



Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington DC 20515

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May 8, 2019

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Coast Guard and Maritime Transportation
FROM: Staff, Subcommittee on Coast Guard and Maritime Transportation
RE: Hearing on “The Cost of Doing Nothing: Maritime Infrastructure Vulnerabilities in an Emerging Arctic.”

PURPOSE

The Subcommittee on Coast Guard and Maritime Transportation will hold a hearing entitled “The Cost of Doing Nothing: Maritime Infrastructure Vulnerabilities in an Emerging Arctic” on Wednesday, May 8, 2019, at 2:00 p.m., in 2167 Rayburn House Office Building to examine the findings and recommendations of the recent report by the U.S. Committee on the Marine Transportation System (CMTS) entitled “Revising Near-Term Recommendations to the Prioritize Needs in the U.S. Arctic.” The Subcommittee will hear testimony from the U.S. Coast Guard (Coast Guard or Service), the Army Corps of Engineers (Corps), the National Oceanic and Atmospheric Administration (NOAA), and experts on Arctic infrastructure.

BACKGROUND

The United States is an Arctic Nation. The U.S. Arctic, as defined in statute,¹ encompasses U.S. territory north of the Arctic Circle with over 46,600 miles (75,000 km) of shoreline in Alaska, including the Aleutian Islands.² Three Arctic seas – the Bering, the Chukchi, and the Beaufort – border Alaska; the U.S. Arctic Exclusive Economic Zone contains 568,000 square nautical miles (SNM), of which less than half is considered by NOAA to be “navigationally significant.” NOAA has designated 38,000 SNM of the navigationally significant areas as Arctic survey priority locations,

¹ The Arctic Research and Policy Act of 1984, as amended (Public Law 98-373); The Arctic region is the area north of the Arctic Circle, North Latitude 66.5622°. The Arctic Ocean dominates the Polar region, covering six million square miles (15.6 million square kilometers). Arctic temperatures range from an average winter temperature of -40° F (-40° C) to an average summer temperature just under 32° F (0° C).

² Alaska ShoreZone: Mapping over 46,000 Miles of Coastal Habitat. (2018) NOAA, Office of Response and Restoration, sourced from <https://response.restoration.noaa.gov/about/media/alaska-shorezonemapping-over-46000-miles-coastal-habitat.html> on October 10, 2018.

and estimates that it could take up to 25 years to conduct modern hydrographic surveys in the priority locations if resources remain at their current level.³

Historically these seas are frozen for more than half the year, restricting the Arctic maritime season to June through October in a typical year, and limiting unaided navigation to an even shorter period. However, this pattern appears to be changing as ice-diminished conditions become more extensive during the summer months. On September 16, 2012, Arctic sea ice reached its lowest coverage extent then recorded, subsequently paving the way for the longest Arctic navigation season on record.⁴ Ice coverage in 2019 tied with 2007 as the joint seventh smallest winter maximum in the 40-year satellite record; ice coverage in 2017 and 2018 have been the first and second smallest on record, respectively.⁵

The melting of Arctic sea ice raises the possibility of far shorter voyages and substantial cost savings for ocean carriers sailing between major trading blocs (i.e., Russia, northern European nations, Asian/Pacific nations, and the United States and Canada). In 2018, Russian President Vladimir Putin signed a decree ordering an annual Northern Sea Route cargo goal of 80 million tons a year starting in 2024.⁶ While present cargo ship traffic in the Arctic is mostly regional, not trans-Arctic, the ramifications could extend far beyond the region if the Arctic were to become a viable shipping route.

In addition to allowing for more vessel transits through the region, rising temperatures in the Arctic will likely enable more exploration for oil, gas, and minerals. Melting permafrost could pose challenges to onshore exploration activities. Increased oil and gas exploration, shipping, and cruise tourism in the Arctic will likely increase the risk of maritime accidents and pollution in the region. Effective strategies for cleaning up oil spills in ice-covered waters have yet to be developed and remain a subject of industry research and testing.

The Polar Code and Arctic Sovereignty

International cooperation in the Arctic is facilitated largely through the Arctic Council, established in 1996. The Council is made up of the eight Arctic nations (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States), and 13 non-Arctic Nations with observer status.⁷ The Council is a consensus-based, intergovernmental forum that works to promote environmental, social, and economic aspects of sustainable development in the Arctic. Iceland chairs the council until 2021.

In 2009 the Arctic Council called upon the International Maritime Organization (IMO) to formulate and adopt the International Code for Ships Operating in Polar Waters, referred to as the Polar Code. The Polar Code went into effect on January 1, 2017, and enacts mandatory requirements intended to improve vessel safety and prevent pollution from vessels transiting in the

³ NOAA National Ocean Service, <https://oceanservice.noaa.gov/economy/arctic/>, accessed May 21, 2018.

⁴ Jeffries, M. O., J. A. Richter-Menge and J. E. Overland, Eds., 2012: Arctic Report Card 2012; see <https://www.bbc.com/news/science-environment-20454757>

⁵ See <https://nsidc.org/arcticseaicenews/2019/03/arctic-sea-ice-maximum-ties-for-seventh-lowest-in-satellite-record/>

⁶ See <https://thebarentsobserver.com/en/arctic/2018/05/its-order-kremlin-shipping-northern-sea-route-increase-80-million-tons-2024>, accessed April 17, 2019.

⁷ See <http://www.arctic-council.org/index.php/en/about-us/arctic-council/observers>, accessed May 21, 2018.

Arctic, including ship construction, navigation, crew training, and ship operation.⁸ The Code applies to passenger and cargo ships of 500 gross tons or more engaged in international voyages.

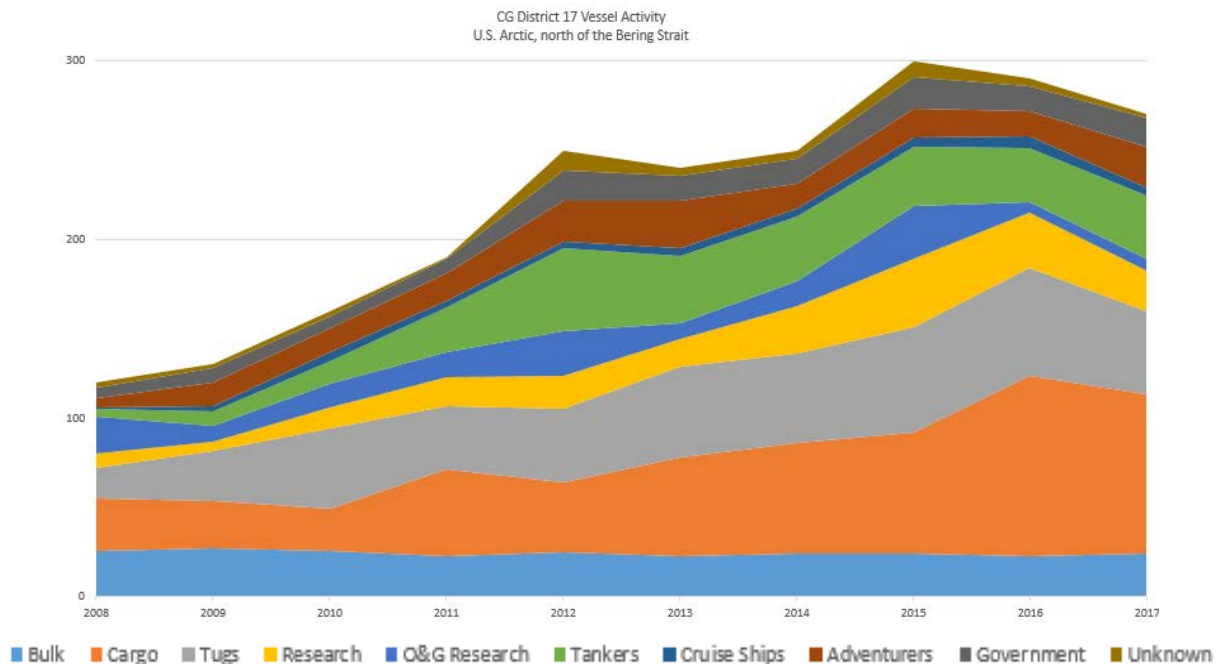


Figure 1. Vessel transits in the U.S. Coast Guard's D17 Arctic area of concern. The "D17 Arctic area of concern" is defined as an area north of the Bering Strait to the North Pole, east into the Canadian Arctic to Banks Island and west into Russia past the Russian port of Pevek. Source: Modified with data provided by the U.S. Coast Guard and from Figure 5 in the U.S. Coast Guard. Port Access Route Study: In the Chukchi Sea, Bering Strait, and Bering Sea. Preliminary Findings. 23 December 2016. Docket Number USCG-2014-0941 and USCG-2010-0833.

U.S. Coast Guard Arctic Assets

While several U.S. agencies have a physical presence and substantial interests in the Arctic, the Coast Guard's experience, material assets, and installations located throughout Alaska establish it as a key presence in the region. The Coast Guard's significant presence in Alaska is anchored by the Seventeenth District offices in Juneau and the Service's largest command, Air Station Kodiak.⁹ In addition to continuous operations from year-round facilities throughout the state, the Coast Guard conducts seasonal operations, as part of its Operation Arctic Shield, in locations such as Kotzebue, Nome, and Utqiagvik (formerly Barrow).¹⁰ However, with no assets permanently stationed above the Arctic Circle the Service's seasonal presence includes employing mobile command and control platforms such as large cutters and ocean-going ice-strengthened buoy tenders, and establishing seasonal air and communications capabilities by leasing facilities. These mobile and seasonal capabilities facilitate search and rescue, maritime border security, intelligence gathering for maritime domain awareness, emergency response, and marine environmental protection and law enforcement.

Since 2012, the Coast Guard has implemented Arctic Shield operations to perform Coast Guard missions, broaden partnerships, and enhance and improve preparedness, prevention, and

⁸ "Polar Code," Polar Code, International Maritime Organization, 2019, available at www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx.

⁹ The 17th District encompasses over 3,853,500 sq. miles and over 47,300 miles of shoreline throughout Alaska and the Arctic.

¹⁰ <https://www.pacificarea.uscg.mil/Our-Organization/District-17/17th-District-Units/Air-Station-Kodiak> accessed April 18, 2018.

response capabilities. For example, the Service deployed a number of assets as part of its Arctic Shield 2017 operations including: Coast Guard Cutter (CGC) HEALY, a medium icebreaker; CGC SHERMAN, a high endurance cutter; CGC ALEX HALEY, a medium endurance cutter; CGC MAPLE, a seagoing buoy tender; and two Coast Guard MH-60 Jayhawk helicopters from Air Station Kodiak, Alaska. Arctic Shield 2017 included Operation Arctic Guardian, an oil spill exercise near Utqiagvik, Alaska, engagement with nine remote Alaskan villages, a historic transit of the Northwest Passage by CGC MAPLE and joint operations with the Royal Canadian Navy, as well as the completion of 28 search and rescue cases that resulted in 20 lives saved. Compared to Russia's 46-vessel icebreaker fleet, with 12 more ships under construction,¹¹ the U.S. Coast Guard is forced to stretch assets and capabilities to secure a wide mission set with limited resources.

A decade-long effort to provide the United States with the capabilities necessary for assured year-round access to the polar regions has recently found footing in Congress, and substantial progress has been made to deliver by 2024 the Nation's first new heavy icebreaker in more than 40 years. The Coast Guard and Navy have established a Joint Program Office to capitalize on experience and best practices from both Services. In FY 2019, Congress appropriated an additional \$675 million to fund the detail design and construction of a new heavy icebreaker, the Polar Security Cutter. On April 23, 2019, the Coast Guard awarded a \$745.9 million fixed-price incentive-firm contract to VT Halter Marine Inc., a Pascagoula, Mississippi shipyard, for the construction of the first icebreaker with options to extend the contract for two additional vessels. The construction of the third icebreaker will most likely provide a dedicated Arctic asset. The primary mission of Polar Security Cutters 1 and 2 will be to take over the Coast Guard's existing responsibilities in the Antarctic to ensure a self-rescuing capability.

While much of the Nation's focus regarding the Arctic in recent years has been on the critical need for new heavy icebreakers, new vessels are far from the only need in the region. A report conducted by the Homeland Security Operational Analysis Center identified four major gaps in Coast Guard Arctic Capabilities including unreliable communications, lack of adequate maritime domain awareness, scarcity of available assets (especially ice-resistant air support and icebreakers) and supporting infrastructure, and institutional difficulty to identify, articulate, and close capability gaps.¹² The report states that if these capability gaps are not closed by the 2030s, the Coast Guard risks facing substantial vulnerabilities in several of its missions in the Arctic including search and rescue, marine safety, ice operations, marine environmental protection, and ports, waterways, and coastal safety.¹³

The Coast Guard's ability to exercise both military and civil authorities is uniquely suited to address the inter-jurisdictional challenges of the Arctic. In its revised Arctic Strategic Outlook, released April 2019,¹⁴ the Coast Guard highlights three areas of necessary improvement to secure mission success: enhancing capability through asset acquisition, improved communications infrastructure, and Arctic Domain Awareness; strengthening rules-based order to establish Arctic maritime norms; and adapting the Coast Guard mission set to the Arctic through new practices and

¹¹ Ronald O'Rourke, Congressional Research Service. *Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress*. Updated March 1, 2019.

¹² Homeland Security Operational Analysis Center (2018) [*Identifying Potential Gaps in the U.S. Coast Guard Arctic Capabilities*](#).

¹³ Ronald O'Rourke, Congressional Research Service. *Changes in the Arctic: Background & Issues for Congress*. April 24, 2018.

¹⁴ United States Coast Guard Arctic Strategy (Washington, D.C.: April 2019).

technologies. These conclusions generally address capability gaps identified in a 2016 GAO study.¹⁵ The Coast Guard must adapt to enforce evolving regulatory frameworks for maritime activity in the Arctic and a changing strategic context, and will do so by forming new partnerships to promote rule of law.

Arctic Infrastructure Challenges

Numerous governmental and academic reports have identified infrastructure and operational challenges to maritime transportation in the U.S. Arctic. Liabilities mentioned include limited satellite coverage and architecture to support voice and data communications, the lack of a deep-draft port (i.e., depths greater than 35 feet), hazardous weather and ice conditions, and the lack of channel marking buoys and other floating visual aids to navigation, which are not possible due to continuously moving ice sheets.¹⁶ In addition, to ensure safe and efficient maritime transportation in the region, it is necessary to conduct surveys to improve nautical charts, improve communications capabilities, improve weather forecasting and modeling, construct a deep-draft U.S. Arctic port, and develop community and regional emergency response networks in preparation for vessel and aircraft accidents and environmental damage related to increased ship traffic and industrial development.

In addition to known infrastructure requirements, the Coast Guard is exploring the need for the creation of new vessel routing measures to reduce the risk of marine casualties and increase the efficiency and predictability of vessel traffic in the U.S. Arctic.¹⁷ The Coast Guard is also conducting several Arctic-focused research projects in collaboration with academia at the Arctic Domain Awareness Center, including methodologies to minimize environmental damage from spilled oil in extreme cold, enhanced navigational capabilities in the Arctic, establishing exposure limits for Search and Rescue team members in extreme cold, and developing a classification system of ice conditions.¹⁸

Other efforts to improve Arctic capabilities include the International Arctic Ocean Buoy Program, which maintains an international network of drifting buoys in the Arctic Ocean to provide meteorological and oceanographic data for real-time operational and research purposes. Additionally, H.R. 1314, the *Integrated Coastal and Ocean Observation System Act Amendments of 2019*, has been re-introduced in the 116th Congress to reauthorize funding for the U.S. Integrated Ocean Observing System (IOOS), both for observation data in the Arctic and other U.S. regions.

Existing Infrastructure, Near-Term Recommendations

¹⁵ U.S. Government Accountability Office (2016) *Arctic Strategy Is Underway, but Agency Could Better Assess How Its Actions Mitigate Known Arctic Capability Gaps*.

¹⁶ Arctic Council (2009) *Arctic Marine Shipping Assessment*; U.S. White House (2013) *National Strategy for the Arctic Region*; U.S. Government Accountability Office (2014) *Maritime Infrastructure: Key Issues Related to Commercial Activity in the U.S. Arctic over the Next Decade*; Alaska Arctic Policy Commission (2015) *Final Report*; U.S. Committee on the Marine Transportation System (2016) *A Ten-Year Prioritization of Infrastructure Needs in the U.S. Arctic*; Council on Foreign Relations (2017) *Arctic Imperatives, Reinforcing U.S. Strategy on America's Fourth Coast*; Center for Strategic and International Studies (2017) *Maritime Futures, the Arctic and the Bering Strait Region*.

¹⁷ U.S. Coast Guard. Port Access Route Study: In the Chukchi Sea, Bering Strait, and Bering Sea. Preliminary Findings. 23 December 2016. Docket Number USCG-2014-0941 and USCG-2010-0833.

¹⁸ U.S. Coast Guard. Acquisition Directorate. Research, Development, Test & Evaluation. *FY18 RDT&E Project Portfolio*. March 2018. Examples: Next Generation Arctic Navigational Safety Information System (proj #6211), Arctic Operations Support (proj #6210), Robust Maritime Arctic Communications (proj #6213), Safety Parameters for ICE Operations (proj #5301), Response to Oil in Ice (proj #4701), Ice Condition Risk Assessment Tool (proj #6512), and Arctic Technology Evaluation 2018 (proj #62101).

The U.S. Committee on the Marine Transportation System (CMTS) is a Federal Cabinet-level, inter-departmental committee that creates a partnership of Federal departments and agencies with responsibility for the Marine Transportation System (MTS). In 2010, the CMTS was directed by statute (PL 111-281, Section 307(c)) to coordinate transportation policy in the U.S. Arctic for Safety and Security. Since then, they have published recommendations for Arctic infrastructure needs in 2013 and 2016, and revised those recommendations in 2018. The CMTS recently released its findings and recommendations to prioritize infrastructure needs and secure sovereignty in the Arctic (summarized in Appendix I). These recommendations span five key categories integral to the Arctic MTS, including: (1) navigable waterways, (2) physical infrastructure, (3) information infrastructure, (4) emergency response, and (5) vessel operations.

The CMTS recommendations from 2016 remain largely unchanged except for recommendation for the Coast Guard to finalize a new Port Access Route Study for the Bering Strait. Outstanding near-term recommendations from 2016 emphasize the urgency of congressional authorizations and appropriations to support prioritized Arctic infrastructure projects across the five categories.

WITNESS LIST

Panel I

Admiral Charles W. Ray, USCG
Vice Commandant
United States Coast Guard

Panel II

Rear Admiral Shepard Smith
Director
NOAA Office of Coast Survey

Colonel Phillip J. Borders
Commander of District Alaska
U.S. Army Corps of Engineers

Panel III

Ms. Heather A Conley
Senior Vice President, Europe, Eurasia, and
the Arctic
Center for Strategic and International Studies

Ms. Abbie Tingstad, PH.D
Senior Physical Scientist
RAND Corporation

Admiral Thad Allen, USCG ret.
Senior Executive Advisor
Booz Allen Hamilton

Hon. Mead Treadwell
Co-Chair, Polar Institute Advisory Board
Woodrow Wilson Center

Appendix I:
[Near-Term Recommendations from the CMTS Arctic Infrastructure Needs Report](#)

Near-Term Recommendations	
Navigable Waterways	Designate Port Clarence as an Arctic Maritime Place of Refuge.
	Review Port Clarence facilities to assess whether adequate support facilities are available at Port Clarence or in the region for a ship in need of assistance.
	Leverage existing data-sharing frameworks, such as Data.gov, the Alaska Regional Response Team, and Alaska Ocean Observing System, to facilitate waterways planning and response to environmental emergencies.
	Support Arctic Waterways Safety Committee efforts to bring stakeholders together.
	Work with stakeholders to coordinate research efforts to de-conflict research within commercial and subsistence use areas.
	Leverage international partnerships supporting waterways coordination.
	Designate M-5 Alaska Marine Highway Connector to connect the Arctic Ocean and the western section of the Northwest Passage.
Physical Infrastructure	Prioritize the need for Arctic port reception facilities to support international regulatory needs and future growth.
	Expand Arctic coastal and river water-level observations to support flood and storm surge warnings.
	Co-locate new Continuously Operating Reference Stations and National Water Level Observation Network stations to significantly improve the Arctic geospatial framework with precise positioning and water levels.
	Review U.S. Arctic maritime commercial activities to identifying major infrastructure gaps that should be addressed to promote safe and sustainable Arctic communities.
Information Infrastructure	Expand partnerships to provide new satellite Automatic Identification System (AIS) capabilities for offshore activity information.
	Advance Arctic communication networks to ensure vessel safety.
	Place hydrography and charting of the U.S. maritime Arctic among the highest priority requirements for agency execution.
	Improve weather, water, and climate predictions to an equivalent level of service as is provided to the rest of the nation.
	Implement short-range, sea-ice forecasting capability.
MTS Response Services	Continue collaboration with State and local authorities to ensure readiness of Arctic maritime and aviation infrastructure for emergency response and Search and Rescue (SAR).
	Develop a plan to transport critical response equipment from the contiguous U.S. into the Arctic area in the event of a catastrophic event.
	Continue coordination through international fora to provide significant opportunities for engagement across the Federal Government and the international Arctic response community.
	Support Pan-Arctic response equipment database development, best practices recommendations, and information sharing for continued development of guidelines for oil spill response in the Arctic.
	Evaluate facilities currently available on the North Slope for use as seasonal staging areas by those engaged in readiness exercises or research.
Vessel Operations	Expand U.S. icebreaking capacity to adequately meet mission demands in the high latitudes.
	Finalize the Port Access Route Study for the Bering Strait and continue efforts to provide routes for vessel traffic in the U.S. Arctic.
	Update domestic law to implement the mandatory provisions of the Polar Code and the Convention on Standards of Training, Certification and Watchkeeping for Seafarers.
	Examine existing training and safety standards applicable to the U.S. fishing fleet with respect to the new Polar Code requirements.