

United States Arctic Ocean Management & the Law of the Sea Convention

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Abstract - This paper will provide a brief overview of the international and domestic law and policy that provide the framework for the management of Arctic Ocean resources off the coast of Alaska by the United States. There will be a general discussion of the international legal framework set forth by the United Nations Convention on the Law of the Sea (UNCLOS) as applied to the U.S. management in the Arctic Ocean, including the delicate balance of rights and interests in particular the right of navigation, research and exploration and the right of U.S. exercise of coastal State jurisdiction. To provide the proper international legal context for this discussion, the paper will first provide an overview of the work of the U.S. Baseline Committee which is the decision-making body in the U.S. Government that determines the Baseline from which the limits of all U.S. maritime zones are measured, including a discussion of the U.S. work on its project collecting data regarding the seaward limit of its continental shelf consistent with Article 76. It will also provide a brief overview of the depiction of the limits of the territorial sea, contiguous zone and Exclusive Economic Zone on the official nautical charts of the United States that are produced by the National Oceanographic and Atmospheric Administration.

The United States, Canada, Denmark, Norway and Russia are all interested in determining the limits of their respective continental shelves in the Arctic Ocean. Russia was the first to submit a claim defining its interests in 2001. While the United States has not ratified the Law of the Sea Convention, it is working on collecting the data required for determining the limit of its continental shelf under Article 76 of UNCLOS. The paper will briefly discuss this work including the cooperation between the United States and Canada in the survey and research of their respective continental shelves in the Arctic Ocean. Climate change is having dramatic effects; most notably there is a significant melting of Arctic sea ice in the summer months. This is resulting in new access to ships to explore and exploit resources of the Arctic Ocean and new routes of navigation that may provide more economical and efficient trade and commerce. There is a growing concern over these trends, and the U.S. anticipates an increase in human activity, shipping, and energy development, among other things. These new activities will undoubtedly have significant impacts on the Arctic environment. Increased activity may have other consequences as well. The U.S. is reviewing its Arctic policy and focusing on these changes and their implications for national and homeland security, the mapping of our continental shelf, energy exploration, environmental protection, and conservation of natural resources. This paper addresses how U.S. policies regarding management of its resources in the Arctic Ocean are in a manner consistent with customary international law as reflected in UNCLOS. Finally, cooperation among Arctic states in multilateral organizations will also be a key component of protection of the marine environment and the management of shipping in the Arctic.

I. INTRODUCTION

The Arctic has recently emerged as a region of growing economic and environmental importance. As the polar ice cap melts at a rate higher than many scientists forecast, new opportunities for research, shipping, and resources exploitation are becoming available. According to the U.S. Geological Survey, “[t]he area north of the Arctic Circle has an estimated 90 billion barrels of undiscovered, technically recoverable oil, 1,670 trillion cubic feet of technically recoverable natural gas, and 44 billion barrels of technically recoverable natural gas liquids in 25 geologically defined areas thought to have potential for petroleum.”¹ In pursuit of control over a lucrative portion of the Arctic continental shelf, the Russian government planted a flag beneath the Arctic sea ice in the summer of 2007. Arctic states have now launched expedited research efforts to determine the limitations of the continental shelf to stake claim to valuable resources now made more accessible. The melting of sea ice will also lead to the opening of the Northwest Passage. This route has the potential to serve as a major venue for global shipping, reducing shipping distances by up to 2000 nautical miles.² The U.S. National Snow and Ice Data Center predicted that the North Pole would be briefly ice free in September of 2008, one year after the Northwest Passage was opened for the first time in recorded

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history.³ The potential for exploitation of natural resources and ship traffic is increasing in one of the most pristine environmental assets left on earth. Arctic states are concerned about the possible adverse affects to this pristine marine environment particularly from an incident akin to the 1989 Exxon Valdez oil spill. Accidents in this uncharted and unpredictable area of the sea have already occurred, as evidenced by passenger vessels that have ventured into the Arctic and run aground. In addition to an increase in commercial shipping, the cruise ship industry is always looking for new and exciting destinations to take passengers, including sensitive marine environments like the Arctic. With a predicted influx in eco-tourism, marine pollution issues will also need to be addressed.

The United Nations Convention on the Law of the Sea (UNCLOS) provides the international legal framework for all of these activities, interests and concerns and is a basis for addressing the acceleration of activity that will take place in the Arctic as the region is transformed into a heavily researched, patrolled, transited, and industrialized landscape. While this region will see a convergence of complicated and politically charged issues over the next era of Arctic exploration, this paper will identify a few issues important to the U.S., particularly those where it is cooperating with Canada.

II. THE EXTENDED CONTINENTAL SHELF AND U.S. MARITIME ZONES

The U.S. is not a party to the UNCLOS, but recognizes much of the convention as reflecting customary international law and therefore applies those provisions relating to the maritime zones. UNCLOS is a carefully balanced compromise between a flag state's interest in maritime shipping and a coastal state's interest in protecting and managing its coastal waters. One of the most significant compromises in UNCLOS is the balancing of these interests in the 200 nautical mile (nm) Exclusive Economic Zone (EEZ) and the continental shelf. The limit of the 200 nm EEZ is measured from the same baseline used for measuring the limits of the territorial sea. The U.S. uses a normal baseline as the starting point for measuring and depicting the reach of a coastal state's territorial sea, contiguous zone, and EEZ, and the baseline is therefore critical in determining the reach of a state's jurisdiction in Arctic waters.⁴ It is important to note, however, that the baseline and all of these zones are ambulatory, due to the accretion and erosion of the shore. The international rules for measuring the territorial sea were initially established under the 1958 Geneva Convention for the Territorial Sea⁵ and adopted in UNCLOS. In 1970, when the National Oceanic and Atmospheric Administration (NOAA) was created within the Department of Commerce, it recognized the importance of developing official U.S. charts for navigation that also delimited the territorial sea and contiguous zone in a manner consistent with international law. NOAA, through the Secretary of Commerce, worked with the Department of State to establish an ad hoc Committee on the Delimitation of the United States Coastline, now known as the "Baseline Committee." The committee is chaired by the Department of State and is comprised of representatives from federal agencies responsible for implementing policy and enforcing federal statutes in maritime zones off the coast of the United States. The work of the committee involves the application of UNCLOS provisions to coastal surveys and related information used to determine the points which comprise the baseline from which the territorial sea and other maritime zones are measured. After developing a consensus on the baseline points, NOAA creates a set of official U.S. charts depicting the limits of the territorial sea, contiguous zone and EEZ. The committee continues to update charts that are distributed for agency and commercial use.⁶ Consistent with UNCLOS, the U.S. proclaimed a 12 nm territorial sea in 1988,⁷ a contiguous zone extending to 24 nm from the baseline in 1999,⁸ and a 200 mile EEZ in 1983.⁹ The 1945 Truman Proclamation also asserts U.S. jurisdiction and control over the natural resources of the seabed and subsoil of the continental shelf.¹⁰

Delimiting the maritime zones and boundaries in the Arctic is becoming more charged as research uncovers the presence of valuable oil and gas reserves and states vie for more control of lucrative shipping routes. While unresolved boundaries exist, the U.S. continues to work with other coastal states in the Arctic to determine the delimitation of each nation's maritime zones. Current unresolved boundaries include the U.S. – Canada boundary in the Beaufort Sea, and the Northwest Passage. Other maritime states, including the U.S., maintain the position that the Northwest Passage is an international strait, and therefore flag states enjoy a right of transit passage.¹¹ Canada's position is that this shipping route is on the landward side of its baseline and is therefore internal waters.¹² Under UNCLOS states have complete control of international shipping traffic through their internal waters. However, flag states have the right of innocent passage in straits used for international navigation.¹³ Based on its sovereignty, a coastal state has a great deal of authority in its territorial sea to regulate foreign ships even if they are exercising their right of innocent passage, as recognized by Articles 21, 22, and 23 of UNCLOS.¹⁴ This authority is not without limitation. A coastal state may not adopt requirements relating to the construction, design, equipment, and manning of foreign ships unless they give effect to international rules and standards.¹⁵ In the contiguous zone, a coastal state is limited to the enforcement of customs, fiscal, immigration, and sanitary laws.¹⁶ Another provision of note is Article 56 of UNCLOS, as it provides coastal states with jurisdiction in the EEZ with regard to marine scientific research and protection and preservation of the marine environment.¹⁷ UNCLOS balances these interests in the various maritime zones. As a result, the delimitation of

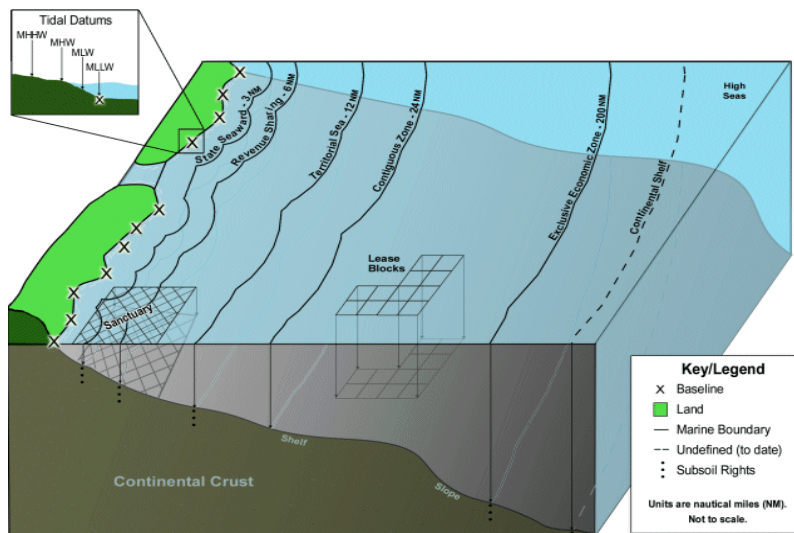


Figure 1: U.S. Maritime zones in accordance with customary international law

maritime zones and maritime boundaries between coastal states, as well as their depiction on official charts, is important to the states as well as the mariner and those conducting activities in these areas.

The U.S. and Canada have formed a Hydrographic Commission that meets annually to determine how to reflect unresolved boundaries on nautical charts in both countries. The Commission's primary focus of late has been the "U.S. – Canada Transboundary Electronic Navigational Chart (ENC) Project." The goal of the project is to address overlapping ENCs in the Pacific, Central and Atlantic regions, to develop a mechanism for displaying unresolved international maritime boundaries. To resolve charting issues in the Pacific Region, cartographers from both countries have worked on rotational assignment at the Canadian Hydrographic Service (CHS), and NOAA's Office of Coast Survey. Through this effort, a note for use with unresolved boundaries on ENCs was approved. This project is intended to be a template for others that will take place in the Atlantic and Central regions, so that mariners in these regions, as well as the Arctic, can better understand the waters they are transiting.

Determination or delimitation of maritime zones and baselines is only the start of providing notice of limits of maritime jurisdiction over Arctic waters. Under UNCLOS, the coastal state has jurisdiction over the natural resources of the shelf including sedimentary species, oil, gas, and mineral resources. The continental shelf "comprises the seabed and subsoil of the submarine areas that extend beyond [a coastal state's] territorial sea."¹⁸ Every coastal state may claim a continental shelf of two hundred miles. This claim is made automatically, and there is no need to submit evidence of a continental shelf up to two hundred miles. However, under UNCLOS, a coastal state has the opportunity to claim extended continental shelf if the state can demonstrate that certain criteria are met under Article 76 of UNCLOS.¹⁹ Coastal states must conduct extensive research to determine the limit of extended continental shelves. The results of this research are presented to the Commission on the Limits of the Continental Shelf for technical review. While several countries have made extended continental shelf submissions, Russia was the first Arctic coastal state to submit such a proposal in 2001. The Commission neither rejected nor accepted Russia's proposal, but recommended continued research and the collection of additional data.²⁰ After accession to UNCLOS, a coastal state has 10 years to make its claim to the Commission. Therefore, Russia has until 2009 to submit an updated proposal. Canada has until 2013, and Denmark until 2014.²¹

As previously mentioned, the United States is not a party to UNCLOS. This may pose a challenge for obtaining international recognition of the limit of the U.S. extended continental shelf as any claim made outside of UNCLOS may not take advantage of the mechanism established by UNCLOS in Article 76. The UNCLOS process provides greater legal certainty and ensures international recognition. Also, the longer that U.S. waits to accede to UNCLOS, the greater the likelihood of another country's extended continental shelf claim limiting what the U.S. can claim. An extended continental shelf established on the basis of the Commission's recommendations, however, is "final and binding," and one that other UNCLOS parties must acknowledge and observe.²² The U.S. executive branch, not willing to wait for the Senate to give its advice and consent to UNCLOS accession, is already in the process of obtaining and compiling the data necessary to establish the outer limits of its ECS. Determining the limitations of the U.S. extended continental shelf requires extensive bathymetric and seismic surveying and analysis of data.

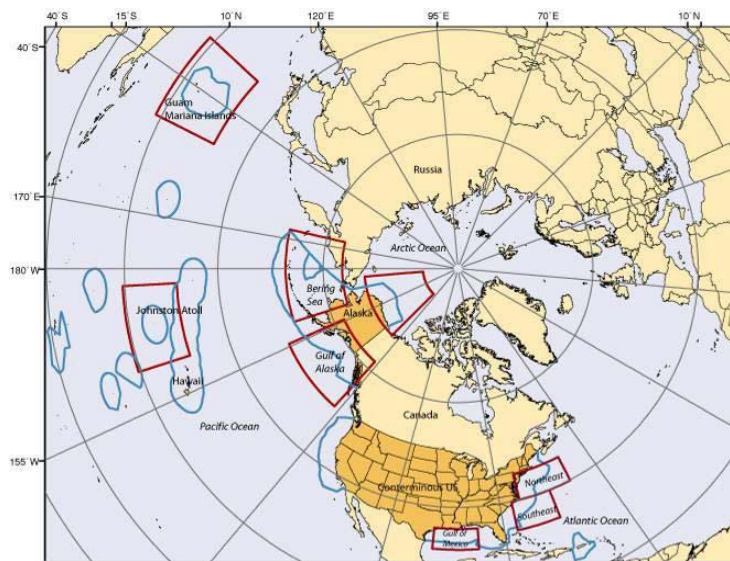


Image 1: The U.S. Extended Continental Shelf (outlined in red), and the U.S. EEZ (outlined in blue)

The U.S. has established an extended continental shelf Task Force, an inter-agency effort including, among others, the Department of State, NOAA, and the U.S. Coast Guard. The extended continental shelf Task Force is responsible for planning and implementing research expeditions, and understanding the geology of the Arctic Ocean. Marine research projects often occur outside of a state's jurisdiction.

Many provisions of UNCLOS address a state's right to conduct marine scientific research (MSR).²⁴ Such projects however, if taking place in waters under another state's jurisdiction, must be authorized by the coastal state.²⁵ The state conducting research must also provide information to the coastal state regarding the nature of the project, the methods used, the dates of the expedition, the sponsor of the research, and to what extent the coastal state should be able to participate.²⁶ In August and September of 2008 a joint mapping expedition was conducted by the U.S. and Canada, utilizing both countries' human resources and research equipment. In accordance with UNCLOS, the U.S. applied for consent from the Canadian government to conduct MSR in areas under Canada's jurisdiction, in this case the Canadian EEZ. The U.S. Coast Guard Cutter *Healy* broke ice and collected bathymetric and gravity data in front of the Canadian Coast Guard Cutter *Louis St. Laurent* while the Canadian vessel collected multi-channel seismic data. The use of two ships offers opportunities for additional data collection that enhance both extended continental shelf and scientific studies. The cruise encompassed those regions where the U.S. and Canada have potential extended continental shelf, including large areas of potentially overlapping extended continental shelf. The 2008 cruise did not enter the U.S. EEZ.²⁷

This joint expedition is an example of the cooperation between the U.S. and Canada in environmental and earth sciences research, evidenced by a Memorandum of Cooperation signed by both countries in 1999, and amended in 2004. The memorandum establishes a framework for the execution and exchange of scientific research, including technological capabilities of both countries.²⁸ The U.S. and Canada are in the process of ensuring that this expedition will have a minimal impact on the Arctic marine environment, such as effects on marine mammals. Several mitigation measures, including those addressing potential harm to marine mammals from use of seismic air guns and multi-beam sonar, will be implemented to ensure that the expedition complies with U.S. and Canadian environmental laws.²⁹

The U.S. Coast Guard is also undergoing a review of communications capability and maritime security in Prudhoe Bay and Northern Alaska. This review will help the Coast Guard and other U.S. agencies identify what equipment and planning is necessary for future operations in the Arctic environment.³⁰ An increase in patrol of the Alaskan frontier to ensure protection of living marine resources and fishing vessel safety may also be implemented. The need for management and international legal instruments generally increases with the exploitation of areas and international shipping.

III. INTERNATIONAL LEGAL INSTRUMENTS AND U.S. MANAGEMENT IN THE ARCTIC

The melting sea ice in the Arctic region will precipitate an increase in ship traffic from both commercial and passenger vessels. However, the Arctic will present many navigational challenges, and great caution will need to be exercised by ships transiting these waters. The most prominent threat to the marine environment is shipping. The management of this threat will



Image 2: The Coast Guard Cutter Healy is the United States' most technologically advanced icebreaker³¹

play an integral role in the regulation and development of the Arctic, as the risk of damage to invaluable marine resources is much higher in this region. Many provisions of UNCLOS address shipping and its relation to the protection of the marine environment and pollution from ships. International entities such as the International Maritime Organization and the Arctic Council have addressed the issues that are likely to arise with the increase of shipping into, out of, and through the Arctic. The U.S. Arctic policy dates to 1994. However, climate change and the increase in shipping have prompted the need for key changes to that policy that are being addressed in a forthcoming update of the 1994 policy. The top priorities of the U.S., revised for today's Arctic circumstances, will be to facilitate safe, secure, and reliable navigation, to protect maritime commerce and the marine environment.

As previously mentioned, a shipping incident involving the release of a harmful substance into the pristine Arctic environment could have lasting catastrophic affects. In addition to the right to explore and exploit the resources of the extended continental shelf, UNCLOS gives coastal states the right to regulate such activities as shipping in order to "protect and preserve rare and fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life."³² While this protection is ideally achieved through cooperative and preventative international measures, the U.S. has developed policy to address Arctic issues in waters under its jurisdiction and beyond because UNCLOS also imposes certain duties on coastal states that have jurisdiction over the extended continental shelf.³³ To ensure safe maritime commerce in the Arctic, it is understood that the U.S. will likely work to develop infrastructure to support shipping, search and rescue capabilities, short and long range aids to navigation, high-risk area vessel traffic management, iceberg warnings, other sea ice information, and effective shipping standards. To achieve this, the U.S. seeks to establish a risk-based capability to prevent and respond to all hazards, threats, and weather in all seasons in the Arctic environment.

The ability of a coastal state to take action with regard to pollution from ships in its EEZ is arguably limited. Article 234 of UNCLOS, however, is applicable in ice-covered waters only, making it an important provision when considering the regulation of the Arctic region.³⁴ It states that "coastal states have the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels in ice-covered waters within the limits of the EEZ."³⁵ Therefore, subject to some limitation, the U.S. may adopt laws applicable to its EEZ in Arctic waters under its jurisdiction to prevent potential environmental degradation from increased ship traffic.

On an international level the U.S. will work through the International Maritime Organization (IMO) to strengthen instruments in existence, such as the recommendatory IMO Guidelines for Ships Operating in Arctic Ice Covered Waters.³⁷ These Guidelines were developed to specifically address Arctic conditions. They set out construction, equipment, operational and environmental provisions with special consideration for the risks of navigating in ice covered waters.³⁸ The U.S. is currently working on the inter-agency and international level to assess if the guidelines should be updated.

UNCLOS also addresses the coastal state's ability to use international instruments to reduce and control pollution from vessels. Article 211(1) requires States to establish international rules and standards for the prevention, reduction, and control of vessel-source pollution and adopt routing measures to minimize the threat of accidents that might cause pollution.³⁹ These rules and standards are to be adopted through a competent international organization or general diplomatic conference.⁴⁰ IMO instruments that the U.S. may seek to utilize include ship routing and reporting systems, such as traffic separation and vessel traffic management schemes in Arctic chokepoints. These instruments have been used worldwide to prevent degradation of the marine environment and species loss, and to promote safety of navigation. For example, a sub-committee of the IMO recently

approved a U.S. proposal to amend the Boston Traffic Separation Scheme in Massachusetts Bay to avoid critical Right Whale habitat.⁴¹ These instruments are likely to be useful in the Arctic as ship traffic increases and the need for enhanced safety of navigation and environmental protection measures increase. Another important instrument will be Particularly Sensitive Sea Areas (PSSAs). PSSAs could possibly be used to protect areas that have opened up to shipping as a result of the melting sea ice, but remain critical habitat for Arctic species, or would be materially affected by possible pollution from ships. The U.S. has gained successful IMO designation of several PSSAs in both the Atlantic, protecting the Florida Keys National Marine Sanctuary, and in the Pacific Ocean, protecting the Papahānaumokuākea Marine National Monument.

Another issue that may need to be addressed on an international level, and consistent with UNCLOS, includes underwater noise standards for commercial shipping. The U.S. has already begun extensive work on this issue, and has recently submitted a paper to the IMO urging action to reduce the incidental introduction of noise from commercial shipping into the marine environment. While the issue of marine mammals and SONAR has been prominent in the media, incidental noise from commercial ships may be equally threatening to cetaceans. The frequency of noise from commercial ships is similar to the noise that marine mammals use to perform critical life functions, and therefore masks the efforts of marine mammals to communicate, locate prey, and migrate. As shipping activity increases in the Arctic, incidental noise from commercial shipping may adversely affect species of marine mammals that are already threatened by their changing environment.⁴² This is a complicated issue, likely requiring action of the international maritime community and the shipping industry. As construction of ships evolves to accommodate the harsh and challenging Arctic environment, it is likely that the U.S. will continue to pursue a policy of noise reduction technology to reduce the risk of harm to marine mammals.

The U.S. also plans a review of emission standards. The U.S. recently passed the Maritime Pollution Prevention Act of 2007, which will implement Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL).⁴³ Annex VI sets caps on sulfur content of diesel fuel and limits NO_x emissions from commercial ships. It also includes a program for designating areas where more stringent fuel standards apply, such as near coastlines and areas that have air quality concerns.⁴⁴ This instrument could be used to control emissions in the Arctic where there are particular environmental concerns. Also, a U.S. delegation has played a lead role in negotiating amendments to MARPOL Annex VI that will further reduce harmful emissions and particulate matter from ships.⁴⁵ The amendments gained initial approval at the last meeting of the IMO Marine Environmental Protection Committee, and are expected to be adopted by the Committee in the fall of 2008. These amendments will be crucial in preserving the Arctic marine environment as the region will soon see an influx of commercial and passenger ships. The U.S. involvement in multilateral negotiations for protecting the marine environment under the international legal framework of UNCLOS is likely to increase as exploitation, international shipping, and corresponding concerns become more prominent in the Arctic.

IV. U.S. INVOLVEMENT IN MULTILATERAL EFFORTS

UNCLOS establishes a global regime for protection and preservation of the marine environment. Article 197 of UNCLOS lays out the basis for cooperation on a global and regional basis for the protection and preservation of the marine environment.⁴⁶ One such multilateral effort to facilitate the safety of shipping and protection of the environment in the Arctic is the work of the Arctic Council. The Arctic Council was established by the Ottawa Declaration in 1996 as a high level intergovernmental forum to promote cooperation and interaction among Arctic states. The Council focuses on issues common to the Arctic region, and specifically environmental protection and sustainable development.⁴⁷ Member States of the Arctic Council include Canada, Denmark, the U.S., Sweden, Iceland, Norway, Russia, and Finland. The Council has six Working Groups that oversee the assessment of oil and gas research, marine pollution, climate change, fisheries, sustainable development, and shipping issues.⁴⁸ The Working Group most relevant to this discussion is the Protection of the Arctic Marine Environment Working Group (PAME). The long term goal of PAME is to develop measures related to the protection of the Arctic marine environment from land and sea-based activities through coordinated action programs and guidelines complementing existing legal arrangements.⁴⁹

PAME is currently wrapping up work on the Arctic Marine Shipping Assessment (AMSA), a three year survey (2005 – 2008) with the initial task of conducting a marine activity data survey that will be sent to the 6th Arctic Council Ministerial in the fall of 2008.⁵⁰ The U.S. is one of the lead countries working on the assessment, with Dr. Lawson Brigham of the U.S. Arctic Research Commission (ARC) in Alaska chairing the effort for all eight states. The assessment will provide the current status and predictions for the level of shipping, and the environmental, economic, and social impacts of shipping in the Arctic. Recommendations for further action from the eight countries that comprise the Arctic Council will also be included in the assessment.⁵¹

The ARC, in reporting some of the preliminary findings of the AMSA, found that regular Arctic Ocean shipping tied to specific resource development projects, tourism, or serving the needs of Arctic communities, is large and growing.⁵² The availability of ships that can transit Arctic waters, however, is lacking. Research related to the AMSA reveals that only 4.5% of the world's shipping fleet is ice class ships. As more ships are built for use in the Arctic, this percentage is expected to rise to 10%.⁵³ PAME and the ARC recognize that this trend increases the need for comprehensive research and management efforts by all Arctic states. Some other issues of environmental concern that the assessment will address include efforts to monitor and observe trends in the Arctic environment, the application of the large marine ecosystem concept, and a plan for environmental response to shipping incidents.

V. CONCLUSION

When the U.S. acquired Alaska in 1867, it became an Arctic state. This status now requires great responsibility and planning, as climate change readjusts the way humans will utilize the Arctic. The implementation of international instruments, such as UNCLOS, coordination and agreement with other Arctic states, and U.S. policies that reflect this cooperation will be essential in successful and safe management practices.

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- [31] See <http://www.uscg.mil/pacarea/cgcHealy/>
- [32] UNCLOS. 1982. Part XII, Protection and Preservation of the Marine Environment, Article 194(5). Available at: http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm.
- [33] UNCLOS. 1982. Part XII, Protection and Preservation of the Marine Environment, Article 208. Available at: http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm.
- [34] Johnson, L. *Coastal State Regulation of International Shipping* 114 (2004).
- [35] UNCLOS. 1982. Part XII, Protection and Preservation of the Marine Environment, Article 234. Available at: http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm.
- [37] Transport Canada, May 16, 2007. "Guidelines for Ships Operating in Ice Covered Waters." Available at: <http://www.tc.gc.ca/marinesafety/CES/Arctic/menu.htm>
- [38] Id.
- [39] Johnson, L. *Coastal State Regulation of International Shipping* 108 (2004).
- [40] Id.
- [41] See Amendment of the Traffic Separation Scheme "In the Approach to Boston, Massachusetts." IMO Sub-comm. on Safety of Navigation, 54/3.
- [42] See Minimizing the introduction of incidental noise from commercial shipping operations into the marine environment to reduce potential adverse impacts on marine life. IMO Marine Environmental Protection Committee, 58/19.
- [43] Environmental Protection, July 16, 2008. "Congress backs MARPOL with Bill Passage." Available at: <http://www.eponline.com/articles/65283/>.
- [44] Environmental Protection Agency, July 22, 2008. "New law bolsters U.S. efforts to make ocean-going ships cleaner." Available at: <http://yosemite.epa.gov/opa/admpress.nsf/dc57b08b5acd42bc852573c90044a9c4/f1e6594e8e04fdd88525748e0069fb1f!OpenDocument>
- [45] Id.

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- [46] UNCLOS. 1982. Part XII, Protection and Preservation of the Marine Environment, Article 197. Available at: http://www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm.
- [47] See the Arctic Council Webpage: http://arctic-council.org/section/the_arctic_council.
- [48] Id.
- [49] See PAME's webpage: http://arctic-council.org/working_group/pame
- [50] See the PAME ASMA webpage: <http://arcticportal.org/pame/amsa>
- [51] Id.
- [52] Coast Guard Icebreaking: Subcomm. On Coast Guard and Maritime Transportation Staff of the House transportation and Infrastructure Comm., July 15, 2008. (statement of Mead Treadwell, Chair U.S. Arctic Research Commission, pg 2)
- [53] Id.