrying about that, they are not worrying about the dangerous work they are doing day in and day out. And then over the long haul, the young people that serve in the Coast Guard that raise their right hand—they are making decisions. They can serve in the Marine Corps, in the Army, the Air Force, and they are choosing to serve in our Coast Guard, and I do not want them to think that the Coast Guard is less of an armed service and we are going to do a less job of taking care of them and their families.

Senator SULLIVAN. Well, we are going to work with you on that, but we might need you to work some of our colleagues over who are resisting that, which I think is not appropriate. And I do not know where the resistance is coming from but evidently it is out there.

I want to follow up on a question that I mentioned. We are making progress on the icebreakers. I asked a series of questions of our last panel just with regard to the state of not just infrastructure but Coast Guard assets. We are committed—this committee is committed—to the very broad-based recapitalization effort that is ongoing with the Coast Guard, more ships, better ships, more technologically advanced ships and aircraft.

But would you agree—and I know it is a longer-term decision that the Congress and the Coast Guard has to make, but assuming we are able to get on budget or even faster six polar security cutters and medium cutters like the Healy, that they should be homeported near where the Arctic is. The Coast Guard has already announced the Seattle basing, which given that there is currently cutters or icebreakers there, you can see how that would make sense. But moving forward, thinking about our strategic interests, thinking about the time it takes for an icebreaker to get from Seattle to the Arctic, 8 days or more, I know you cannot commit, but do you not think as you are looking strategically, assuming you had the resources, that that would make sense?

Admiral RAY. Sir, I want to thank you for your support for home ports in general, for assets as we have looked forward with our fast response cutters moving up across Alaska and striking that balance between being close to the mission and being in places where we can maintain the assets and take care of our families that come along with them.

So to answer your question, yes, sir. This is part of a holistic analysis. If we look at mission effectiveness, the ability to sustain the assets, and the ability to sustain the families of the people that are sailing and working on them. So we look forward to working, as we move forward, with you.

Senator SULLIVAN. Let me ask just a more direct question. You saw the wonderful people in Dutch Harbor. In Alaska, that is the number one fishing port in the nation, 10 years running, given the amount of seafood that is harvested from Alaskan waters. And the Coast Guard personnel station there do tremendous work. When you and I were there with the Chairman, we saw what great work they do and how strongly they are supported by the community in that very busy port.

As we discussed, the Coast Guard members are required to complete their tour unaccompanied. That community has great schools, an increasing medical clinic with good capability. I think they would be warmly welcomed if the Coast Guard took a look at being able to bring their families with them on assignment. I know you got a bit of a polite earful when you were with me and Chairman Wicker on that issue.

Have you been able to take a look at that or do you want to get back to me on the record for that question, which I know you probably expected me to ask you?

Admiral RAY. Sir, we are committed to looking at that in the upcoming assignment, not this assignment season, but as we shape up our billets for this coming year in 2020. So I love Dutch Harbor, and there is a lot of people that do.

Senator SULLIVAN. Me too. By the way, the Coast Guard does too. All the members out there love it.

Admiral RAY. Yes, sir. But we are meeting mission right now with the way we are doing it, sir. And it is not just a—I mean, we are meeting mission, sending folks out there for 1 year, and the guys and gals that go out there and do the work that they do—they are integrated into the community quickly and doing it. I can understand the community—their desire to have the Coasties become a more integral part of their community because of the kind of young folks that we send out there. We are going to look at this issue and see if there are ways we can get there from here.

We have got other places, as you know, in our service where we send people, single, because there are challenges with regard to, as you mentioned already, medical or schools or other things. Some of those may not apply in Dutch, but we have to look at the big picture.

So we are going to look at that. I do not have the answer yet. When I got it, I will get to you.

Senator SULLIVAN. Thank you.

Senator Markey.

Senator MARKEY. Thank you, Mr. Chairman, very much.

I am just going to come back to oil spills, if I may, sir.

Admiral RAY. Yes, sir.

Senator MARKEY. They are extremely challenging to clean up in icy conditions because oil gets trapped under ice or can travel upwards through small holes in porous ice. Therefore, in addition to the immediate response to the oil spill, oil will need to be cleaned up once the ice melts or travels to the top of the ice flows.

In the 2019 Strategic Outlook, the Coast Guard acknowledges shortfalls in its ability to respond to oil spills in the Arctic, but is not specific about what those shortfalls are.

Admiral Ray, can you give us some examples of those shortfalls and how the Coast Guard is working to overcome them?

Admiral RAY. If I could go in reverse order, sir, I will talk about what we are doing to overcome it and then talk about the shortfalls, if that is acceptable, Senator.

So the oil spill challenge we have in the Arctic—you got to address it from prevention to response. So on the prevention, on the very high-end strategic end, we have done several things recently specifically to address this.

One, we are kind of the drivers of the polar code for vessels operating up in the Arctic region. We have led the nation's effort at the International Maritime Organization. So what that does is makes ships less likely to cause an oil spill. We have one of the few relationships with Russia on this with regard to the boundary in the Bering Strait between our countries where we would work together to ensure that. And in fact, we have done that creating a port access route study to keep ships separated going through the Bering Strait. So on the prevention side, we are working it.

With regard to responding, we have a series of exercises every year that work at both the national level and all the way down to the village level where we will go with the local village people, open the container that has got the pre-positioned boom, drag it out, make sure it is in good shape. So we are working at the tactical level. So from the top to the end.

And every summer—there is not a secret weapon for oil in ice yet that we have found. And every summer for the last decade, we have done research and development either onboard Coast Guard Healy when she is up there or in some other independent fashion with various ways to get oil out of ice, underneath ice, on top of ice. We are working with the Alaska Department of Homeland Security Center of Excellence up in the University of Alaska at Fairbanks to put a UAV under the ice this winter to study this problem. So we are working at it hard. We do not have any ironclad solutions.

And then the problem, Senator, is the same thing that challenges most operations in Alaska. It is time, distance, weather. Unless you have got a vessel poised, stationed every so many miles, which is just not sustainable, that is the biggest challenge. It is the tyranny of distance and that.

But there is also scientific challenges, as has been mentioned by our esteemed panel members, and we are working to get after that.

Senator MARKEY. And I am, obviously, very concerned about this. Today is actually the fourth anniversary of the signing of the Paris Climate Agreement, just 4 years ago today. And a lot of it is in recognition of what is happening up in the Arctic because it has consequences for the entire planet, especially that ice cap on Greenland. That is the largest ice cube imaginable. If it goes into the water, it is going to be catastrophic, upwards of 10 to 20 feet of sea rise. And it is happening at a very rapid rate, and it is much worse today than it was 4 years ago, and it is much worse today than when we began actually discussing this issue years ago.

So we can see the consequences as well. The Coast Guard's 2019 Strategic Outlook notes that fish stocks are shifting northward in response to warmer ocean temperatures in the Arctic creating new

fishery enforcement challenges and illegal fishing presents one of the most significant law enforcement missions in the Arctic region. In August, the U.S. agreed to a moratorium on fishing in the high Arctic seas along with Canada, the European Union, and Russia. There are currently no commercial fisheries in the Arctic high seas because most of the region is covered by ice year around, but that is rapidly changing.

So, Admiral, how does the Coast Guard currently partner with existing organizations and communities to monitor shifting fish stocks, marine mammals, and other living marine resources in the Arctic?

Admiral RAY. Thank you for the question, Senator.

We are very active at the national level with NOAA in understanding fish stocks and understanding the changes to what is happening both in the weather in that area and with regard to the migration of the species. We work with NOAA as an enforcement arm. They do not have the capability to get offshore and enforce fisheries laws. And we have been doing that for many years.

In the Alaska region, we work with the State troopers extensively, provide transportation for them. We work with them inside close to shore. And then we do independent operations on the high seas in the Bering Sea and up in the Arctic. Right now, as you say, there is no authorized fishing north of 64-ish I think is the latitude that we do not fish north of.

But the point is that we are latched up with our interagency team. We are following the science. When the Senator and I were in Alaska at Nome, we had a NMFS scientist there. In the dirt of the parking lot in the Nome harbor, it was the best description I have had of the changing water temperature, what is happening with the Pollack stocks. And she drew a line in the sand. She told us what was happening with the fish stocks. So they are moving north, and we have got to be able to get up there and do enforcement there. And we intend to be there.

Senator MARKEY. Yes. The cod of Massachusetts—they are moving north. The lobster are moving north. They need cold water. And we are seeing it dramatically along our coastline.

The moratorium on commercial fishing in the Arctic high seas will be reconsidered in 16 years. It can take more than 10 years to procure Coast Guard vessels that can withstand Arctic ice conditions.

Admiral Ray, would the Coast Guard be ready for enforcement activity should the moratorium be lifted?

Admiral RAY. Sir, our plan for—when you hear us talk about 6-3-1, when we talk about recapitalizing our icebreaker fleet, we are talking about we need six polar icebreakers altogether. And three of them at least have to be heavy. And the essence of that, the underlying assumption is that we want access to the Arctic year-round. Right now, we do not have the capacity or the capability to do that. But in the future, our intent is to have access year-round.

One of the reasons we call them polar security cutters—icebreakers are just a means to an end. We are not up there to break ice. We are up there to get through ice to get to where we need to do our mission. And so that is literally what we will do with those.

So to answer your question, I think in 10 years, given the pace that we are on with regard to building out, if we keep the funding steady, we are supposed to launch the first polar security cutter in 2024, and with one coming each year after that. If we stay steady with our funding, sir, we have got a good chance of being ready for that.

Senator MARKEY. And one final question. If there was an oil spill and it was Russia or China that was responsible, what is their capacity to respond to an oil spill?

Admiral RAY. I will have to get back to you on their specific capacity. I know that we exercise with the Russians. They have actually been to Juneau in the last few months, and we have been over there. And so we do exercises, table-tops in a lot of cases, exercises with regard to oil spills at sea in that boundary area, that seam between our nations' waters. So I do not know the specifics of their spill response equipment, but my assumption, given that we are exercising with them, they got some.

Senator MARKEY. Thank you.

Senator SULLIVAN. Senator Markey, thanks. It is an important point because all of these issues, infrastructure, assets, are related to everything that we have been talking about, including to be ready for any kind of environmental spill or ship collision, as the previous panel had talked about. And again, the capacity that we expect in the Lower 48 and pretty much have just does not exist in the Arctic. Everybody recognizes that. The previous panel made it clear that the National Defense Strategy, the new Arctic DOD strategy says we should be doing freedom of navigation operations. That is the strategy. We do not have that capability to do that right now with the Navy or the Coast Guard.

Senator MARKEY. May I just say just in conclusion, I agree with the Chairman on pay for the Coast Guard?

Senator SULLIVAN. Thank you.

Senator MARKEY. Just 100 percent in agreement. There is absolutely no justification for not including the Coast Guard. You are vital to our national security. You are vital to protecting our citizens. And it is only getting more dangerous out there because of climate change, because of these weather conditions that are absolutely getting more extreme on an ongoing basis, more exposure to risk to these young men and women. And they should be paid equally with the other branches.

Thank you.

Senator SULLIVAN. Let me go a little deeper, Admiral, on one of the capabilities that you highlighted in your testimony again that we lack in the Arctic and we just take for granted in the rest of the country, and that is on communications capabilities.

What are the current command and control communications limitations for the Coast Guard operating in the high north, and what should we, the Congress, be doing about that? What is the Coast Guard doing about that? Again, I think most people recognize that, wait a minute, there is a part of America, Alaska, where you have essentially no comms. Our military, our Coast Guard—that is unacceptable. I agree that is unacceptable. How do we close that gap?

Admiral RAY. Sir, in the last few months, we have been talking with industry. As you know, last year we had a research and devel-

opment project where we launched two cube sats, so low earth orbit sats, and they were in a polar orbit ellipse. And they were specifically for us, and we were using them. Those particular cube sats were used to provide a capability to detect an emergency signal. So if somebody had an EPIRB north over the horizon where we would not hear it from the North Slope there—and unfortunately—it was not very high-end project anyway—they tumbled. Both the satellites did. We got data off of one of them, and it showed that this is viable.

Since then, I have been engaged with industry and the people that are a lot more dialed in on this than I am in the service, and we believe there is an opportunity to get more of those low earth orbit satellites launched that have the right orbit to service the polar region. I think that is the way ahead, and multiple of those because they are not super expensive. They are becoming—I have been told by people in industry that that is becoming. So I think moving in that direction, getting some support for that—currently we do not have a project for that, but getting in that direction is the way to go.

As to what we are doing right now, we are doing what we have been doing for many years. We are using HF radios that have a long range. If the atmospherics are right, you can talk quite a ways, but you are not going to get any sort of data or anything like that. This is voice communications. This is what we are doing right now.

Senator SULLIVAN. So is there things that we should be doing working with the Coast Guard in this committee to close that gap? It seems like it is a need for all the reasons we have talked about, the safety in particular, whether it is for the ship or whether it is on rescues or whether it is to help with some kind of environmental response, fishermen at sea. Is there a plan that the Coast Guard has that this committee can help make sure gets either in the bill or in appropriations?

Admiral RAY. We do not have one that is to the level of specificity with regard to being ready for appropriations now, sir.

Senator SULLIVAN. Well, let us look at working on that together.

Admiral RAY. Yes, sir.

Senator SULLIVAN. I think it is important.

Let me go even a little bit more specific. You know, the Alaska delegation recently sent a letter to the Commandant urging him to prioritize the repair of the radio towers that relate to I think it is the Rescue 21, distress comms signal. As you know, since this summer, there have been numerous radio towers across the Gulf of Alaska that have been non-operational. Particularly for our fishermen who are on the water and rely on the Coast Guard, if they are in distress, that lack of complete coverage that is existing is again something that I think most of the rest of the country would not tolerate.

What is the Coast Guard doing to cover this gap? This is obviously not as complicated as the issue on the high north. This is more getting the communication infrastructure back to an operational status, including these radio towers that have become non-operational across the Gulf of Alaska.

Admiral RAY. Yes, sir. Thank you for the question, Senator.

As you know, I spent 5 years flying search and rescue in Alaska—

Senator SULLIVAN. Thank you for that.

Admiral RAY [continuing]. Especially in southeast which is where most of these sites are because they are hidden behind mountains and in Kodiak as well.

So the fundamental challenge here is twofold. It is the microwave system that is required to relay the signals, and it is power generation. That is the fundamental issue. So we are getting after that. And I have been tracking this. Literally three times a week I personally pull up the status of these sites. And we are going to take some risk in other areas to apply more funds to get after this power generation problem because if you get good power generation at these sites, they are going to work.

Senator SULLIVAN. But the reason some of them have not been operational is primarily the power generation?

Admiral RAY. Yes, sir. That is 80 percent of the problem. They are in very remote locations in the mountains, and there is a short window to work on them. And if they go down starting now in December, it could be a while. But we are going to apply some more funds to this.

And then second, we just changed contractors. We got rid of the contractor who was providing the day-to-day maintenance for them. This just happened last week or 2 days ago. And so I am convinced that the new provider—and there is one in the State of Alaska, and they cover the entire region. And as you know, there are 33 sites. So this requires just like all things in Alaska—it is a logistics challenge. I am not making excuses. So I am confident these folks are going to get after it on the short term, and then we are going to apply some resources to get up the power generation and in the long run pull that left. Our response to you was longer, and we want to pull it to the left.

Senator SULLIVAN. Well, listen, if there are resources that you need, I think that is the kind of issue that I am confident that all members of this committee would recognize the importance of this and fund the resources. It would not be an ask of a dramatic increase in resources. But as you know, this is vital to keep our fishermen safe who often are in seas that can be very dangerous. And having the Coast Guard there and the robust communications systems is critical. Again, you know that from firsthand experience flying in some of that difficult weather. So thank you for that. I appreciate the fact that you are focused on that very, very regularly. We just need to take action to make sure those non-operational sites are getting up so the fishermen in my State are safe. And I think that we all recognize that that is important.

Let me ask another issue with regard to the broader Coast Guard Arctic strategy. And I do want to commend the Coast Guard with regard to its focus on this. I have publicly stated that one of my frustrations has been that the other military services have seemed to be slow to the awakening of our national security challenges, economic challenges, environmental challenges in the Arctic. And I do not levy that criticism at the Coast Guard. I believe that you recognize it. The Commandant certainly does. You have

been operating in that part of the world for decades, if not centuries.

But when you put out the strategy, what is the kind of gap between what you think we would need—we, not just the Coast Guard but the United States—to have a much more robust presence in the Arctic to safeguard our national security interests, our economic interests, our environmental interests, as I always like to remind people, the human interests? We have American citizens there. They happen to be my constituents. What we need in the shortfall between that and the resources to do that. Are there things that are not in the strategy because you do not think they would be resourced, or are there things in the strategy that we need as a Congress to address in terms of funding shortfalls?

Admiral RAY. Thank you for the question, Senator.

We have gotten after a part of it. And I do not put all of my eggs in the icebreaker basket because that is one tool of several.

Senator SULLIVAN. It is important.

Admiral RAY. It is super important.

Senator SULLIVAN. And it is important that we are making progress.

Admiral RAY. Yes, sir.

Senator SULLIVAN. Finally.

Admiral RAY. You are doggone right. 43 years since we built the last one. It is time to get going. So thank you for that.

Senator SULLIVAN. I could not agree more.

Admiral RAY. And that is huge because that allows us to be mobile. Today's challenges are not going to be where tomorrow's challenges are. So that is what that asset gives us. And when you compare that with a shipboard helicopter, unmanned aerial system, you have got real capability that you can move around and have effect on whatever mission you are working. You can do that.

As I have said before, I think reliable communications through the region—you know, it is not just communications for emergencies. This is day in, day out. You and I have seen this. It is just running the business of having a presence on the North Slope. That is significant I think.

The maritime domain awareness is enabled. So we talked about communicating and using satellite technology to enable that. That also enables us to know who is out there, and we want to know who is out there. And it needs to be more than the radar on a ship because you can only cover so much ground with that. So I think that capability, that kind of sensor and that ISR capability in the skies there.

You know, other than that, I think just the continued support for our operations money for our service—you know, we have been kind of flat-lined on this. And we surge Coast Guard assets from all over the country to come up there during Arctic Shield. We will have a mechanic working on H-60's whose family is in Clearwater, Florida, but she is up there working on a helicopter on the North Slope. And that is OK. We do that, but that is not a long-term strategy. We know we are going to be up there every year. We need to have the assets to grow—the operations and maintenance money to grow those people. So end strength—I think that is also helpful.

Senator SULLIVAN. Let me ask one final question, and I appreciate your outstanding testimony.

In the NDAA right now and the conference report—I believe the House is going to be voting on this today, and then it will come over here starting today or next week—there was a provision. It was something that I and many other members were interested in, is this idea of a strategic Arctic port. And I highlighted this in my opening statement whereby there is not the port capability anywhere near the Bering Strait to bring in a large-scale national security cutter or an icebreaker, polar security cutter. And again, on the East Coast or the West Coast of the United States, this would be considered just unacceptable.

So there is a provision that directs the Secretary of Defense and Homeland Security to look at this issue and say, hey, we need this infrastructure, particularly when you look at what the Russians are doing in their Arctic.

What is your sense of the importance of having a port that can handle these larger scale Coast Guard and Navy vessels to protect our economic and national security interests in the region, not 1,200 nautical miles away from the region?

Admiral RAY. Sir, there is no question that a deepwater port north of Dutch—and there are a few candidates that I am well aware of, but a deepwater north up there somewhere in the vicinity would benefit Coast Guard operations. No doubt about that.

Senator SULLIVAN. So you think we need it.

Admiral RAY. Yes, sir.

Senator SULLIVAN. Thank you.

Well, listen, Admiral, I think you and the previous panel—I want to thank you for your outstanding service. Please tell the men and women of the Coast Guard that this committee, certainly this subcommittee, are very appreciative of their hard work and sacrifice. And we will continue these series of hearings on the needs and capabilities of the Coast Guard.

As we look to finish up the hearing, I will ask the witnesses both you, sir, and the previous panel that if there are any other questions from Senators on the Committee, that they will be submitting them in the next two weeks. And we ask that the written answers to these questions be written back to the Committee as soon as possible.

I want to thank you again, Admiral, for your service and the previous panel for their outstanding testimony as well.

And with that, this hearing is adjourned.

[Whereupon, at 11:30 a.m., the hearing was adjourned.]