The Challenges of Northern Resource Development and Arctic Shipping

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Global Warming and the Arctic

There is no doubt that global warming is transforming the world above the Arctic Circle. The resource wealth of the has resulted in a number of Arctic States formulating official policies on northern development.2

According to Environment Canada, the ice in our Arctic has shrunk by 32 per cent since the 1960s and each year, the ice shrinks on average by 70,000 sq km, an area equivalent to that of Lake Superior.3

In fact some scientists now say that the Northwest Passage (the waterway which traverses Canada’s Territories in the Arctic will be ice-free in summer as early as 2030,4 permitting commercial vessels to traverse the Passage without icebreaker assistance. On the other side of the Arctic Ocean, global warming is also opening up the Northern Sea Route (the “Northeast Passage” – the area adjacent to the northern coast of Russia), where ice cover is less protected by islands.

Melting Ice and Arctic Shipping – Opportunities and Risks

The accessibility of the Northwest Passage, at least in summer, could greatly reduce transit times of commercial voyages between Europe and Asia by nearly one third.5 In an age of ever-increasing costs of vessel operation, and ever more stringent controls on carbon dioxide emissions, owners and operators are looking to moving cargoes and people by water across the top of the world.

Canadian waters have seen more activity. Mining and cruise ship operation have meant that, as of September 20, 2010, 18 ships had cleared customs in Inuvik, N.W.T. at the

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1 This paper is an amended and updated version of an article by Peter G. Pamel and Robert C. Wilkins of Borden Ladner Gervais LLP, Montreal, entitled “Challenges of Northern Resource Development and Arctic Shipping” (2011) 29 Journal of Energy & Natural Resources Law 333-353.
western end of the Northwest Passage, compared to only 7 in 2009. Canada plans to build a deepwater port at Nanisivik on Baffin Island, as well as a Canadian Forces training station on Resolute Bay.

Navigation in the arctic does not come without risks, including the unpredictability of ice cover, the need for ice-strengthened vessels and (sometimes) icebreaker assistance, the scarcity of infrastructure for refueling and ship repair (particularly in the Northwest Passage), out-of-date navigation charts, increased costs of insurance cover, the inaccessibility of search and rescue services, and, of course, the environmental threat to both animal and human populations.⁶ There are increased calls from local aboriginal communities to restrict vessel activities, and to balance the thirst for more efficient commercial operations with the need to protect the delicate environment and a way of life that has lasted hundreds if not thousands of years.

**Arctic Sovereignty Issues - Land**

Land is not the problem, generally. There is little contestation of Russia’s claim to sovereignty over Siberia or the waters of the Northeast Passage, and there are many developed ports there pointing to effective Russian occupation of the Northern Sea Route. Also, Russia and Norway signed an agreement in Murmansk on September 15, 2010, delimiting the maritime boundaries of those two countries in the Barents Sea and the Arctic Ocean.

As regards the U.S., its claim over Alaska, purchased from Russia in 1867, is uncontroversial, as is Denmark’s claim to Greenland. As for Canada, there is no real challenge to its land territory and the islands of its Arctic Archipelago.

Exceptions to the general rule is, for example, Canada’s conflict with Denmark over the tiny Hans Island, a 1.3 square kilometer, uninhabited knoll in the strait separating northern Greenland from Ellesmere Island.

**Arctic Sovereignty Issues - Waters**

Waters, rather than land, are the real focus of contestation. The ongoing dispute over the Northwest Passage,⁷ which Canada claims to be part of its internal waters, and which the

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⁷ The Northwest Passage connects the Davis Strait and Baffin Bay in the east to the Bering Strait in the west, and in fact includes seven routes, although only two main ones. See Robert Dufresne, “Canada’s Legal Claims over Arctic Territory and Waters,” Library of Parliament, Document No. PRB 07-39E, December 6, 2007 at p. 15; available online at [http://www2.parl.gc.ca/Content/LOP/ResearchPublications/prb0739-e.htm](http://www2.parl.gc.ca/Content/LOP/ResearchPublications/prb0739-e.htm). Last visited: April 10, 2012.
United States and the European Union consider an international strait, is the key sore point. In support for the position that the Northwest Passage is an international strait, the European Parliament has issued a policy paper in which it reiterates its insistence that freedom of navigation must be maintained in the Arctic.

The right of innocent passage is a recognized exception, in international law, to a State’s sovereign rights over its internal waters, and Canada invokes two arguments in support of its claim that the Northwest Passage is internal water: historic title and straight baselines.

Without delving too deeply into the substance of either argument, suffice it to say that there is controversy among experts as to whether there is a right of innocent passage over the waters that Canada enclosed by straight baselines, as art. 8 of United Nations Convention on the Law of the Sea (UNCLOS) provides. Some contend that because those baselines were established under customary international law before Canada became party to UNCLOS, there is no such right, while others argue that art. 8 applies to the waters in question.

Putting aside any argument, in the wake of 9/11, some have suggested that the U.S. acceptance of Canadian sovereignty over the Northwest Passage may assist in achieving stronger continental security in the Arctic. A recent statement by the U.S. on Canadian sovereignty is that of the Senate Standing Committee on National Security and Defence, issued in March 2011. China has also expressed its position with a somewhat more watered-down model for Canada on the sovereignty issue.


9 See the European Parliament’s resolution of January 20, 2011 on “A Sustainable EU Policy for the High North”, available on line at: http://www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P7-TA-2011-0024&language=EN&ring=A7-2010-0377 (last visited April 10, 2012). The Policy calls on States in the region to ensure that current and future shipping routes in the Arctic remain open to international shipping and that they do not introduce “unilateral arbitrary burdens” (financial or administrative) that could hinder Arctic shipping, other than measure aimed at improving security or environmental protection.

10 The “sector theory” of the early twentieth century, pioneered by Senator Pascal Poirier, and based on the argument that States whose land mass reached the Arctic could claim sovereignty based on sector lines meeting at the North Pole, has been discredited. See Donald R. Rothwell, “The Canadian-U.S. Northwest Passage Dispute: A Reassessment” (1993) 26 Cornell Int’l L.J. 331.


14 See David Curtis Wright, CDFAI Research Fellow and Associate Professor of History University of Calgary, “The Panda Bear Readies to Meet the Polar Bear: China Debates and Formulates Foreign Policy Towards Arctic Affairs and Canada’s Arctic Sovereignty”, available on-line at:
On the Beaufort Sea, Canada and the United States are also in a deadlock. The U.S. contends that that boundary should respect the equidistance principle, following a line at equal distance from the closest land point of each state. Canada, on the other hand, proposes that the maritime boundary runs along the 141\textsuperscript{st} meridian, as an extension of the territorial boundary between the Yukon and Alaska established by an 1825 treaty between Russia and the United Kingdom.\textsuperscript{15} The result will affect who will have eventual control of exploitation rights for minerals and oil and gas in the area.

Failing a negotiated settlement, the parties are always free to proceed via art. 287 of UNCLOS and seize the International Tribunal for the Law of the Sea or the International Court of Justice, or could institute arbitration, and strive to convince the judges or arbitrators of the merits of the competing claims. In this regard, the importance of the United States becoming party to UNCLOS cannot be overemphasized.

**Canadian Legislation on the Arctic**

Canadian exercise of sovereignty tends to focus on the adoption of legislation aimed at protecting the environment. In 1970, Canada enacted the *Arctic Waters Pollution Prevention Act* (AWPPA).\textsuperscript{16} Thereby controlling deposit of waste in Arctic (north of the 60\textsuperscript{th} parallel) up to 100 nautical miles out to sea, and imposing significant sanctions on offenders. Later, in 2009, Canada extended the scope of the AWPPA to the full 200 nautical miles of Canada’s Exclusive Economic Zone.\textsuperscript{17} Regulations under AWPPA govern Arctic pollution\textsuperscript{18} and Arctic shipping\textsuperscript{19} in considerable detail.

Other Canadian legislation on the environment also has an impact in the Arctic, including the *Canada Shipping Act, 2001*\textsuperscript{20} and the *Marine Liability Act*.\textsuperscript{21} Through this legislative and regulatory scheme, Canada applies many international maritime law conventions to its Arctic waters, such as the CLC 1992 on Civil Liability for Oil Pollution Damage,\textsuperscript{22} the Fund Convention 1992,\textsuperscript{23} the OPRC Convention 1990,\textsuperscript{24} the Athens Passenger Convention 1974\textsuperscript{25} and the Bunker Pollution Convention 2001.\textsuperscript{26}
Canada has also taken steps to better control marine traffic in its Arctic waters and through the Northwest Passage. It has adopted the Northern Canada Vessel Traffic Services Zone Regulations under the Canada Shipping Act, 2001 and the creation of Vessel Traffic Control Zones. In force as of July 1, 2010, the regulations establish the so-called NORDREG Zone. Vessels are required to report certain information at least 24 hours before entering such a Zone or when they leave port if they are less than 24 hours away from such a Zone. Those waters are those contained with one or more of the sixteen shipping safety control zones established by government order, and amended recently to extend their boundaries to the full extent of Canada’s EEZ.

The Continental Shelf

According to the U.S. Geological Survey in 2008, north of the Arctic Circle there are an estimated 90 billion barrels of undiscovered, recoverable oil, 1,670 trillion cubic feet of recoverable natural gas and 44 billion barrels of recoverable natural gas liquids. The Arctic is thus thought to account for about 13 percent of the world’s undiscovered oil, 30 percent of its undiscovered natural gas and 20 percent of its undiscovered natural gas liquids. About 84 percent of those resources are estimated to lie offshore.

The coastal state has exclusive sovereign rights over its continental shelf for the purpose of exploring and exploiting its natural resources. Those rights do not depend on occupation or express proclamation (UNCLOS, art. 77(1) and (3)) The natural resources subject to that exclusive sovereignty include the minerals and non-living resources of the seabed and subsoil, together with living resources belonging to sedentary species (art. 77(4)).

Even if the estimates as to the quantities of undiscovered oil and natural gas north of the Arctic Circle are somewhat exaggerated, it is little wonder that Arctic States, including

Russia, Denmark, Norway, and Canada, are anxious to put forward their claims to the continental shelf. The continental shelf is defined in art. 76 of UNCLOS as comprising the seafloor and subsoil of the submarine areas extending beyond the coastal state’s territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.

Under a complex formula provided for by art. 76(4) to (6) of UNCLOS, however, the coastal state may lay a claim to an extended continental shelf, stretching not more than 350 nautical miles (648 kms.) from its territorial sea’s baselines nor more than 100 nautical miles (185 km) beyond the point at which the seafloor lies at a depth of 2,500 metres. Under a procedure established by Annex II of UNCLOS, such claims, accompanied by scientific data, must be submitted to the twenty-one scientists sitting on the United Nations Commission on the Limits of the Continental Shelf, within 10 years of the ratification of UNCLOS by each applicant State. The Commission studies each application and makes recommendations to the coastal state concerned, based upon its Scientific and Technical Guidelines. If the Commission disagrees with the application, the State concerned may present a revised application. The Commission’s recommendations are not binding. Its role is to help legitimize reasonable claims and to alert countries to exaggerated claims. States whose claims overlap must negotiate a mutually satisfactory agreement or litigate before a competent international court or tribunal. Where the coastal state establishes the limits in accordance with the recommendations of the Commission, the limits are final and binding. (art. 76(8)).

The Russian Federation, in 2001, submitted a claim to the Lomonosov Ridge, an extension to its Siberian continental shelf and one of its claims reaches to the North Pole. The UN Commission recommended that Russia submit further information. Norway submitted its claim in 2006. Denmark ratified UNCLOS in 2004 and so has until 2014 to present its claim. Canada, having ratified UNCLOS in 2003, must submit its claim to the Commission by 2013 and is now working hard on assembling the required data. Much work is now in progress, funded by a substantial budget, gathering the scientific data needed to substantiate Canada’s claim.

Canada and the U.S. have been carrying out joint scientific research activities since 2008, in an effort to delimit the outer limits of the extended continental shelf of each country. In the summer of 2010, the U.S. Coast Guard cutter HEALY and the Canadian Coast Guard icebreaker LOUIS S. ST-LAURENT, with scientists aboard, carried out joint operations to map the seafloor and image sedimentary layers north of Alaska and west of Canada’s Arctic islands in what is called the “Canada Basin” of the Arctic Ocean.

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The U.S. has not yet ratified UNCLOS, but is nevertheless following the procedure prescribed by art. 76 in assembling its scientific data. Until the U.S. becomes party to that Convention, however, it will not be entitled to submit a claim to the Commission or to receive that body’s recommendations which could be useful in supporting an eventual declaration of the reach of its extended continental shelf under international law.

In 2005, Canada and Denmark conducted joint surveys north of Ellesmere Island, and in 2006 both countries cooperated in the The Lomonosov Ridge Test of Appurtenance (LORITA), to record the sound velocities of the sedimentary and crustal layers of the Lomonosov Ridge, in order to show its affinity with a nearby continental region. In 2007, a joint Canada-Denmark seismic project was carried out from the Canadian Forces Station in Alert, located on Ellesmere Island in the Canadian Arctic. The goal was to determine if the Lomonosov Ridge, a submarine mountain chain, to the northeast, meets UNCLOS requirements for an extension of the North American continental shelf. Denmark is proceeding with its own Continental Shelf Project, in preparation for submitting its claim to the UN Commission.

In Russia, two expeditions met in 2010. Members of Russia’s North Pole expedition Shelf-2010 docked with their colleagues on board the AKADEMIK FYODOROV, an icebreaker operating as a floating laboratory. Around a hundred scientists spent 70 days in the Arctic gathering evidence to support the claim that the Lomonosov Ridge is part of Russia's continental shelf.

It is heartening that UNCLOS is promoting scientific collaboration on an international scale, as well as a legal framework for the submission of claims to the UN Commission on the Limits of the Continental Shelf. It can also be expected, however, that after the Commission makes its recommendations, when coastal States begin declaring their continental shelves, there may be disputes, particularly because of the considerable wealth of resources thought to be buried in the seabed and subsoil. One can only hope that negotiation will resolve any such problems as they arise, or, as a last resort, that the legal dispute resolution mechanisms afforded by UNCLOS will be utilized and that the decisions so generated will be respected out of regard for the rule of law in its worldwide dimension. Above all, the use of force must be rejected.

**Practical Challenges to Arctic Shipping**

Among the many practical challenges confronting Arctic shipping is developing standards for navigating in ice by different types of vessels. In Canada, for example, the

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current Arctic Shipping Pollution Prevention Regulations37 (first adopted in 1972) are based on two systems used for quantifying ice conditions north of the 60th parallel of north latitude: the Zone-Date System and the Ice Regime System.38 The Zone-Date System prescribes dates each year when vessels of nine different “Arctic classes” and five different (Baltic Class) “Types” may enter into, and must exit from, Canada’s sixteen Shipping Safety Control Zones. A second system is the Ice Regime System, which is based on an arithmetic calculation that produces an “Ice Numeral”, based on the quantity of hazardous ice with respect to the classification of the individual vessel. The IRS determines whether or not a given vessel should proceed through a particular “ice regime” (a region of ice with more or less consistent ice conditions, taking into account the concentration, thickness, age, state of decay, and roughness of the ice). The calculation, ice identification and route planning are done by an ice navigator, who could be the master or officer of the watch. The scientific foundation of both the ZDS and the ISR systems have been criticized, however. In addition, they are not adapted to the introduction by the International Association of Classification Societies (IACS) of a new, harmonized system of classification of “Polar Class” vessels. Four other options have been considered, the most satisfactory of which appears to be a “Hybrid System” combining the Zone-Date System with a modified Ice Regime System. The zones and dates for entry and exit from the sixteen Shipping Safety Control Zones would be re-evaluated, based on historical data for the last twenty years. In addition, however, vessels would be required to use a modified Ice Regime System. Thus ship operators would have potentially more time to operate in the Arctic but the IRS would define areas of allowable entry within each of the sixteen Zones.

Much of the “heavy lifting” in adapting to new conditions in the Arctic will fall upon the coast guard services, including those of Canada and the United States. The Canadian Coast Guard,39 for example, provides numerous services to navigation, including ice routing and information, ship escorting, harbour breakout, maritime search and rescue (SAR), marine communications and traffic services, environmental response to marine spills and assistance in Arctic resupply. The Coast Guard supports the Arctic Ice Regime Shipping System described above. It also supports the NORDREG vessel traffic monitoring system which, as indicated above, has become compulsory since July 1, 2010.40 As the ice melts, the CCG is called upon to provide more and more service (supporting scientific missions, hydrography, sovereignty exercises, etc.). It must do this with an aging fleet. Its heavy icebreaker, LOUIS S. ST-LAURENT, for example, was

37 C.R.C. c. 353.
38 See the description of these two systems and four options for improving them in the paper by Ivana Kubat and Garry Timco of the Canadian Hydraulics Centre of the National Research Council, entitled “Ice Regimes Options for the ASPPR: The Way Forward, presented to the Arctic Shipping North America Conference in Montreal, October 20-21, 2008.
39 For a concise description of the multifaceted role of Canada’s Coast Guard in the Arctic, see the powerpoint presentation by David Jackson, National Manager, CCG Icebreaking Program, entitled “The Canadian Coast Guard in the Arctic: Past, Present & Future”, presented to the Arctic Shipping North America Conference in Montreal, October 20-21, 2008.
built in 1969, while the four medium icebreakers were built in the late 1970’s or early 1980’s, and are beginning to have serious maintenance issues. The icebreaker CCGS AMUNDSEN is being used as a scientific research station. At least some of these ships need replacement, and replacement is costly. The new Arctic patrol vessels are yet to be built. Meanwhile, various projects in the North may require heightened icebreaker activity (e.g. mining in the Eastern Arctic, increased activity in the Beaufort Sea and along the Mackenzie River, the Bathurst Inlet Port project and the development of the Port of Churchill). Search and rescue will likely play a more prominent party in Canadian Coast Guard future operations in our northern waters, as will environmental response work. The Government of Canada has just announced that it is considering arming CCG icebreakers as a way to bolster Canada’s claims of Arctic sovereignty.$^{51}$ Yet another potential challenge!

On the American side of the Arctic, the U.S. Coast Guard faces similar challenges of distance, weather and lack of infrastructure in protecting shipping and environment off the coast of Alaska. As with the CCG, the U.S. Coast Guard expects the future to bring an expansion of its SAR functions and infrastructure with improved technologies in search and rescue, as well as in communications and increased self-rescue capability.$^{42}$

Search and rescue is enhanced in Arctic waters by the Automated Mutual Assistance Vessel Rescue (Amver) System.$^{43}$ Amver, sponsored by the U.S. Coast Guard, is a computer-based and voluntary global ship reporting system used worldwide by search and rescue authorities to assist persons in distress and divert the best-suited ship to respond. The System provides information on the positions and characteristics of vessels near a reported distress, to SAR authorities. Shipowners enroll their vessels online, free of charge, by completing a short search and rescue questionnaire, indicating the vessel’s IMO number, communications equipment, speed and medical crew or equipment carried aboard. The vessel sends a sail plan and reports its position, speed and heading every forty-eight hours. The System can thus accurately plot a vessel’s position relative to a distress anywhere on the globe. It is recommended for use by IMO, INTERCARGO and INTERTANKO. The System should be made known to all shipowners of ice class vessels, encouraging them to participate voluntarily, in the interests of enhancing safe navigation “north of 60”.


$^{43}$ On the US Coast Guard’s Automated Mutual Assistance Vessel Rescue (AMVER) System Program of Arctic search and rescue, see Benjamin M. Strong, Director of Maritime Relations, United States Coast Guard, “Arctic Shipping and Challenges to Search and Rescue”, being his paper prepared for the Arctic Shipping North America Conference in Montreal, October 20-21, 2008.
Marine insurance coverage is another thorny problem standing in the way of greater international commercial navigation north of 60. The ships themselves may be problematic. Hitherto, Arctic navigation was primarily done by ice-strengthened ships with trained crews. Increasingly, however, cruise ships (often with crews having less training and outdated charts) are sailing in the north. Tankers and supply ships often have limited ice class status. Legal problems may add to the difficulty. Typically, Arctic waters fall outside the trading limits of hull and machinery insurance policies. Sailing there can entail the automatic suspension or automatic cancellation of cover, depending on the applicable law and policy. The physical risks of Arctic navigation, even in summer, are real despite global warming. Underwriters must consider a veritable host of factors when deciding whether to underwrite such risks. Among these are: the vessel’s suitability for the trade contemplated; what the conditions of the charterparty are (e.g. ice clauses); what is the vessel’s draught; the reliability of the draught data; what route is planned; whether the ship has been in similar conditions previously; what experience its owners and managers have with Arctic trading; how experienced and well-trained are its crew, their systems and routines; whether ice pilots are available; what kind of weather can be expected; whether updated weather and ice information is available for the voyage contemplated and from whom; what preparation of the vessel has been made to confront these conditions; how remote are shipyards and deep water quays; the accessibility (or inaccessibility) of icebreakers or other vessels and of salvage assistance, etc. Claims experience of marine insurers with casualties in cold-water regions often relate to expensive damage to propellers or thrusters, rudders, shell plating, collisions, and frozen equipment. The need for crew training and accessible repair yards, as well as better search and rescue resources (e.g. icebreakers and other vessels in the vicinity) will be major considerations for underwriters as they are faced with an increasing demand for hull and machinery and protection and indemnity cover for northern trading, at affordable premiums.

Legal Challenges to Arctic Shipping and Multilateral Solutions

Legal, as well as practical and commercial, challenges must also be addressed in making Arctic navigation safer and more profitable. Increased Arctic shipping, is likely to require more than just national, but international, legal solutions if the commercial movement of goods and people on the waters at the top of the world is to develop in an orderly, fair and peaceful fashion. Two international bodies now offer some hope that such multilateral

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44 See Reidun Haahjem, Senior Underwriter Gard, “Insurance for Arctic Shipping”, being a powerpoint presentation prepared for the Arctic Shipping North America Conference in Montreal, October 20-21, 2008.

45 Haahjem’s presentation notes that under the Norwegian Marine Insurance Plan, navigating in an excluded trading area entails automatic suspension of coverage unless permission is granted or the infringement is unintentional. Cover is reinstated, however, when the vessel leaves the excluded area. Under the typical English hull and machinery policy (Institute Time Clauses Hulls 1/10/83), on the other hand, sailing in such excluded areas entails automatic cancellation of the policy, and cover is not reinstated when the ship leaves the excluded area. Nevertheless, the risk may be “held covered” under Clause 3 if notice is given to the underwriters immediately, with agreement of the parties as to amended terms and any additional premium required.
solutions to the Arctic shipping challenge will be met: the Arctic Council and the International Maritime Organization.

The Arctic Council grew out of the Ottawa Declaration of 1996, as a high-level, intergovernmental forum to foster cooperation, coordination, and interaction among the Arctic States, with the involvement of the indigenous people of the whole circumpolar region. Member States are Canada, Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden and the U.S.A. In addition to the Member States, there are also Permanent Participants, being mostly indigenous peoples’ organizations. Chairmanship rotates among the Member States every two years. The organization is headquartered in Tromsø, Norway. Ministerial meetings are held biannually in the country holding the chairmanship. Recently, the European Parliament, in its resolution of January 20, 2011, has called for the EU to play a larger role, as a permanent observer, in the work of the Arctic Council, especially if the accession of Iceland to the EU occurs, thus giving that body an Arctic coastline. The EU would also like to see a permanent secretariat established by the Council, more cost sharing and an annual Arctic summit.

Among the major achievements of the Arctic Council has been the adoption of an international instrument on cooperation in search and rescue operations in the Arctic – a most useful instrument in addressing future casualties such as the grounding of the cruise ship CLIPPER ADVENTURER in the Northwest Passage in the summer of 2010. A task force was set up and held meetings in Oslo in June 2010, in Helsinki in October and in Reykjavik in December. The new SAR instrument was signed at the Ministerial meeting of the Arctic Council on May 12, 2011 in Nuuk, Greenland.

Safety standards for maritime transport and a revision of the Arctic Council Offshore Oil and Gas Guidelines recommended to States involved in oil and gas exploration in northern waters, are other priorities now on the work program of the Arctic Council.

In 2009, the Arctic Council, through its Protection of the Arctic Marine Environment (PAME) working group, released a landmark report, entitled “Arctic Marine Shipping Assessment”, which was the result of intensive studies and consultation carried out in

47 See the European Parliament’s resolution of January 20, 2011 on a sustainable policy for the High North, cited supra.
48 Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic (the “SAR Agreement”). This Agreement is the first legally binding treaty to have been developed by the Arctic Council since its creation in 1996. For the text, see: http://arctic-council.npolar.no/accms/export/sites/default/en/meetings/2011-nuuk-ministerial/docs/Arctic_SAR_Agreement_EN_FINAL_for_signature_21-Apr-2011.pdf Last visited April 10, 2012.
different Arctic states. The Report produced a vast array of recommendations too numerous to list here, including an instrument on cooperation in search and rescue; updating of the IMO Guidelines for Ships Operating in Arctic Ice-Covered Waters; mandatory requirements for ship design, construction, equipment, crewing and training; stronger passenger safety requirements in Arctic waters; and implementing the Ballast Water Convention.

The International Maritime Organization (IMO), for its part, is busy drafting an International Polar Code. Such a Code would aim to increase marine safety and environmental protection in all Arctic waters. It would strive to harmonize the national regulatory regimes of the Arctic States governing the design of ice-capable vessels, to set higher levels of ice strengthening for Polar Class ships, and to regulate the training and employment of ice navigators, etc.

The legal challenges that international Arctic shipping presents call for an international spirit, focused on the common good of mankind, rather than national self-interest. Disputes should be solved by negotiation or conciliation, with arbitration or litigation as important, but last, resorts. Issues relating to the Northwest Passage and the delimitation of the continental shelf must be resolved consistently with UNCLOS and customary international law, not by the rule of “might makes right”. Creative new legislation and regulation to protect the environment and increase ship safety must be drafted and applied vigorously but fairly, and national norms must be harmonized. The Arctic Council, working with IMO, should be the focal points for the development of these new, progressive rules.

One hopeful sign of this kind of multilateral synergy is the establishment on October 6, 2010 in Ottawa, of the Arctic Regional Hydrographic Commission, a body set up by five of the eight Arctic Council States: Canada, Denmark, Norway, the Russian Federation and the United States, under Canada’s leadership. This action should pave the way for developing up-to-date navigational charts and related new technologies, thus making Arctic navigation (which has doubled since 2005) safer, and encouraging new Arctic shipping initiatives on both sides of the North Pole. There is a suggestion that the Arctic Council may eventually play a role akin to that of the International Maritime Organization with respect to navigation and environmental protection of Arctic and Antarctic waters.

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51 Resolution A.1024(26)).
Only in these ways can shipping at the top of the globe bring lasting benefits to society, not only in our generation but in the generations that will follow us. The challenge of international Arctic shipping tomorrow lies before us today. Do we have the wherewithal to meet it?

Maritime Law in the U.S. and Alaska

Merchant shipping in, to and from Alaska is subject generally to the general maritime law of the United States (judge-made law), and to various statutes governing different activities and matters of a maritime nature. Among the major Admiralty statutes are the Harter Act,55 the Carriage of Goods by Sea Act (COGSA),56 the Limitation of Shipowners’ Liability Act, 1851,57 the Merchant Marine Act of 192058 (including the Jones Act),59 the Death on the High Seas Act,60 the Salvage Act, 191261, the Federal Bills of Lading Act62 the Commercial Instruments and Maritime Liens Act,63 and the Oil Pollution Act of 1990.64 More recent regulation is beginning to be exerted, particularly over the rapidly-developing offshore activities of the oil majors in Alaskan waters.

Alaska is very dependent on the marine industry for its economic prosperity, for communications within its own territory and with the outside world, and (increasingly) with respect to the development of its offshore oil and gas resources. A brief overview of the role of the marine industry in Alaskan life make these realities clear. State legislation, combined with international conventions and U.S. federal law, is playing an ever larger role in Alaskan life on both land and sea, as these notes will demonstrate.

Mining and Shipping in Alaska

Mining produce is one of the major source of Alaskan exports. Mining is a major contributor to Alaska’s economy. In 2010, for example, it provided Alaskans with some 3,872 full time-equivalent jobs. Spending on exploration reached $264.4 million and on development $293.3 million. The total value of all mineral production in the state in 2010 increased by more than 27 percent over 2009, attaining some $3.1 billion. This was

60 46 U.S.C. Appx. 761-766.
61 46 U.S.C. Appx. 729 et seq.
64 33 U.S.C. 2701-2760.
primarily zinc (42% of production) from places such as the Red Dog Mine near Kotzebue, and gold (35.8%) from locations such as the Fort Knox Mine near Fairbanks.65

Some of this production is carried by sea. For example, a 55-mile road links the Red Dog Mine to a small port on the Chukchi Sea, where the ore is loaded by a conveyor belt system onto 8000-ton barges for carriage to destination.66

Mining is creating the need for new and expanded marine facilities in the state. The Alaska legislature, for example, passed a bill in 201167 that would authorize the Alaska Industrial Development and Export Authority to issue up to $65 million in bonds to finance major upgrades to the Ore Terminal in the Port of Skagway, in order to increase the overseas shipping from there of ore brought into Alaska from the Yukon.

Certain Alaskan ports, notably those of Anchorage, Juneau and Valdez, are departments of the municipal governments of those cities. The City of Valdez, for example, owns and operates the Port’s container terminal, the grain terminal, the city dock and the airport terminal.68

The Trans-Alaska Pipeline

The 800-mile Trans-Alaska Pipeline of Alyeska Pipeline Service Company, completed in 1977,69 stretches from Prudhoe Bay on the Arctic Ocean (Alaska’s “North Slope”) to Valdez in southern Alaska, where the oil emerging from the Pipeline is shipped by tanker to the lower 48 states. It was, of course, in Prince William Sound near Valdez that the EXXON VALDEZ ran aground on Bligh Reef on March 24, 1989, spilling between 260,000 and 750,000 barrels of oil. As a result, the U.S. Congress passed the Oil Pollution Act 199070 which continues to be the centerpiece of American marine pollution legislation.


66 See “Red Dog Mine Project Alaska” at http://www.lassingdibben.com/page34.html. Last visited April 10, 2012. The port is ice-free for only 100 days a year.


67 Alaska House Bill 119 of 2011; Chapter 7 SLA 11.

68 See, for example, the website of the City of Valdez at http://www.ci.valdez.ak.us/index.aspx?NID=151. Last visited April 10, 2012.

See also http://www.worldportsource.com/ports/USA_AK_Port_of_Valdez_763.php. Last visited April 10, 2012. Alaska provides a Municipal Harbor Facility Grant program to aid local authorities in the construction of ports in the State. See Alaska Statute AS 29.60.800.

69 Construction of the Pipeline was authorized by the Trans-Alaska Pipeline Authorization Act of 1973, 43 U.S.C. 1651, following the oil crisis prompted by the OPEC oil embargo of that year.


70 33 U.S.C. 2701-2760.
More than 15,000 oil tankers have called Valdez since the Pipeline was completed, at the rate of about three to five a week.\textsuperscript{71} There is, however, a concern that oil production and flow rates in the Trans-Alaska Pipeline are declining and could cease altogether for technical reasons. In 2010, for example, the North Slope production had fallen from a high of nearly 2 million barrels a day in 1988 to only 0.67 million barrels, representing only 13\% of U.S. domestic production and only 3\% of total consumption.\textsuperscript{72}

**Chukchi and Beaufort Sea – Offshore Oil Drilling**

Global warming and the resulting reduced ice cover in the Arctic, the increased demand for oil in countries like China, India and Brazil with their emerging economies, combined with rising prices and the concern over the security of supply from the Middle East owing to political instability, have led to renewed interest in Alaskan oil among many Americans. In Alaska, there is the additional factor that over 85\% of the state’s budget depends on petroleum revenue.\textsuperscript{73} Two land areas in the state where production has been considered are the Arctic National Wildlife Refuge (ANWR) and the National Petroleum Reserve Area (NPR-A). Two others lie offshore on the Continental Shelf in the Beaufort and the Chukchi Seas along the Alaska coastline.

The Beaufort Sea is thought to have a reserve of some 8.2 billion barrels of undiscovered oil, and the Chukchi Sea, some 15.4 billion barrels.\textsuperscript{74} The great challenge, however, is to protect the environment from a potential blowout of a drill rig, similar to the Macondo disaster involving the DEEPWATER HORIZON in the Gulf of Mexico in 2010. Also required is an adequate transportation infrastructure to permit the safe and environmentally secure carriage of Arctic subsea oil to southern markets. The harsh climate of the Chukchi Sea in particular poses a major challenge to exploration, in addition to which is the problem of ocean currents, which could carry an oil spill along the coast and farther out to sea.

In the United States, the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), conducts extensive environmental assessments of each offshore oil and gas drilling project, under the National Environmental Policy Act (NEPA).\textsuperscript{75} BOEM sets conditions of approval and mitigation measures to palliate the risks identified in the evaluations. Leases are granted accordingly, on applications filed by oil and gas producers for ocean drilling for designated time periods. Off the Alaska

\textsuperscript{71} See \url{http://en.wikipedia.org/wiki/Valdez_oil_terminal#Oil_terminal}. Last visited April 10, 2012.

\textsuperscript{72} See Andreas Osthagen & Clare Richardson-Barlow, “Arctic Petroleum: Alaska Development and International Frameworks”, October 2011 at p. 8 [“Arctic Petroleum Report”]. This report was prepared following a conference on Arctic oil and gas held in July 2011 by the Center for Strategic and International Studies.

\textsuperscript{73} See Arctic Petroleum Report, at p. 11.


\textsuperscript{75} 42 U.S.C. 4321 et seq.
coast, as of October 2011, there were 87 leases covering 2.8 million acres issued in the Beaufort and Chukchi Seas. Among the main lessees are ConocoPhillips, Shell and Statoil. Environmental concerns center on: air quality, noise pollution, and potential damage to marine mammals, particularly in respect of the Chukchi Sea.\(^\text{76}\)

The leases in the Chukchi Sea were contested on environmental grounds in 2010, then reapproved by the BOEM in October 2011. Air permits were held up for two years, until the Environmental Protection Agency approved them in September 2011.\(^\text{77}\) On December 16, 2011, BOEMRE granted a conditional approval of the Exploration Plan of Shell Gulf of Mexico Inc. under its leases in the Chukchi Sea Planning Area. Six exploration wells are to be drilled in the 2012 drilling season, subject to a host of safety and environmental protection measures.\(^\text{78}\) A noise permit will also be needed, because drilling noise is believed to disrupt walrus communication and while migration in the Chukchi Sea.

A Safety and Environmental Management System has been made mandatory since the DEEPWATER HORIZON spill, permitting a more accurate evaluation of the risk potential of individual reservoirs, in order to better identify the proper methods and resources required to respond to any potential blowout. For its part, the oil and gas industry has developed subsea containment systems that did not exist at the time of the DEEPWATER HORIZON, including capping stacks, riser systems and support and capture vessels.\(^\text{79}\) The Bureau of Safety and Environmental Enforcement (BSEE) promulgates standards for safety and spill response.

The United States Coast Guard must also be provided with additional equipment in order to fulfill its essential responsibility for safety in America’s Arctic waters. As of late 2011, the USCG had but one functioning icebreaker and no place in the Arctic in which to moor boats or to hangar aircraft.\(^\text{80}\)


\(^{78}\) For example, Shell must leave time to implement cap and containment operations and do clean-up before the onset of sea ice, in the event of loss of well control. It must cease drilling into zones capable of flowing liquid hydrocarbons 38 days before the first date of ice encroachment over the drill site. That window would also permit drilling a relief well, should one be required. Approvals are also needed from the Bureau of Safety and Environmental Enforcement (BSEE) for Shell’s Oil Spill Response Plan, and further permits must be obtained from other agencies, including the Environmental Protection Agency (EPA), the U.S. Fish & Wildlife Service and the National Marine Fisheries Service. See “BOEM issues Conditional Approval for Shell 2012 Chukchi Sea Exploration Plan” at: \url{http://www.boem.gov/BOEM-Newsroom/Press-Releases/2011/press12162011.aspx}. Last visited April 10, 2012.


\(^{80}\) Arctic Petroleum Report at p. 15.
As in the Canadian Arctic, there is an ongoing struggle in the American Arctic to achieve responsible development, balancing the need for access to new domestic sources of petroleum products against the need for effective and enduring environmental safeguards.81

Consultation in Alaska re Development Projects

Leasing of offshore drilling sites are subjected to a thorough environmental analysis by the Bureau of Ocean Energy Management, Regulation and Enforcement, including many opportunities for public comment. Under the Outer Continental Shelf Lands Act, a five-year plan is prepared showing the size, timing and location of leases. The final sanctioning of the 5-Year Program is subjected to three separate comment periods, two separate draft proposals, a final proposal and the development of an environmental impact statement (EIS).82 Leasing and operational activities on the OCS are subject to some thirty U.S. federal laws. The main statutes governing exploration, development and production are the Outer Continental Shelf Lands Act,83 the National Environmental Policy Act,84 the Endangered Species Act,85 the Coastal Zone Management Act,86 the Federal Water Pollution Control Act,87 the Ports and Water Safety Act88 the Marine Mammal Protection Act,89 the Clean Air Act90 and the National Historic Preservation Act.91

Tribal consultations are expressly required with native peoples on policy and legislation of concern to the, under the Executive Order 13175 of November 6, 2000 of President Clinton.92 Alaska has established a framework for lasting government-to-government relationships with Alaskan Native Organizations, by virtue of its Millennium

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81 This struggle is reflected in particular in Alaska in the continuing conflict, for over thirty years already, over whether to permit oil drilling in the Arctic National Wildlife Refuge (ANWR), and, to a lesser degree, a similar struggle relating to the National Petroleum Reserve of Alaska (NPR-A). See Arctic Petroleum Report at pp. 11-12 for a brief history of these conflicts.


83 43 USC 1331 et seq.
84 42 USC 4321-4347.
85 7 USC 136, 16 USC 1531 et seq.
86 16 USC 1451-1456.
87 33 USC 1251-1376.
88 33 USC 1221-1236.
89 16 USC 1361-1389 and 1401-1423h.
90 42 USC 7401 et seq.
91 16 USC 470 et seq.
Agreement. Alaskan tribes must also be consulted in actions taken by the Alaska Department of Transportation and Public Facilities.

Nor are these policy statements and guidelines purely theoretical. A native village, together with other petitioners, was held to have standing to challenge an earlier OCS Leasing Program where it entailed threats to the enjoyment of wildlife in the area concerned, although in the case concerned, the challenge was held premature, because the Leasing Program was only in its earliest stage.

Consultation with aboriginals must be meaningful and not merely a perfunctory process orchestrated to meet the purely formal requirements of treaties or statutes. Alaskan authorities appear to grasp that fact and operate according to its dictates in their relations with the native peoples of the State.

The Arctic Council is also beginning to pay attention to Inuit knowledge. In its recently-announced promotion of the Inuit Circumpolar Council’s sea ice project, the main subjects will be how Arctic changes have affected Inuit and how Inuit are adapting to the changes. Interviews will be held with Inuit from Chukotka to Greenland in this process.

The Alaskan Cruise Industry

The cruise industry is a prime component of Alaska’s modern prosperity. The Alaska Cruise Association, established in 2007, is a not-for-profit organization to which no less than nine cruise lines servicing Alaska now belong. Some 28 cruise ships today bring approximately 60% of the 1.63 million visitors to Alaska each year, from Vancouver, Seattle and San Francisco, between April and October. The visitors, many of whom travel inland to see the magnificent scenery and visit the glaciers, inject an estimated $767 million in spending into the state’s economy, and creating approximately 40,000 jobs.

93 See http://www.dot.state.ak.us/cvrlts/forms/Millenium-agree.PDF, Last visited April 10, 2012. See also Alaska’s Administrative Order 186 of April 11, 2001.
94 See http://www.dot.state.ak.us/cvrlts/forms/01_03_010.pdf, Last visited April 10, 2012.
95 See Center for Biological Diversity v. United States Department of the Interior, 563 F.3d 466 (D.C. Cir. 2009). The Court nevertheless held that the Department of the Interior had failed to consider fully the environmental impact of the proposed drilling and sent the Program back to be revised. In Canada too, Inuit are beginning to use the judicial system to defend their traditional culture and way of life and protect marine mammals from such activities of seismic testing, deemed harmful to the pursuit of both those objectives. See Qikiqtani Inuit Association v. Canada (Minister of Natural Resources), 2010 NUCJ 12 (Nunavut Court of Justice).
96 This principle has been upheld by Canadian courts in relation to native land claims and consultation on development projects on their lands. See Haida Nation v. British Columbia (Minister of Forests), 2004 SCC 73; Mikisew Cree First Nation v. Canada (Minister of Canadian Heritage), 2005 SCC 69.
98 The lines are: Carnival Cruise Lines, Celebrity Cruises, Crystal Cruises, Holland America, Norwegian Cruise Line, Oceana Cruises, Princess Cruises, Regent Seven Seas Cruises, Royal Caribbean International and Silversea Cruises.
Approximately $1.35 billion has been calculated to result, in direct and indirect benefits.\(^9^9\)

Alaska is proud of its safety record of cruise ship travel. The Alaska Cruise Association states: \(^1^0^0\)

All cruise ships must meet standards set by the International Maritime Organization (IMO) and the International Convention for Safety of Life at Sea (SOLAS). Ships operating from U.S. ports also are subject to U.S. federal and state regulations as well as quarterly safety inspections by the U.S. Coast Guard and periodic health inspections conducted by the U.S. Centers for Disease Control.

The U.S. Coast Guard has declared cruise ships to be one of the safest forms of transportation, noting that there have been no passenger deaths relating to a maritime accident on an ICCL vessel in over 20 years.

Safety features of cruising in Alaska include:

- the use of fire teams on cruise ships;
- controlled access to and from the vessels;
- careful background checks of cruise ship personnel;
- screening of passengers and their baggage at embarkation;
- a zero-tolerance policy with respect to on-board crime.

Alaska voters in 2006 approved a head tax of $46. on cruise ship passengers entering Alaska. The Alaska Cruise Association contested the constitutionality of the tax in court, claiming that it had cost their industry some 140,000 passengers and three ships. In 2010, the state and the Association reached an out-of-court settlement, reducing the tax to $34.50, in return for which the Association dropped the suit. \(^1^0^1\)There nevertheless remains concern in the industry that Alaska cruising is beginning to decline in intensity in favour of other destinations, and in the face of the general North American economic slowdown.

### Alaska Marine Highway System

Marine transport within Alaska itself is provided by the Alaska Marine Highway System, which is, in effect, a ferry service operated by the state government. The routes cover distances some 3,500 miles. The ferries serve communities that have no road access in southeast Alaska and operate on the Inside Passage of Alaska and British Columbia, as

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\(^9^9\) See the website of the Alaskan Cruise Association at http://www.akcruise.org/group.cfm?menuId=147.

\(^1^0^0\) See http://www.akcruise.org/group.cfm?menuId=151&subId=177. Last visited April 10, 2012.

far south as Bellingham, Washington, and as far west as Unalaska/Dutch Harbor on the eastern Aleutian Islands. The Alaska Marine Highway is part of the U.S. National Highway System, and as such receives federal highway grants. Voyages take from a few hours to several days, depending on distances. The vessels (approx. 11 in number) are of different sizes, with some have more commodities than others. About 350,000 passengers and 100,000 vehicles are transported by the AMHS each year.\textsuperscript{102} Tourists are being encouraged to avail themselves of the Service to explore Alaska in greater detail.

The Alaska Marine Highway System is governed by the Chapter 19.65 of the Alaska Statutes.

**Conclusion**

Marine transport is an indispensable element of Alaska’s society and economic welfare. It plays a vital role in the export of mineral ores from mines in that state and even in Canada. The tanker transport of oil from the Trans-Alaska Pipeline via the Port of Valdez continues to be relied upon by the lower 48 American states and may gain in importance once again as the U.S. seeks more dependable, domestic sources of energy to replace petroleum from the Middle East or South America. Increased development of Alaska’s offshore oil and gas reserves on the Outer Continental Shelf seems imminent, despite the environmental challenges which drills rigs and related vessels pose when navigating in Arctic climes. Tourist cruising remains a permanent feature of Alaskan economic health and jobs for its residents. And those residents, as well as tourists, are dependent now as in the past on the Alaska Marine Highway System to move around the otherwise inaccessible reaches of the state. Alaska seems destined to keep on needing and thriving on various types of shipping as far ahead as can be seen. In all of these areas, international conventions, American federal legislation and the general maritime law, and specific Alaskan statutes combine to foster safe, efficient and environmentally-sensitive navigation in the breathtakingly beautiful waters of the most northerly American state.