Feasibility of Establishing an Arctic Deep-draft Seaport

Report to Congress
February 11, 2014

U. S. Coast Guard
Foreword

I am pleased to present the following report on the “Feasibility of Establishing an Arctic Deep-draft Seaport,” which has been prepared by the U.S. Coast Guard in consultation with the U.S. Navy, the U.S. Maritime Administration (MARAD), and the U.S. Army Corps of Engineers (USACE).

Section 721 of the Coast Guard and Maritime Transportation Act of 2012 (Pub. L. 112-213) directed the Commandant of the Coast Guard to complete a study on the feasibility of establishing a deepwater seaport in the Arctic to protect and advance strategic United States interests within the Arctic region. The analysis and conclusions in this report are consistent with those contained in the USACE and the Alaska State Department of Transportation and Public Facilities “Alaska Deep-Draft Arctic Port System Study” released in March 2013.

Pursuant to Congressional requirements, this report is being provided to the following members of Congress:

The Honorable John D. Rockefeller IV  
Chairman, Senate Commerce, Science, and Transportation Committee

The Honorable John Thune  
Ranking Member, Senate Commerce, Science, and Transportation Committee

The Honorable Bill Shuster  
Chairman, House Transportation and Infrastructure Committee

The Honorable Nick J. Rahall II  
Ranking Member, House Transportation and Infrastructure Committee.

I am happy to answer any further questions you may have, or your staff may contact my Senate Liaison Office at (202) 224-2913 or House Liaison Office at (202) 225-4775.

Sincerely,

R.J. PAPP, JR.  
Admiral U.S. Coast Guard  
Commandant
Table of Contents

I. Legislative Language 1
II. Background 2
III. Analysis 3
I. Legislative Requirement

This report responds to the congressional requirements set forth in Section 721 of the Coast Guard and Maritime Transportation Act of 2012 (Pub. L. 112-213), as provided in the following language:

SEC 721: ARCTIC DEEPWATER SEAPORT.

(a) STUDY— The Commandant of the Coast Guard, in consultation with the Commanding General of the Army Corps of Engineers, the Maritime Administrator, and the Chief of Naval Operations, shall conduct a study on the feasibility of establishing a deepwater seaport in the Arctic to protect and advance strategic United States interests within the Arctic region.

(b) SCOPE— The study under subsection (a) shall include an analysis of—

(1) the capability provided by a deepwater seaport that—
   (A) is in the Arctic (as that term is defined in the section 112 of the Arctic Research and Policy Act of 1984 (15 U.S.C. 4111)); and
   (B) has a depth of not less than 34 feet;
(2) the potential and optimum locations for such deepwater seaport;
(3) the resources needed to establish such deepwater seaport;
(4) the timeframe needed to establish such deepwater seaport;
(5) the infrastructure required to support such deepwater seaport; and
(6) any other issues the Secretary considers necessary to complete the study.

(c) DEADLINE FOR SUBMISSION OF FINDINGS.—Not later than 1 year after the date of enactment of this Act, the Commandant shall submit the findings of the study under subsection (a) to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives.
II. Background

This report assesses the feasibility of a deep-draft seaport in the U.S. Arctic. The Arctic Research and Policy Act of 1984 (Pub. L. 98-373), Section 112, defines the Arctic as follows:

“Arctic” means all United States and foreign territory north of the Arctic Circle and all United States territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers [each of which is located in western and northern Alaska]; all contiguous seas, including the Arctic Ocean and the Beaufort, Bering, and Chukchi Seas; and the Aleutian chain.

Despite the diminishing permanent sea ice and the emerging economic opportunities in the U.S. Arctic, there is very limited infrastructure in the region. Extensive distances, extreme weather, and scarcity of physical infrastructure present tremendous logistical challenges for maritime operations generally, including emergency response in the Arctic region.

The U.S. marine presence in the Arctic is still in its infancy. Only a small percentage of navigationally significant U.S. Arctic waters have been surveyed with modern technology to determine and chart precise depths and accurately depict all hazards to navigation. Currently, a majority of coastal communities in this area have small, shallow-draft ports, which can only be serviced by barges and small boats. There are no deep-draft seaports in western or northern Alaska and few places of refuge. The nearest facilities and vessels supporting the U.S. Arctic for emergency response are located in Kodiak, Dutch Harbor, and Adak, which are 800-1000 nautical miles from the Arctic Circle. The marine transportation and service infrastructure is not designed to support conceivable increases in Arctic traffic and to mitigate the risks that could accompany increased activity.

---

1. This report interprets Section 721 as directing a study of a deep-draft seaport and not a “deepwater port” as such term is defined in section 3(9)(A) of the Deepwater Port Act of 1974 (33 U.S.C. § 1502(9)(A)). Section 721 provides two salient characteristics of the seaport for the purpose of the analysis Congress has directed: location (“in the Arctic”) and depth of the adjacent waters (“not less than 34 feet”). As such, the term “deepwater” is used in its usual sense and should be afforded its ordinary meaning. This distinction comports with the legislative history of section 721 and is consistent with informal discussions between the Coast Guard and the Senate Committee on Commerce, Science, and Transportation and the House Committee on Transportation and Infrastructure. Whether or not it would be feasible to establish an offshore deepwater port in the Arctic beyond Alaska’s seaward boundaries—waters that routinely ice over during the winter months and routinely encounter drifting ice—would require an entirely separate analysis.

2. Section 721(b)(1)(A) of the Coast Guard and Maritime Transportation Act of 2012 (Pub. L. 112-213) and section 307(h) of the Coast Guard Authorization Act of 2010 (Pub. L. 111-281) referenced the same definition for the Arctic.

3. The term “Infrastructure” as used within this report refers to all building and support functions necessary for a seaport to exist to include Transportation, Energy, Water Management, Communication, Law Enforcement, Medical, Governance, etc.


6. A place of refuge is a location where a vessel needing assistance can be taken to stabilize the vessel and protect human life during a storm, reduce a navigation hazard, or protect sensitive natural resources and other uses of the area (e.g., subsistence collection of mussels, commercial fishing, recreational boating). Places of refuge may include a constructed port, natural embayment, potential grounding site, or an area in offshore waters.

In the March 2013 Alaska Deep-Draft Arctic Port System Study, there was broad consensus among the experts and other participants that the Bering Strait and Norton Sound should be the focal point for a more detailed evaluation of options for developing a deep-draft port in the region.\(^8\) Experts contributing to that study also agreed that Nunivak Island, located in northwestern Bristol Bay, should be the southernmost boundary of the U.S. Arctic region for consideration of a new deep-draft port.\(^9\) This report will focus on the same geographic region as discussed in the Alaska Port System Study.

The two most promising sites identified through that process for such a deep-draft port are the mostly undeveloped Port Clarence Bay, located only 35 miles east-southeast of the Bering Strait, and the existing large town and medium-draft harbor of Nome, located another 70 miles to the southeast.

## III. Analysis

### A. Capabilities Provided by a Deep-draft Seaport

The United States has broad and fundamental interests in the Arctic region. An Arctic deep-draft seaport could help promote:

- **U.S. Security Interests.** A deep-draft Arctic seaport could providing a forward staging location for U.S. military, government, commercial, and scientific assets operating in this region.

- **Energy Security and Independence.** A deep-draft Arctic seaport could provide commercial enterprises with a forward staging location for offshore resource extraction activities as well as response capabilities in the event of a major marine casualty. With the right intermodal connections, a seaport could facilitate access to this region by reducing time and logistics required to use alternate ports. The U.S. offshore fields in the Chukchi Sea and Beaufort Sea could also require a highly capable support infrastructure positioned at a U.S. Arctic deep-draft port facility.

- **Mariner Safety and Protection of the Arctic Environment.** As resource extraction and commercial shipping activities continue to expand in this region, a deep-draft Arctic seaport, as a forward staging base and a hub for operations, would facilitate search and rescue (SAR) activity, as well as support the prevention and response activities that could minimize the impacts a marine incident may have on the fragile Arctic environment.

- **Economic Development and Shared Arctic Interests.** The U.S. Arctic region contains significant quantities of natural resources available for extractive activities. These include oil and gas, a wealth of minerals, timber, and fish. If harvested sustainably, these valuable resources could provide long-term economic opportunities for Alaska Native corporations, tribal communities, regional commercial enterprises, entrepreneurs, and investors. A deep-draft seaport could become a logistics and support link for these activities.

---


B. Potential and Optimum Locations for a Deep-draft Seaport

A deep-draft seaport that advances national strategic interests in the Arctic region must be in a location suitable to provide a base of operations for a variety of industrial activities, transportation requirements, SAR requirements, marine scientific research efforts, staging for disaster response, logistics support, and as a place of refuge for vessels in distress. It must be located near the shipping lanes passing through the Bering Strait.

The March 2013 Alaska Port System Study identified five primary criteria for evaluating each potential site’s geographic and physical suitability. These five criteria were: (1) Port Proximity to Mission (e.g., mining, oil, and gas); (2) Intermodal Connections; (3) Upland Support; (4) Natural Water Depth; and (5) Navigation Accessibility. Based on an analysis of 14 locations in western and northern Alaska and the five criteria discussed above, the Federal and State authors of the study identified four sites with the strongest potential for such a deep-draft seaport: Nome, Port Clarence/Teller, Cape Darby, and Barrow. The study then narrowed this list down to two potential sites, Nome and Port Clarence/Teller—both located on the Seward Peninsula of western Alaska, east-southeast of the Bering Strait.

Nome is a small city with a permanent population of about 3,600. It is located on Norton Sound in the northeastern Bering Sea. Nome is a regional center of trade, health care, transportation, and education for 23 outlying communities within the Bering Strait and Norton Sound area. As shown on NOAA chart 16206, Nome has a small harbor at the mouth of the Snake River, which is capable of handling commercial and fishing vessels with medium and shallow draft.

As a result of improvements undertaken by the U.S. Army Corps of Engineers (USACE) in 2006, the Nome harbor now has a nearly 3,000-foot causeway, a 3,000-foot breakwater, and a 200-foot pier with a depth of 22.5 feet mean lower low water (MLLW) in the outer harbor. However, the harbor is only 100 meters wide at the harbor mouth, and the outer harbor extends only 300 meters. The channel into the inner harbor, which shallows to 10 feet, was dredged and surveyed in 2010 and 2011. This channel leads to a shallow inner harbor used mostly by fishing vessels, gold dredging, and other smaller vessels.

Nome is homeport to a commercial fishing fleet that fishes the Bering Sea, as well as a vital commercial transportation fleet of more than 40 vessels. Medium and shallow-draft vessels use the outer and inner harbors as appropriate throughout the navigable seasons to load and offload cargo, refuel, and receive other essential services. Because of a modern “gold rush” in the gravel sediments deposited by the Snake and Nome River just off the coast, Nome’s harbor has been practically overrun with small-vessel activity during the ice-free summer months. Nome also has a regional airport and opened a new, $168-million full-service hospital in November 2012. The State of Alaska recently drafted plans for a

---

10 Alaska Port System Study, supra note 6, at 4, 32-33, Appendix A-4. A sixth criterion, “Other factors,” was also listed, but was not included as one of the five major criteria.
12 NOAA Chart 16206 is available online at http://www.nauticalchartsonline.com/chart/zoom?chart=16206. Detailed information about the harbor at Nome is found in the inset at the upper right corner of the chart.
proposed 500-mile highway project to connect an existing highway out to Manley Hot Springs (60 miles west of Fairbanks) with Nome. There are major concerns in the State about the $2.7 billion estimated price tag associated with that highway project.

Port Clarence Bay is a very large, natural, deep-water bay located only 35 nautical miles east of the southern entrance to the Bering Strait. It was an important harbor used as a place of refuge for whaling vessels active in the region in the second half of the 19th Century. It is currently used intermittently as a protected anchorage by tug-and-barge operators, other resupply vessels, and Eskimo whalers as they await ice and weather conditions to improve in and around the Bering Strait. The large-scale NOAA chart 16204 indicates that the water depth at the entrance is at least 45 feet MLLW. The entrance, from Point Spencer on the south to the nearest point to the north, is 4 nautical miles wide with deep water and no hazards to navigation for most of that distance. The water remains quite deep (35 feet MLLW or more) in much of the bay, although it shallows toward the east, south, and southwest. The bay stretches a maximum of about 16 nautical miles from the western entrance at Point Spencer to Teller to the east, about 13 miles from the eastern side of the spit near Point Spencer to Cape Riley, and about 15 nautical miles from Brevig Mission in the north to the uninhabited south shore. The bay has two small villages along its shores: Brevig Mission and Teller.

The town of Brevig Mission reported a population of 388 in the 2010 census. It is located at the north end of the Port Clarence Bay. Brevig Mission has an airport with two gravel runways, with regularly scheduled service to the town of Nome and the village of Wales. Teller, with about 270 residents, is located at the eastern side of Port Clarence Bay, on a spit separating the bay from Grantley Harbor. Teller has a lighted 3,000-foot runway, with scheduled flights to Nome, and is further accessible by a recently improved 72-mile gravel road that runs southeast to Nome. There are no pier facilities in the bay; barges and lighter vessels from Nome or elsewhere must offload cargo directly onto the beach.

During the years 1961-2010, the Coast Guard operated a LORAN-C station on some 2,600 acres on the north end of the long, narrow spit of land separating the western side of Port Clarence Bay from the northeastern Bering Sea (Norton Sound). An air strip capable of handling C-130 aircraft on the property is currently not maintained nor used for flight operations. The Coast Guard is currently engaged in negotiations to turn over most of this large parcel of property to the Bering Straits Native Corporation.

C. Resources Needed to Establish such a Deep-draft Seaport

Developing and maintaining a deep-draft seaport and its accompanying infrastructure anywhere requires resources. This is especially true in the Arctic region, where construction costs can run several times as much as a similar project in the lower 48 States or even elsewhere in Alaska. Development under current environmental conditions would be a major challenge because the potential sites for such a seaport are iced over for several months of the year even well south of the Bering Strait. It would require importing most of the essential building materials and bringing dredging and construction equipment to the port site. The scope of the project (dredging, construction of breakwaters, piers, and/or quays, loading and unloading facilities, transportation nodes, ship repair and maintenance facilities, and

---

16 “Legislators cringe at $5.4 million price per mile but see benefits of an interior highway.” Id.
17 NOAA Chart 16204 is available online at http://www.nauticalchartsonline.com/chart/zoom?chart=16204.
19 Such materials would include concrete, steel, and pressure-treated lumber; the vast quantities of sand and gravel that the project would require could likely be procured locally, mostly from dredged materials.
other public and private infrastructure) would determine its cost.\textsuperscript{20} Industry, tribal, and private investors (with some local, State, and Federal funds, if eligible) would have to raise and provide the necessary funds. However, the construction of a port and related landside infrastructure could occur in stages over a period of time. The basis for building a port depends on the extent to which it would be used. Mining, shipping, fishing, oil and gas development, and other resource development in the U.S. Arctic may expand slowly for the foreseeable future. As industry makes long-term investments in the Arctic region, developing the intitial port or enhancing its capabilities could play a role.

D. Timeframe Needed to Establish such a Deep-draft Seaport

Building a deep-draft seaport in the Arctic would reasonably take 10 to 20 years. Developing the concept, reaching out to indigenous communities and all other stakeholders for input, complying with all applicable laws and regulations, and drafting the detailed plans in response to the many logistical and engineering challenges would involve a great deal of time and expertise. The recent decade-long engineering failures at the Port of Anchorage underscores these challenges.

E. Infrastructure Required to Support such a Deep-draft Seaport

Infrastructure typical of a deep-draft seaport includes private aids to navigation to mark the port’s approaches and any hazards, breakwaters, dredged channels, turning basins and anchorage areas, piers and quays. A typical deep-draft seaport would also require cranes and other cargo handling equipment, warehouses and cargo staging areas, fuel storage tanks and fueling facilities, adequate supplies of electrical power and a distribution grid, vessel tracking technology and communications technology. Finally, a typical port would require facilities for port operations, management, and vessel repair and maintenance.

The type of specialized infrastructure required for a deep-draft Arctic seaport would largely depend on the various purposes for which the port was developed. For example, if the primary purpose of the seaport was the transfer of coal, graphite, zinc, lead, iron ore, gold, and/or other minerals mined and produced on the Seaward Peninsula and brought to port via rail or heavy truck, infrastructure would have to include storage, processing, and loading equipment to handle the partially processed ore.

If it were developed primarily as a seaport to support oil and gas exploration on the continental shelf or trans-Arctic shipping, it would have to include cargo-handling infrastructure, cargo marshalling and storage yards and warehouses, and equipment repair shops. If it were developed as a fisheries center, it would include fish processing plants and maintenance yards. The long-term prospects for a deep-draft seaport in the Arctic may include some mix of these capabilities and services. As such, it would be beneficial for the port and its environs to provide for future expansion to accommodate additional uses. The physical challenges of the region, such as drifting ice and extreme weather and winds might be addressed by infrastructure and engineering controls or by controlling operational aspects.

A seaport is also typically associated with economic and social support infrastructure which implies: intermodal transportation capabilities (roads, air, and/or rail), retail commerce, adequate housing, public schools, medical facilities, and the capability to provide a range of other, social, and economic services through both local government and private enterprise.

\textsuperscript{20} The authors of the Alaska Port System Study cautioned that there was currently “insufficient information available for accurate cost estimates.” Id. at 33.
F. Additional Issues

In addition to the infrastructure and operational aspects of a deep-draft seaport in the U.S. Arctic, there are four additional areas that would be important to address.

(1) National, State, Local and Tribal Policies and Priorities. In the May 2013 National Strategy for the Arctic Region, future infrastructure needs are noted as issues to be addressed in an Integrated Arctic Management approach that manages natural resources from a comprehensive understanding of environmental and cultural sensitivities in the region. Another goal is to pursue innovative arrangements to support the investments needed in the Arctic region, including “new thinking on public-private and multinational partnerships.”

A deep-draft seaport in the Arctic region could advance national policy goals. Alignment of Federal, state, local, and tribal support to authorize and approve the concept would encourage the establishment of a tailored public-private partnership body and set the stage for government, industry, and other private investors to provide the capital necessary to move the project forward.

(2) Practical and Environmental Concerns. Those looking to build a deep-draft seaport in the Arctic must proceed with great caution, ensure that they have adequate long-term funding, and take into account all of the challenges and variables inherent to the Arctic region. As loss of sea ice creates a more accessible Arctic, there are ongoing impacts on the maritime and terrestrial environment. This reality poses significant challenges and opportunities for subsistence livelihoods and resource management in Alaska and the Arctic region. The 2009 U.S. Arctic Region Policy listed two national policy objectives related to the environment and sustainable development: (1) Protect the Arctic environment and conserve its biological resources; and (2) Ensure that natural resource management and economic development in the region are environmentally sustainable. In addition to complying with all applicable environmental laws and regulations in planning any project to build a deep-draft seaport in the Arctic, proponents must be sensitive to the threats to all marine mammal, bird, and fish species and their habitats, as well as shore-based pollution, to minimize the potential adverse impacts.

(3) Cultural and Legal Issues Involving the Indigenous Populations. U.S. Arctic indigenous peoples have continuously adapted to live and thrive for thousands of years in one of the harshest environments on the planet. The cultural identity of indigenous peoples in dozens of villages and coastal communities in western and northern Alaska is closely tied to ocean transportation (water craft and over ice) to hunt and fish. Indigenous peoples now must prepare to deal with increases in commercial shipping, oil and gas development, mining, and other economic activities. Because maritime activities have the potential to disrupt traditional uses and subsistence activities, it is incumbent upon the Federal and State Governments to ensure that shipping and other commercial activities are pursued in ways that are compatible with traditional indigenous life as identified through consultations with Arctic tribal governments and communities, and Alaska Native Corporations. This concept is also consistent with U.S. law and policy.

---

21 National Strategy for the Arctic Region (National Arctic Strategy), May 10, 2013.
22 Id. at 10.
24 Alaska Northern Waters Task Force, supra note 7, at iii, 18, 22.
(4) **Other Legal Issues.** Receding ice has led to the opening of waters that are sufficiently deep, wide, and slow-moving for vessels to pass safely and efficiently. The Federal Government has broad authority to manage the use of those waters for navigation. All agencies must be involved in determining how to comply with these various legal requirements. Alignment of Federal, state, local, and tribal support to authorize and approve such a deep-draft seaport project would prove to be of immeasurable value in making it a success.

Initiatives at the International Maritime Organization (IMO) and within the Arctic Council can help reach consensus on how best to approach Arctic-related activities. Best practices can be codified in international and domestic law. Insurance companies can insist that their insured companies and industries comply with them.

The 2009 U.S. Arctic Region Policy, the National Ocean Policy\(^{25}\), the 2013 National Strategy for the Arctic Region, the Coast Guard Arctic Strategy, and the Findings and Recommendations of the Alaska Northern Waters Task Force, all made strong recommendations that the United States join the 1982 Convention on the Law of the Sea at the earliest opportunity to promote a variety of national, state, regional, and international interests in the Arctic region.\(^{26}\)

---


\(^{26}\) The Alaska Northern Waters Task Force urged the U.S. Senate to join the Convention and commended Senators Begich and Murkowski for their efforts in support of ratification. Alaska Northern Waters Task Force, supra note 7, at 4. Noting that a wide variety of national security, environmental, and business interests support joining the Convention, the Alaska Northern Waters Task Force observed: “By failing to act, the United States jeopardizes its effectiveness in shaping future ocean policies, risks its ability to improve its strategic position in the Arctic, and imperils economic opportunities afforded under the convention.” Id. at 5. See also the National Arctic Strategy, supra note 22, at 2: “[The U.S. Government] will work toward U.S. accession to the United Nations Convention on the Law of the Sea.”