



## GOVERNANCE OF ARCTIC SHIPPING

The governance of shipping activities in the Arctic might be described as a complicated mosaic. The Law of the Sea, as reflected in the 1982 *United Nations Convention on the Law of the Sea* (UNCLOS), sets out the legal framework for the regulation of shipping according to maritime zones of jurisdiction. Other international agreements address specific elements of shipping such as marine pollution prevention standards, ship safety, seafarer rights and qualifications and liability and compensation for spills. In addition, Canada and the Russian Federation have adopted special national legislation for ships operating in ice-covered waters within their EEZs. Descriptions of international law, including as reflected in the UNCLOS, are included for the benefit of the reader and are not intended to constitute interpretations.

A wide range of actors affect the law, policy and practice applicable to shipping in the Arctic. In addition to governments, ship-owners, cargo owners, insurers, port authorities, trade and labor union associations, among others, may be involved in determining when and where shipping in the Arctic should occur and under what conditions.

Governance of shipping is characterized by efforts to promote safety, security, protection of the environment from damage by accident, as well as harmonization and uniformity in international maritime law and standards. The International Maritime Organization (IMO), a specialized agency in the United Nations system, addresses a broad range of issues pertaining to international shipping, including maritime safety, security and environmental protection. Other intergovernmental organizations work closely with the IMO in the governance of international shipping. For example, the International Labour Organization (ILO) has played a seminal role in the establishment of minimum basic standards for seafarers' rights.

The IMO acts as secretariat for most international maritime conventions and facilitates their implementation through the adoption of numerous codes and guidelines aimed at operationalizing and facilitating the implementation of international rules and standards. International conventions and related protocols become binding only on those states that choose to become parties. Upon ratification of a convention, states must formally implement it into their national maritime regulatory regime. States can, however, legislate

the provisions of a convention or protocol without necessarily becoming a party.

An explanation of the governance of shipping would not be complete without noting the critical role played by standard form contracting and related “good practices” developed by industry. For example, in contracts for carriage by sea the carrier must prepare against foreseeable risks and provide a seaworthy ship for the voyage, which must be pursued without deviation or delay and with due care for the cargo or passengers. These standard forms have been recognized and applied by courts around the world.

### Law of the Sea, as reflected in UNCLOS: The Overarching Legal Framework

The Law of the Sea, as reflected in UNCLOS, has struck a balance among the powers of coastal states, flag states and port states to exercise jurisdiction and control over shipping. The jurisdictional status of some Arctic waters, in particular internal waters and straits used (or potentially to be used) for international navigation, remains controversial and could give rise to future disputes concerning the exercise of national jurisdiction over international navigation through those waters.

#### Coastal State Jurisdiction and Control

For coastal states to claim maritime zones in the Arctic in accordance with UNCLOS, they must have coastal frontage in the region. Of the eight Arctic states, Canada, Denmark (Greenland), Norway, the Russian Federation and the United States have coastal frontage in the Arctic Ocean. Iceland has coastal frontage on the Norwegian Sea and Finland and Sweden in the Baltic Sea.

The extent of legislative and enforcement control over foreign ships by the coastal states of the Arctic Ocean varies according to the different maritime zones set out in UNCLOS, namely: internal waters, the territorial sea, the contiguous zone, the exclusive economic zone and the continental shelf (Table 4.1).

The seaward limit of the maritime zones and jurisdictions is based primarily on distance from a combination of the low-water marks along the coast, straight baselines and closing lines for bays. With the exception of the United States, the Arctic Ocean states have proclaimed straight baselines along most or all of their Arctic coasts. Table 4.1 sets out the limits of jurisdictional claims by Arctic Ocean coastal states.

For internal waters, coastal states are entitled to exercise full sovereignty and maximum jurisdiction over ships and can, pursuant to that authority, set conditions for entry into its ports. For example,

Arctic States	Territorial Sea		200 nm Zones		
	3 nm	12 nm	EEZ	Extended Fisheries Protection	Fisheries Protection
Canada		✓	✓		
Denmark (Greenland)	✓		✓		
Iceland		✓	✓		
Norway		✓	✓		
- Jan Mayen		✓		✓	
- Svalbard		✓			✓
Russian Federation		✓	✓		
United States		✓	✓		

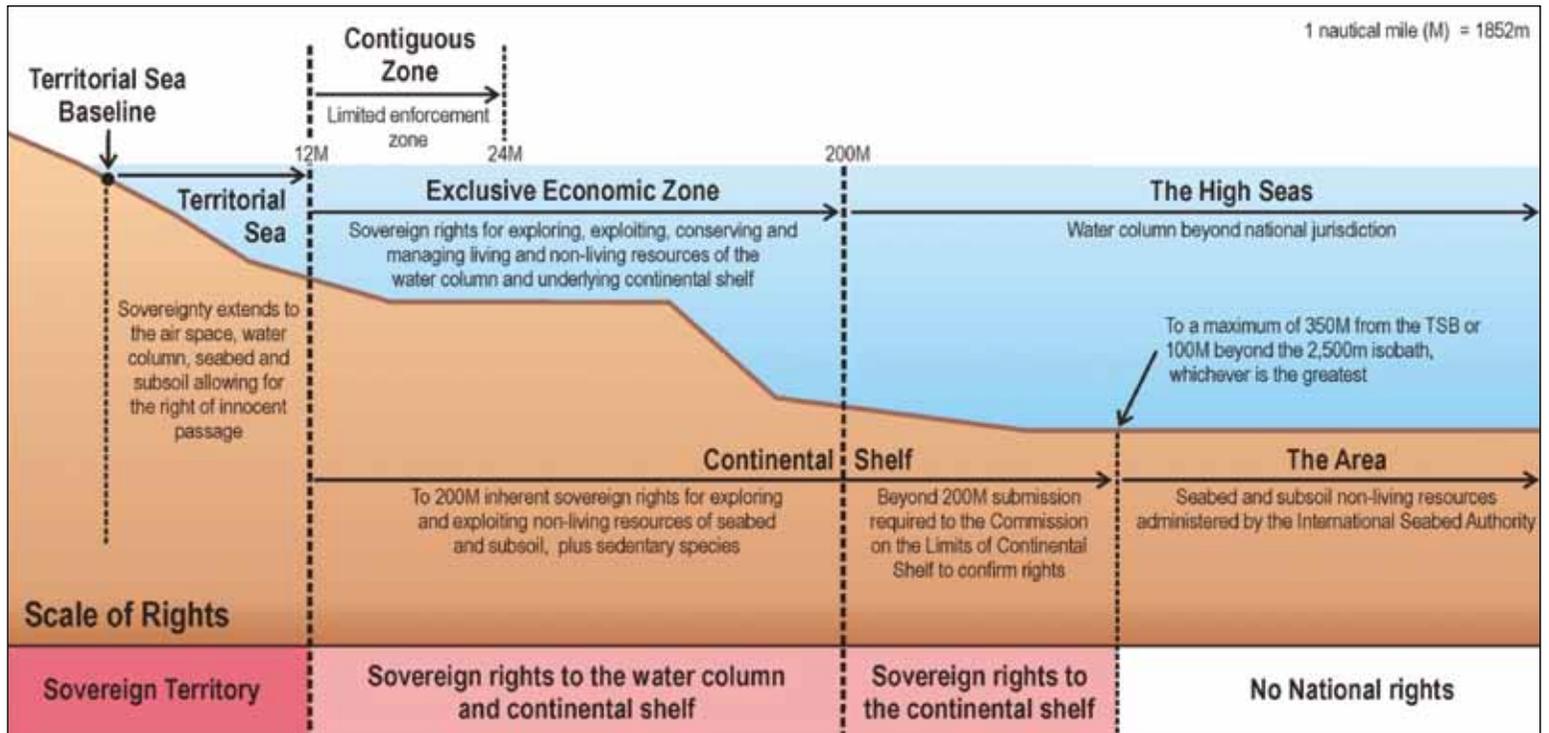
Table 4.1 Arctic coastal state maritime jurisdictional zone claims. Source: AMSA

coastal states might prohibit entry of certain “risky ships”, such as substandard ships or those carrying radioactive wastes or other hazardous cargoes, or they might impose “zero discharge” limits on particular ship-source pollutants. The only likely constraint on the exercise of this power is the traditional and customary duty to grant refuge in sheltered waters to a ship in need of assistance.

Internal waters include marine areas on the landward side of closing lines for bays, ports and harbors and historically recognized internal waters. A coastal state may also choose to draw straight baselines around a deeply indented coastline or where there is a fringe of islands in the immediate vicinity of the coast. Waters enclosed would be internal. UNCLOS sets forth the rules on setting baselines.

Exactly which Arctic waters may be claimed validly as internal has been contentious. For example, Canada enclosed its Arctic archipelago with straight baselines, effective January 1, 1986, but the United States and other states protested against the internal waters status claim.

Within the limit of the 12 nautical miles that may be claimed for the territorial sea, Arctic coastal states have full sovereignty, but foreign ships retain the right to innocent passage; that is, passage which is continuous and expeditious, and is not prejudicial to the peace, good order or security of the coastal state. For example, undertaking research or surveys or fishing without the coastal state’s



■ **Illustration 4.1** Illustration of maritime zones (for illustrative purposes only). Source: Geoscience Australia

consent, or engaging in an act of serious and willful pollution in contravention of UNCLOS would be considered prejudicial to the interests of the coastal state.

UNCLOS allows coastal states the authority to adopt laws and regulations applicable to foreign ships transiting through the territorial sea. Domestic laws can be applied in relation to such things as safety of navigation, preservation of the marine environment and marine pollution control. There are two limits on this authority; namely, that coastal states cannot impose design, construction, crewing or equipment standards on foreign ships unless giving effect to generally accepted international rules or standards; and that such laws may not have the practical effect of denying or impairing the right of innocent passage. Coastal states may also, having regard to the safety of navigation, designate sea lanes and traffic separation schemes for foreign ships. However, the coastal state must take into account IMO recommendations and any channels customarily used for international navigation. They may not impose a charge on the passage itself; only specific fees for services rendered may be charged and without discrimination.

Coastal states may also claim a 12 nautical mile contiguous zone adjacent to the territorial sea (i.e., up to a seaward limit of 24 nautical miles). In this zone, coastal states may exercise necessary control over foreign ships to prevent infringement and to enforce

violations of customs, fiscal, immigration or sanitary laws and regulations in their territory or territorial sea.

In a 200 nautical mile exclusive economic zone (EEZ), measured from the territorial sea baselines, coastal states have sovereign rights to explore, exploit, conserve and manage their natural resources, and jurisdiction over such things as protection of the marine environment. In part XII of UNCLOS, the issue of coastal states' ability to regulate shipping for the purposes of pollution prevention and control laws is addressed, which is that laws and regulations applicable to foreign ships must conform or give effect to international rules and standards established through the IMO.

A coastal state has limited enforcement powers in the EEZ against transiting foreign ships violating applicable international rules and standards for preventing and controlling pollution. A coastal state may only undertake physical inspection of a foreign ship where a violation has resulted in a substantial discharge causing or threatening significant pollution of the marine environment. Actual arrest and detention of a foreign ship is only allowed if a violation causes major damage or a threat of major damage to the coastline, interests or resources of the coastal state. In such a case, the coastal state may only impose monetary penalties.

UNCLOS defines the continental shelf of a coastal state as comprising the seabed and subsoil of the submarine areas beyond the

territorial sea to the outer edge of the continental margin, or to at least 200 nautical miles from coastal baselines where the outer edge of the continental margin does not extend to that distance. A coastal state with a continental shelf extending beyond 200 nautical miles has 10 years from the time the convention enters into force for that state to make a submission to the Commission on the Limits of the Continental Shelf. The limits of the continental shelf established by a coastal state on the basis of the recommendations of the commission shall be final and binding. While the coastal state's rights to the resources of the extended continental shelf are exclusive, the waters above the extended continental shelf are high seas. Therefore, the coastal state has no jurisdiction over foreign ships in those waters with very few exceptions (for example, where a foreign ship is undertaking exploration activities on the continental shelf without its consent.) The coastal state may locate artificial islands, installations or structures on an extended continental shelf and include safety zones that are consistent with international standards. However, it may not establish them where interference may be caused to the use of recognized sea lanes essential to international navigation.

Coastal states bordering a strait used for international navigation retain very limited powers over foreign ships because of their right to transit passage. States bordering straits cannot suspend passage and may only adopt ship-source pollution laws applicable to foreign ships if in accordance with international standards. Sea lanes and traffic separation schemes may be designated, but only with IMO approval. A ship exercising transit passage may do so in its "normal mode," a phrase taken to mean that a submarine may remain submerged, whereas in innocent passage it must navigate on the surface and show its flag.

UNCLOS does not specify the extent of international navigation required to transform navigable waters into a strait used for international navigation. National opinions have differed over the application of the straits used for an international navigation regime in the Arctic.

Article 234 of UNCLOS bolsters coastal state powers to regulate foreign shipping in order to prevent, reduce, and control marine pollution in the Arctic. It recognizes the coastal state's right to adopt and enforce special non-discriminatory pollution prevention, reduction and control laws in areas within the limits of the EEZ that are covered by ice for most of the year, when certain conditions are met. Additionally, the coastal state's laws and regulations must have due regard to navigation, protection and preservation of the marine environment and be based on the best available scientific evidence.

Article 234 raises various questions of interpretation. What is required to meet the litmus of "ice covering such areas for most of the year?" For example, will even partial ice cover suffice if there is



an exceptional hazard to navigation? What is the significance of giving special coastal state powers only in the EEZ? One interpretation is that coastal states are given no greater powers than those applicable in the territorial sea. Another is that coastal states are granted broader powers, in particular the right to unilaterally adopt special ship construction, crewing and equipment requirements. Application of Article 234 to straits used for international navigation may also be questioned. Since UNCLOS does not exempt straits from the application of Article 234, questions of interpretation may again rise over the geographical scope of coverage and the breadth of coastal state regulatory powers.

### Flag State Jurisdiction and Control

Flag states play a vital role in the governance of shipping. UNCLOS permits a state to fix conditions for granting its nationality (i.e., flying its flag) to ships so long as there exists a "genuine link." Ships can only sail under the flag of one state at a time. The flag state's domestic laws, for example, criminal law, apply to those aboard its ships. A flag state must also ensure that its ships conform to international rules and standards concerning matters such as safety at sea, pollution control and communication regulations. On the high seas, the flag state is granted exclusive jurisdiction with only limited exceptions.

It should be noted that the provisions of UNCLOS regarding the protection and preservation of the marine environment do not apply to any warship or other vessel owned or operated by a state and used, for the time being, only on government non-commercial service. However, each state must ensure, by the adoption of appropriate measures not impairing operations or operational capabilities of such vessels owned or operated by it, that such vessels act in a manner consistent, so far as is reasonable and practicable, with UNCLOS.

## Port State Control

Under general international law, the port state has the authority to impose conditions for the entry of foreign ships into its ports. Under UNCLOS, when foreign ships are voluntarily in the port of another state, the host state has broad inspection and enforcement powers for pollution violations occurring not only in the port and internal waters, but also in the territorial seas and the EEZs of other coastal states when those states request the port state's assistance in enforcement. A flag state may also request the port state's assistance in relation to enforcement of pollution offenses on the high seas. A port state must comply with requests from other states for investigation of discharge violations. If a port state determines that a foreign ship is unseaworthy and threatens marine environmental damage, it may prevent the ship from sailing until the deficiencies are corrected.

## Maritime Boundaries in the Arctic

To date, there are eight bilateral agreements delimiting maritime zone and continental shelf boundaries between the five countries that border the Arctic Ocean, in addition to unresolved boundary issues. Lack of clearly delimited maritime boundaries for territorial

seas and EEZs is of potential concern for future shipping in the Arctic. Ship operators may face uncertainty over which national shipping laws are applicable in a disputed zone, particularly with reference to laws and regulations adopted pursuant to Article 234 of UNCLOS and with regard to penalties and compensation for damage caused by ship-source spills. Unresolved maritime boundaries may also reduce opportunities to develop marine resources and expand shipping in the Arctic. This situation is, however, no different than in other maritime areas where maritime boundaries are not agreed.

## High Seas

Trans-Arctic shipping across the high seas of the Arctic (i.e., beyond EEZs) raises other governance issues. Because a coastal state's authority to regulate foreign shipping does not extend to the high seas, transiting ships would only be subject to global shipping safety, environmental and security rules and standards adopted through the IMO and as may be applied by the flag states. Thus the adequacy of international shipping standards for Arctic conditions and the need to provide special protective measures for the Arctic high seas must be considered.



## International Public Maritime Law Framework

Ships and their crews operating in the Arctic environment face unique risks. A significant body of international public maritime law has established safety, environmental and security rules and standards for international shipping and seafarers. Generally, the contents of IMO safety conventions are not specific to Arctic shipping. Nonetheless, many of the requirements, for example, double hulls for tankers and increased safety and communications equipment systems for passenger ships and cargo ships, will affect ships trading into or transiting Arctic waters. Not all applicable standards are mandatory. Whereas the provisions of the *International Convention on Safety of Life at Sea, 1974* (SOLAS), for example, are mandatory, the *2002 IMO Guidelines for Ships Operating in Arctic Ice-covered Waters* (Arctic Guidelines) only provide internationally accepted recommendatory guidelines. These guidelines, however, are under review by the IMO.

### Maritime Safety Rules and Standards

For the most part, international safety standards for merchant shipping are formulated in the rules, codes and procedures adopted within the framework of SOLAS (Table 4.2). The convention specifies minimum safety standards for the construction, machinery, equipment and operation of ships. Flag states are responsible for ensuring compliance of their ships with SOLAS requirements, and certificates are prescribed as proof that this has been done. Using port state control, contracting states can inspect ships of other states on a non-discriminatory basis. Chapter V of SOLAS sets forth provisions of an operational nature including the maintenance of meteorological services for ships, the ice patrol service, routing of ships and the maintenance of search and rescue services. Chapter VII of SOLAS regulates the carriage and care of dangerous goods through the *International Maritime Dangerous Goods (IMDG) Code* and the carriage of liquefied natural gas (LNG) through the *International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk Code* (International Gas Carrier Code). The IMDG Code may need to be reviewed for the purpose of identifying any dangerous goods that may be affected by extremely low temperature during transportation in the Arctic.

The American Bureau of Shipping and the Russian Maritime Register of Shipping recently announced they are jointly developing classification rules for Arctic LNG carriers. Ice-strengthening for LNG carriers focuses on hull, containment system, propulsion and propeller requirements.

Arctic States	Safety					
	COLREGS 1972*	SOLAS			SAR 1979*	Load Lines 1966*
		Convention 1974*	Protocol 1978*	Protocol 1988*		
Canada	✓	✓	-	-	✓	✓
Denmark	✓	✓	✓	✓	✓	✓
Finland	✓	✓	✓	✓	✓	✓
Iceland	✓	✓	✓	✓	✓	✓
Norway	✓	✓	✓	✓	✓	✓
Russian Federation	✓	✓	✓	✓	✓	✓
Sweden	✓	✓	✓	✓	✓	✓
United States	✓	✓	✓	✓	✓	✓

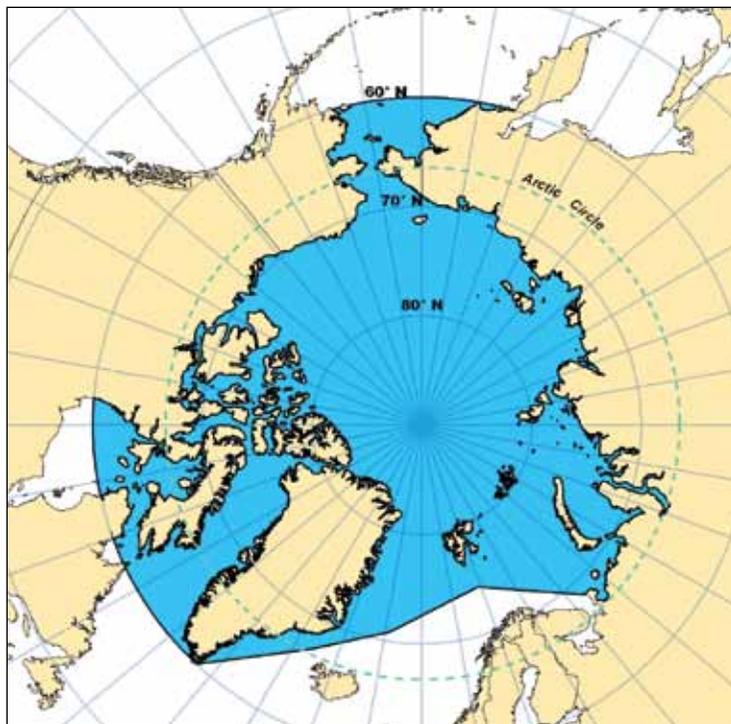
Abbreviations: (✓) = Ratification; (-) = Not Party; \* = In Force (data as of October 10, 2008)

**Table 4.2** Ratification of International Maritime Safety Agreements and Instruments.  
Source: AMSA

SOLAS also includes specifications for passenger ships. However, at this time there are no international construction requirements specific for cruise ships in polar operations. Cruise ships, which are not classed as ice-strengthened, may operate in the Arctic at certain times of the year and in areas of open water. The international cruise ship industry has initiated a Cruise Ship Safety Forum to develop design and construction criteria for new vessels and to consider other safety issues.

Additional non-mandatory industry standards for passenger ships have been adopted by the IMO. In January 2008, the IMO adopted *Guidelines on Voyage Planning for Passenger Ships Operating in Remote Areas*, also called the Arctic Guidelines. The Guidelines call for ships to develop detailed voyage and passage plans that include contingency plans for emergencies. Emergency contingency plans should be developed with reference to the IMO MSC/Circular 1184, *Enhanced Contingency Planning Guidance for Passenger Ships Operating in Areas Remote from SAR [Search and Rescue] Facilities*. This guidance document outlines extra steps that should be taken when passenger ships operate remote from SAR facilities, including keeping the appropriate authorities informed of the ship's position and intentions while the ship is operating in the remote area. Consideration should also be given to voyage "pairing" (i.e., coordinating travel with another vessel

**Map 4.1** Geographical scope of the 2002 IMO *Guidelines for Ships Operating in Arctic Ice-covered Waters* (Arctic Guidelines) (shaded area). Source: IMO Arctic Guidelines



to ensure emergency assistance), the carriage of enhanced life-saving appliances and the provision of additional life-saving resources.

The 1994 *International Safety Management Code* (ISM Code), adopted under Chapter IX of SOLAS, provides an international standard for safe management and operation of ships and for pollution prevention. The code calls on shipping companies to establish a safety and environmental protection policy (“safety management system”) that is both ship-based and shore-based. The safety management system should ensure compliance with mandatory rules and regulations, as well as industry standards, and is subject to certification by national maritime authorities and verification by both flag and port states. The ISM Code is applicable to ships operating in Arctic waters although its provisions do not deal with the special circumstances and operational hazards of Arctic navigation. As shipping activity increases in the region, express provision for safety management for ice navigation might need to be considered.

The voluntary Arctic Guidelines apply to ships covered by SOLAS, including passenger ships and cargo ships of 500 gross tonnage or more engaged in international voyages in ice-covered waters (Map 4.1). The Arctic Guidelines are additional provisions deemed necessary for consideration beyond existing SOLAS requirements. They provide the most comprehensive standards for ships in ice-covered waters, including construction, equipment and operational matters.

Polar Class	General Description
PC 1	Year-round operation in all Arctic ice-covered waters
PC 2	Year-round operation in moderate multi-year ice conditions
PC 3	Year-round operation in second-year ice which may include multi-year ice inclusions
PC 4	Year-round operation in thick first-year ice which may include old ice inclusions
PC 5	Year-round operation in medium first-year ice which may include old ice inclusions
PC 6	Summer/autumn operation in medium first-year ice which may include old ice inclusions
PC 7	Summer/autumn operation in thin first-year ice which may include old ice inclusions

**Table 4.3** The Arctic Guidelines and the Unified Requirements, adopted by the International Association of Classification Societies, designate a system of *Polar Classes* for ships with different levels of capability and construction, structural and equipment requirements under various ice conditions. The Unified Requirements apply to ships of member associations constructed on or after March 1, 2008.

Source: IMO Arctic Guidelines

The Arctic Guidelines are structured in four parts. Part A provides construction, subdivision and stability in damaged condition recommendations for new *Polar Class* ships. The guidelines suggest a harmonized classification of *Polar Class* ships into seven categories according to intended ship operations and the level of ice in the area (Table 4.3). Ships should be able to withstand flooding resulting from hull penetration due to ice damage. No pollutants should be carried directly against the hull in areas of significant risk of ice impact. Operational pollution of the environment should be minimized by equipment selection and operational practice. Navigational, communications, safety-related survival and pollution control equipment should be appropriate for Arctic conditions.

Part B applies to *Polar Class* and non-*Polar Class* ships and includes recommendations on fire safety, fire detection and extinguishing systems, life-saving appliances and arrangements and navigation equipment in conformance with SOLAS, Chapter V. All *Polar Class* ships should be provided with an Automatic Identification System. *Polar Class* ships are encouraged to carry fully enclosed lifeboats. Other ships are urged to carry lifeboats having tarpaulins of sufficient size to provide complete coverage from environmental conditions.

Part C concerns ship operations, crewing and emergencies. Ships should carry operating manuals, as well as training manuals with relevant information concerning operations in ice-covered waters, including emergency procedures. Qualifications and training for crew and ice navigators are suggested.

Arctic States	Seafarers									
	ILO								IMO	
	C147 1976*	P147 1996 Protocol*	C163 1987*	C164 1987*	C166 1987*	C180 1996*	C188 2007	Maritime Labour 2006	STWC Convention 1978*	STWC-F Convention 1995
Canada	√	--	--	--	--	--	--	--	√	--
Denmark	√	√	√	--	--	√	--	--	√	√
Finland	√	√	√	√	--	√	--	--	√	--
Iceland	√	--	--	--	--	--	--	--	√	√
Norway	√	√	√	√	--	√	--	--	√	√
Russian Federation	√	--	√	--	--	--	--	--	√	√
Sweden	√	√	√	√	--	√	--	--	√	--
United States	√	--	--	--	--	--	--	--	√	--

**Table 4.4** Ratification of International Marine Labor Agreements and Instruments. Source: AMSA  
 Abbreviations: (√) = Ratification; (--) = Not Party; \* = In Force; C188 = Work in Fishing Convention; C180 = Seafarers' Hours of Work and the Manning of Ships Convention; C166 = Repatriation of Seafarers Convention; C164 = Health Protection and Medical Care (Seafarers) Convention; C163 = Seafarers' Welfare Convention; P147 = Protocol of 1996 to the Merchant Shipping (Minimum Standards) Convention; C147 = Merchant Shipping (Minimum Standards) Convention (data as of October 6, 2008)

Part D provides for environmental protection and damage control equipment, recognizing the navigational and environmental hazards and limited response capabilities for assistance in Arctic ice-covered waters. All ships navigating in Arctic ice-covered waters should be adequately equipped and their crews properly trained to provide effective damage control and minor hull repair, as well as containment and cleanup of minor spills.

The Arctic Guidelines have been criticized for various deficiencies. Criticisms include the lack of details or uniform international standards on training, failure to require actual ice navigational experience for ice navigators and limited provisions on prevention and mitigation of sea-spray icing of ships. Guidance about towage in ice-covered waters is also limited. The IMO recently agreed to revise the Arctic Guidelines and to extend their application to the Antarctic.

The *Convention on the International Regulations for Preventing Collisions at Sea, 1972* (COLREGS) sets out technical and seaman-ship rules for ships on the high seas and in all other waters navigable by seagoing vessels connected thereto, including bays, straits, territorial seas and EEZs. COLREGS applies to navigation in the Arctic, but it does not contain specific rules for ships navigating in ice-covered waters. COLREGS covers a situation where a ship is constrained in its ability to maneuver due to size, draft or other reason such as ice. However, the application of some rules may need to be considered with reference to ice navigation. With an extended Arctic shipping season and increased ship traffic, COLREGS can be expected to assume greater importance.

The remoteness and harsh conditions present special search and rescue challenges in the Arctic. The *International Convention on Maritime Search and Rescue, 1979* (SAR Convention) provides for rescue coordination centers, ship position reporting systems and expedited entry of rescue units into the territorial waters of other states. Arctic state parties to the SAR convention shall coordinate SAR-incidents in their respective areas of responsibility and cooperate

The increased use of Arctic waters for tourism, shipping, research and resource development also increases the risk of accidents and, therefore, the need to further strengthen search and rescue capabilities and capacity around the Arctic Ocean to ensure an appropriate response from states to any accident. Cooperation, including on the sharing of information, is a prerequisite for addressing these challenges. We will work to promote safety of life at sea in the Arctic Ocean, including through bilateral and multilateral arrangements between or among relevant states.

~ Ilulissat Declaration, May 2008



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with each other as required. The IMO has established 13 major search and rescue areas around the world, within which coastal states have designated search and rescue regions.

The Global Maritime Distress and Safety System (GMDSS) facilitates maritime safety communications for merchant and passenger ships. The Arctic is “Sea Area A4” and extends to 90°N for GMDSS purposes. Canada, Norway and the Russian Federation plan to coordinate navigational and related maritime safety information in one or more designated navigational areas (NAVAREAs) by 2011.

Representatives from the five Arctic coastal states meeting in Ilulissat, Greenland, recently adopted a declaration reaffirming their commitment to work together through the IMO to strengthen existing measures and to develop new measures to improve the safety of maritime navigation and prevent or reduce the risk of ship-based pollution in Arctic waters. The Ilulissat Declaration recognizes the need to further strengthen search and rescue capabilities and capacity around the Arctic Ocean.

As international shipping increases in the Arctic, it should be expected that ships will be more frequently in need of assistance. There are, however, practical difficulties in finding and supporting suitable places of refuge for ships in the Arctic, even during the summer navigation months. The 2003 IMO *Guidelines on Places of Refuge for Ships in Need of Assistance* provide a risk assessment and decision-making framework for coastal state decision-makers, masters of ships and salvors when a ship needs refuge in sheltered coastal waters such as a port or a bay. The guidelines are not mandatory.

Many states have adopted places of refuge policies and/or designated such places, with the European Union requiring member states to designate places of refuge.

When a ship becomes a casualty and eventually sinks, it may continue to pose a hazard for navigation. Shipwrecks within and beyond the territorial sea will eventually be covered by the 2007 *Nairobi International Convention on the Removal of Wrecks*, which is not yet in force. Shipowners are responsible for locating, marking and removing ships, and must carry suitable insurance for this purpose.

## Standards for Seafarers in the Arctic and Maritime Labor Law Issues

The Arctic presents a particularly hazardous work setting for those who must live and work under its extreme conditions. Both the IMO and the ILO set international standards for seafarers’ competence and their working and living conditions (Table 4.4). In addition, the World Health Organization (WHO) sets standards for seafarers’ health issues such as medical fitness for duties and requirements for on-board medical supplies. Most international standards are directed to flag states and apply to ships undertaking international voyages, although some requirements are directed to countries in their capacity as maritime labor supply states.

The IMO addresses seafarer competency and training and other safety matters for both ship and crew through the *International Convention on Standards of Training, Certification and Watchkeeping*

Arctic States	Environment												
	London		MARPOL 73/78					Salvage 1989*	OPRC		Anti-fouling 2001**	Ballast Water 2004	Wreck Removal 2007
	London Convention 1972*	Protocol 1996*	Annex I/II*	Annex III*	Annex IV*	Annex V*	Protocol 1997 (Annex VI)*		Convention 1990*	OPRC/NHS 2000			
Canada	√	√	√	√	-	-	-	√	√	-	-	-	-
Denmark	√	√	√	√	√	√	√	√	√	-	√	-	-
Finland	√	-	√	√	√	√	√	√	√	-	-	-	-
Iceland	√	√	√	√	-	√	-	√	√	-	-	-	-
Norway	√	√	√	√	√	√	√	√	√	-	√	√	-
Russian Federation	√	-	√	√	√	√	-	√	-	-	-	-	-
Sweden	√	√	√	√	√	√	√	√	√	√	√	-	-
United States	√	-	√	√	-	√	√	√	√	-	-	-	-

**Table 4.5** Ratification of International Environmental Protection Agreements and Instruments. Source: AMSA  
Abbreviations: (√) = Ratification; (-) = Not Party; \* = In Force; \*\* = In Force September 17, 2008 (data as of October 10, 2008)

for *Seafarers, 1978* (STCW) and SOLAS. The STCW is again being revised, including standards for medical fitness for duty and hours of work and rest.

Since 1920, the ILO has adopted more than 70 international conventions and recommendations addressing maritime labor conditions and standards for decent working and living conditions for seafarers, for example, hours of rest and work, accommodations, occupational safety and health, wages, food and medical care. More than 35 of these maritime labor conventions and related recommendations were consolidated in the 2006 *Maritime Labour Convention*, which is expected to enter into force by 2011.

IMO, ILO and WHO have not adopted specific mandatory instruments addressing Arctic or Antarctic shipping as distinct from the general requirements. Existing minimum standards apply to ships flying the flag of states party to these conventions, and flag states are responsible for enforcing them on their ships. However, they would also be enforced on non-party ships under the regime of port state control inspection. Outside STCW or the ILO standards, there do not appear to be any special requirements for minimum hours of rest or maximum hours of work and safe manning despite navigation under what could be regarded as especially hazardous conditions.

The Arctic Guidelines also make recommendations on labor issues not dealt with under SOLAS or STCW. The integrated approach adopted by the guidelines recognizes that safe operation in ice-covered conditions “requires specific attention to human factors including training and operational procedures.” The guidelines recommend that crew have ice navigation and simulator training prior to entering Arctic waters, as well as exposure to ice-breaking operations and cold weather cargo handling; and that all ships operating in Arctic ice-covered waters should have at least one qualified ice navigator available to continuously monitor ice conditions when the ship is underway and making way in

the presence of ice. The guidelines recommend that the ice navigator provide documentary evidence of having satisfactorily completed an approved training program in ice navigation. Currently, most ice navigation programs are ad hoc and there are no uniform international training standards. Although the Arctic Guidelines are not comprehensive with respect to seafarer training for the Arctic, they are the first international instrument to emphasize the need for specialized training in ice navigation.

### Marine Environmental Rules and Standards

The *International Convention for the Prevention of Pollution from Ships, 1973 as Modified by the Protocol of 1978 Relating Thereto* (MARPOL 73/78) establishes international standards for pollutant discharges from ships. The standards are applicable in some Arctic waters (Table 4.5). Six annexes set out technical rules and procedures dealing with the prevention and control of pollution from ships by oil (I), noxious liquid substances (II), harmful substances in packaged form (III), sewage (IV), garbage (V) and air emissions (VI).

MARPOL does not totally prohibit the discharge of wastes in the marine environment. Establishing oily ballast and bilge water discharge limits, Annex I is an important annex for the protection of



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the Arctic marine environment. Oily ballast water from tankers may be discharged at a rate of 30 liters per nautical mile while en route and over 50 nautical miles offshore. Annex I also establishes a 15 ppm discharge limitation on oily bilge water from oil tankers, as well as from other ships. Amendments to MARPOL in 1992 and 2003 introduced a mandatory requirement of double hulls for new oil tankers and an accelerated phase-out period for existing single-hull tankers, as well as prohibition of operation of single-hull oil tankers carrying heavy grade oil as cargo accordingly. A proposal is before IMO to prohibit the use and carriage of heavy grade oil in the Antarctic Special Area, which may be considered in the future whether it should also apply to the Arctic.

Annex IV sets out sewage regulations that apply to ships of 400 gross tonnage or more, or ships that are certified to carry more than 15 persons. Sewage may be discharged at a distance of more

than three nautical miles from the nearest land when a ship has an approved treatment system and the sewage discharged is comminuted and disinfected. Sewage that is not treated may be discharged at a distance of more than 12 nautical miles from the nearest land if the ship is proceeding at not less than four knots and the discharge is not instantaneous but at a moderate rate.

Annex V, while prohibiting the disposal of plastics into sea, still allows ships to discharge some garbage generated by normal operations of a ship and depending on the distance from land. For example, ships are allowed to dispose of packing materials more than 25 nautical miles from the nearest land.

Annex VI allows special sulfur oxide (SO<sub>x</sub>) emission control areas to be declared, where sulfur content of ship fuels would be lowered for designated regions (1.5 percent m/m) from the global standard of 4.5 percent m/m. Amendments to MARPOL 2008 introduced increasingly stringent regulations, including gradually decreasing the global cap for SO<sub>x</sub> (from 4.5 percent m/m to 0.5 percent m/m) and decreasing SO<sub>x</sub> and particulate matter in Emission Control Areas from 1.5 percent m/m to 0.1 percent m/m. Stringent controls were also placed on nitrogen oxide (NO<sub>x</sub>) emissions and the ability to create Emission Control Areas for such emissions is now also available. These amendments enter into force on July 1, 2010. However, neither polar region has been proposed for special treatment.

Where the discharge standards under MARPOL Annexes I, II and V are not sufficient for protecting sensitive areas of the marine environment, IMO may designate special areas based on oceanographic and ecological as well as ship traffic conditions. For example, the Antarctic area (south of 60° latitude) is designated as a special area under all three annexes and a very high standard for discharges under Annex I has been established, namely a prohibition on any discharge of oil or oily mixtures from any ship. The Arctic may satisfy at least the oceanographic and ecological conditions for special area designation, if not also ship traffic conditions, as set out in the 2002 IMO *Guidelines for the Designation of Special Areas under MARPOL 73/78*. Before a special area becomes effective, regional coastal states must undertake to provide port reception facilities, an important consideration in the Arctic with its limited port infrastructure.

Marine areas can also receive special protection from the IMO because of their particular sensitivity to international shipping through designation as particularly sensitive sea areas (PSSAs). The IMO has developed *Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas*, most recently revised in 2005. To be eligible for designation as a PSSA, there must be three elements: (1) the area must have certain attributes as set forth in the Revised PSSA Guidelines, (2) there must be an identified vulnerability from

international ship traffic and (3) there must be an IMO measure to address the identified vulnerability. These IMO measures are called associated protective measures and include such things as areas to be avoided, traffic re-routing and separation schemes, mandatory ship reporting, discharges, restrictions and designation as a special area. If the conditions and criteria set out above are satisfied in a given area of the Arctic, that area may be eligible for PSSA designation.

There is also the option of obtaining protective measures under SOLAS without necessarily involving the designation of a PSSA. Routing and reporting measures under SOLAS Chapter V (Regulations 10 and 11) normally associated with safe passage (such as recommended routes, precautionary area and area to be avoided) may be obtained through the IMO to protect the marine environment. Measures of this sort have already been obtained and applied in northern waters, such as Alaska's Prince William Sound, the Baltic Sea and waters off the coast of Norway, Iceland and Greenland.

*The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972* and its 1996 Protocol govern ocean dumping from ships (excluding wastes from normal ship operations) and the dumping (intentional sinking) of ships in the Arctic (Table 4.5). The convention permits dumping except for those wastes listed on a "black list" pursuant to a national ocean dumping permit. The 1996 Protocol adopts a precautionary approach, and only wastes listed on a global "safe list," for example, dredged material and organic wastes of natural origin, may be disposed of subject to a waste assessment audit and a national permit.

Seven Arctic states are parties to the 1990 *International Convention on Oil Pollution Preparedness, Response and Co-operation* (OPRC), which sets out a framework for cooperative measures in relation to pollution incidents involving oil (Table 4.5). The 2000 *OPRC-Hazardous and Noxious Substances (HNS) Protocol* provides a similar framework for cooperation in preparedness and response measures

for dealing with HNS incidents, but not all Arctic states are parties. State parties are required to establish measures for dealing with oil and HNS pollution incidents, either nationally or in cooperation with other countries, and the conclusion of further bilateral or multilateral agreements is encouraged. The OPRC envisages an ongoing need to assess the adequacy of pre-positioned equipment for responding to pollution incidents in light of changing risks, such as an increase in shipping levels.

Under OPRC, trained crew and appropriate damage control materials must be on board ships and offshore installations to implement their ship oil pollution emergency plans to effect damage repair and mitigate pollution, including responding to ice damage. OPRC calls for the establishment of stockpiles of oil spill combating equipment, the holding of oil spill combating exercises and the development of detailed plans for dealing with pollution incidents. State parties have a duty to provide assistance to other states in pollution emergency situations.

Regional and bilateral arrangements are in place that provide a framework for cooperation among some Arctic states under OPRC in the Arctic. For example, the Arctic Council's Emergency Prevention, Preparedness and Response (EPPR) working group has noted the need to increase communication and to share information with the IMO in such areas as dispersant application, waste removal and treatment, in-situ burn up and spill response in ice and snow conditions. Several Arctic states have joint contingency planning arrangements. They include, among others, the *Canada/United States Joint Marine Pollution Contingency Plan* for the Beaufort Sea area, the *Russia/USA Joint Marine Pollution Contingency Plan*, the joint *Russian/Norwegian Plan for the Combating of Oil Pollution in the Barents Sea* and the *Canada/Denmark Agreement for Marine Environmental Cooperation*, which includes annexes for responding to shipping and offshore hydrocarbon spills.



The *International Convention on the Control of Harmful Anti-Fouling Systems on Ships* addresses the use of anti-fouling systems, including paints containing toxic substances such as tributyltin (TBT). The convention, which entered into force on September 17, 2008, requires ships to either not use organotin compounds on their hulls by January 1, 2008 or to have a protective coating to prevent leaching of organotin compounds. Although several Arctic Council states regulate TBT use and the European Union has introduced a complete ban on TBT-based paints, only Denmark, Norway and Sweden are parties to the convention.

An additional vessel-source environmental concern is ballast water, whereby ships take up sea water in order to maintain ship stability and structural integrity. When ballast water is discharged, pathogens and alien living organisms may be released that can disrupt local marine species and ecosystems.

The 2004 IMO *International Convention for the Control and Management of Ships' Ballast Water and Sediments* is intended to prevent, minimize and ultimately eliminate the risks of introduction of harmful aquatic organisms and pathogens via ships' ballast water, but it is not yet in force. The convention details technical standards for the control and management of ships' ballast water and sediments with the goal of shifting ballast water management from exchange to treatment for all ships by 2016. Among the Arctic states, only Norway has consented to be bound by the convention.

The Ballast Water Convention encourages enhancement of regional cooperation, including the conclusion of regional agreements. The 2007 non-binding IMO *Guidelines for Ballast Water Exchange in the Antarctic Treaty Area* provide an example of a regional approach. Various measures are recommended, including the exchange of ballast water before arrival in Antarctic waters. The specific impact of ballast discharges in the Arctic marine environment remains largely unknown. These issues require further research.

### The Role of Ports in International Maritime Law

Port state control could play an important role in promoting maritime safety and marine environmental protection in the Arctic. A global network of memoranda of understanding (MOUs) on port state control among national maritime authorities provides a systemic ship inspection approach to ensure compliance with international standards on ship safety, labor, training and pollution prevention such as SOLAS, COLREGS, MARPOL 73/78 and STCW. The inspection data is centralized in databases to which member authorities have access, and is used to track the compliance of a particular ship and the record of violations by flag. The Paris MOU among European maritime authorities is potentially relevant for ships navigating within



the Arctic Circle. The maritime authorities of the Arctic Council states, except for the United States, are parties to the Paris MOU. The United States administers its own port state control system, but has cooperating observer status with the Paris MOU.

Regional maritime authorities in the Arctic may wish to consider whether existing MOUs are sufficient to enforce higher regulatory safety and environmental standards applicable to the Arctic or to coordinate port state control enforcement efforts through a new dedicated MOU. Arctic states would need to consider what uniform standards would be enforced through port state control. Currently, only Canada and the Russian Federation have designated national safety and environmental standards for navigation in their Arctic waters separately from international standards adopted under the auspices of the IMO, including the Arctic Guidelines. The Russian Federation employs a ship inspection system for passage through the Northern Sea Route. Canada requires that ships comply with the *Arctic Waters Pollution Prevention Act* and regulates construction and other standards before navigating in Arctic waters, and inspects for this purpose.

Ports and maritime authorities also play a role in the international maritime security regime. In 2002, the IMO introduced the mandatory *International Ship and Port Facilities Security Code* (ISPS Code), which is linked to chapter XI-2 of the SOLAS Convention, for all commercial vessels over 500 gross tonnage engaged in international trade, as well as mobile offshore drilling units. Public and private ports and terminals must be secure, and ships may be required to provide notice and information to the maritime authorities of the host state. For example, Canada and the United States have advance notice of arrival requirements for ships that vary with the duration of the voyage. Certificates are issued to ships, companies and ports and

security plans are subject to periodic audit. Arctic ports and terminals require a risk assessment followed by adoption of security plans to comply with the ISPS Code. Ships engaged in cargo operations, support services or cruises in the Arctic have to comply with the ISPS Code and cooperate with port and terminal security. In areas under their jurisdiction and in accordance with UNCLOS, Arctic coastal states should have ship control procedures in place, as well as a secure system of assessing threats and sharing intelligence among law enforcement agencies.

### International Private Maritime Law Framework

The international customs and practices of the shipping, cruise and merchant communities are likely to govern the Arctic movement of goods and passengers in addition to international maritime law. Since ships move between different countries, their owners’ contracts can be subjected to a variety of different national jurisdictions and laws. To reduce confusion, the international community has concluded international private law conventions that establish uniform contractual regimes for the carriage of passengers and the carriage of goods under bills of lading (Table 4.6).

Shipowners interact with commercial parties, such as cargo owners and cruise passengers, or the suppliers of essential shipping services, like insurers and salvors, through private contracts. The essence of a contract of sea carriage is an agreement for safe transport and delivery by ship in exchange for payment of freight, hire or passage and the allocation of risks and responsibilities of the transit between the parties. These contracts also take into account the relevant international maritime law, with the carrier ensuring that its ship meets international standards for human safety and environmental protection (e.g., SOLAS, the 1972 *International Convention for Safe Containers* (CSC), MARPOL 73/78 and STCW). International shipping organizations and traders’ associations have also developed standardized clauses for particular trades, cargoes and routes and organized them into blank forms of contracts.

Arctic States	Carriage of Goods and Passengers										
	Athens				Hague Rules 1924*	Hague-Visby Rules 1968*	SDR Protocol 1979*	Hamburg Rules 1978*	CSC		Multimodal Transport 1980
	Convention 1974*	Protocol 1976*	Protocol 1990	Protocol 2002					Convention 1972*	CSC Amendments 93	
Canada	--	--	--	--	R	--	--	--	√	--	--
Denmark	--	--	--	--	D	√	a	--	√	--	--
Finland	--	--	--	--	D	√	√	--	√	--	--
Iceland	--	--	--	--	--	--	--	--	√	--	--
Norway	--	--	--	--	D	√	√	--	√	--	--
Russian Federation	√	√	--	--	--	a	a	--	√	--	--
Sweden	--	--	--	--	D	√	√	--	√	--	--
United States	--	--	--	--	√	--	--	--	√	--	--

**Table 4.6** Ratification of International Carriage of Goods and Passengers Agreements and Instruments. Source: AMSA  
 Abbreviations: (√) = Ratification; (--) = Not Party; (D) = Denounced; (R) = Revoked; (a) = Accession; \* = In Force (data as of October 10, 2008)

The international customs and practices of the shipping, cruise and merchant communities are likely to govern the Arctic movement of goods and passengers in addition to international maritime law.

Contracts of carriage for the movement of petroleum, liquefied natural gas (LNG) and minerals moved in bulk in tankers and ore carriers that tramp (sail) around the world from port to port are known as charter parties. Industry bodies like the Baltic and the International Maritime Council (BIMCO) and International Association of Independent Tanker Owners (INTERTANKO) have devised generally accepted standard terms of trade for inclusion in individual charter parties. For example, BIMCO's voluntary "ice clauses" allow a carrier to deviate from the contracted carriage to prevent a ship from becoming icebound.

Packaged, crated and containerized items, including hazardous goods, are carried under contracts represented by bills of lading and sea waybills that are regulated under competing international rules with similar modes of operation and regulatory function. These rules differ in the standards of conduct expected of the carrier, the scope of application of the rules and the limits of liability for their breach. The 1924 *International Convention for the Unification of Certain Rules of Law Relating to Bills of Lading* as amended by the Protocols of 1968 and 1979 (Hague-Visby Rules), or some variant of them, are the most widely applied international regulations. The other rules are the 1978 *United Nations Convention on the Carriage of Goods by Sea* (Hamburg Rules) and the 1980 *United Nations Convention on International Multimodal Transport of Goods* (Multimodal Rules). The United Nations Commission on International Trade Law has prepared a wholly new uniform set of rules, the *Draft Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea*, presented to the General Assembly in October 2008. States that are not party to a particular convention may choose to legislate the rules into carriage contracts, for example, Canada implements the Hague-Visby Rules through the Marine Liability Act. Each set of rules applies to marine transportation in the Arctic just the same as in any other ocean area.

Intergovernmental and non-governmental organizations also influence the standard of care set out in a carriage contract. Since 2006, a number of classification societies have introduced winterization guidelines for navigation in cold climates that establish standards of ship preparedness for Arctic shipping, thereby indirectly establishing the expected minimum standard of reasonable care for cargo.

The commercial carriage of passengers by sea, whether on ferries or cruise ships, is internationally regulated by the 1974 *Athens Convention Relating to the Carriage of Passengers and their Luggage by Sea* and its protocols of 1976 and 1990 not yet in force. A further protocol concluded in 2002 is also not yet in force: the consolidated treaty will be known as the *Athens Convention, 2002*. The carrier

is responsible for the safety of everyone on board, whether crew, cruise company employees or fare paying passengers. The Athens Convention establishes liability rules and limitations for personal injuries to passengers and loss or damage to their luggage. The safety criteria to be followed in order to negate a finding of negligence are established by the international shipping practices of operators, for example, *Association of Arctic Expedition Cruise Operators Guidelines*, as well as by SOLAS and other binding IMO shipping safety rules.

### Marine Insurance

Arctic shipping will not be sustainable without the availability of marine insurance at reasonable commercial rates. Unlike most other areas of shipping, the practice of marine insurance is not regulated in an international convention. A business and private law matter, marine insurance is legislated at the national level, for example, Canada and the Russian Federation; and occasionally at a sub-national level, for example, the United States. Insurance practices are driven by international insurance markets. Of particular significance for Arctic shipping is protection and indemnity insurance, offered through P & I Clubs. Until recently, Russian Federation shipping in the Arctic tended to be insured under state schemes, and now P & I coverage is a requirement for trading on the Northern Sea Route.

Although most of the risks associated with shipping are well known and understood by insurers and assureds alike, the risks associated with polar navigation are still not fully known or understood. With the exception of the Northern Sea Route, the Arctic is perceived as an unknown quantity or a marine frontier. As a result, the



Arctic States	Liability and Compensation										
	CLC			FUND				LLMC		HNS 1996	Bunkers 2001**
	Convention 1969*	Protocol 1976*	Protocol 1992*	Convention 1971	Protocol 1976*	Protocol 1992*	Protocol 2003*	Convention 1976*	Protocol 1996*		
Canada	D	√	√	D	√	√	--	--	√	--	--
Denmark	D	√	√	D	√	√	√	D	√	--	√
Finland	D	√	√	D	√	√	√	D	√	--	√
Iceland	D	√	√	D	√	√	--	--	--	--	--
Norway	D	√	√	D	√	√	√	D	√	--	√
Russian Federation	D	√	√	D	√	√	--	--	√	√	√
Sweden	D	√	√	D	√	√	√	D	√	--	--
United States	--	--	--	--	--	--	--	--	--	--	--

**Table 4.7** Ratification of International Maritime Liability and Compensation Agreements and Instruments. Source: AMSA  
 Abbreviations: (√) = Ratification; (--) = Not Party; (D) = Denounced; \* = In Force; \*\* In Force November 21, 2008 (data as of October 10, 2008)

provision of insurance for Arctic shipping tends to be on a case-by-case basis and expensive, with seasonal additional premiums. The availability and cost of marine insurance is a major constraint on Arctic marine shipping.

**Salvage**

The availability of salvage services can be expected to be vital for the future of commercial shipping in the Arctic. The 1989 *International Convention on Salvage* establishes the general legal principles for salvors and salvage operations. All Arctic Council states are parties to the convention. Salvage refers to the actual service provided to a ship in need of assistance, the body of law that exists to govern this maritime institution, and the reward due to the salvors for their services. Essentially, salvors are entitled to a reward (a percentage of the value of the salvaged property) for successful salvaging of the vessel or cargo, such as, “no cure, no pay”. Most commonly, private firms of professional salvors respond to shipping casualties, although the Russian Federation has a fleet of polar vessels that provide salvage services. In general, the rights and obligations of the parties to a salvage operation are legislated and subject to industry standard form agreements, the best known being the *Lloyd’s Open Form of Salvage*

*Agreement*. If there is no contract, the parties will turn to domestic courts to obtain a salvage award. The convention provides for an enhanced salvage award for salvors preventing or minimizing damage to the marine environment.

Generally, there is limited infrastructure for ship repair and/or salvage and pollution countermeasures capability in the Arctic basin or companies with significant Arctic salvage experience. This lack of salvage capability is a concern to marine insurers.

**Liability and Compensation**

Should there be incidents resulting in oil or other hazardous substance spills that cause damage to the Arctic marine environment, property or economic loss, national and international systems of financial compensation for cleanup and losses sustained will become important. The current international system for compensation for

pollution damage caused by ship-source pollution is fragmented and limited. Separate conventions address oil pollution liability and compensation from tankers; damages from the spill of bunker fuel carried in ships other than tankers, such as cargo ships; and hazardous and noxious substance spills from ships (Table 4.7). Compensation is only available to state parties to the respective conventions and to private bodies or individuals who have suffered damage as a result of the pollution. None of the conventions address damage to the high seas beyond national jurisdiction. In general, under the conventions, the shipowner is strictly liable for the loss or damage up to a certain amount. A supplementary fund may provide additional compensation when the victims do not obtain full compensation from the shipowner or the insurer.

The compensation regime for damage caused by persistent cargo and fuel (bunker) oil pollution from oil tankers is the 1992 *Civil Liability Convention* (1992 CLC) and the 1992 *Fund Convention*, as well as the 2003 *Supplementary Fund Protocol*. These conventions do not apply to spills of bunker oil from ships other than tankers. In the Arctic context, it is unclear if the conventions apply to floating production, storage and offloading units and permanently and semi-permanently anchored ships engaged in ship-to-ship oil transfer operations.

While seven Arctic states have adopted the 1992 Civil Liability and Fund conventions, the United States has established a separate regime under the *Oil Pollution Act of 1990*. The international regime limits compensation for environmental damage to actual restoration costs; U.S. regulations provide compensation for both diminution in value of natural resources and the cost of assessing such damages.

The *International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996* (HNS Convention) also establishes a two-tier international compensation regime for bulk solids (excluding coal and iron ore and radioactive materials), liquids including non-persistent oils, liquid gases such as LNG and liquefied petroleum gases (LPG) and packaged substances. Individual receivers of HNS by sea in state parties to the convention would contribute to the International Hazardous and Noxious Substances Fund. The HNS Convention is not yet in force. Among the Arctic states, only the Russian Federation is a party.

The 2001 *International Convention on Civil Liability for Bunker Oil Pollution Damage*, which entered into force on November 21, 2008, applies to pollution damage caused by the spill of bunker oil from a ship other than a tanker and makes the shipowner strictly liable. The Bunkers Convention preserves the right of the shipowner and insurer to limit liability under any applicable national or international regime. The convention is accompanied by a Resolution (Annex 1) that urges all states to ratify or accede to the 1996 Protocol to

the 1976 *Convention on Limitation of Liability for Maritime Claims* (LLMC 1976) thus increasing the funds available for bunker pollution claims. Among the Arctic states, the Russian Federation, Denmark, Finland and Norway are parties.

## Selected National Legal Frameworks: Canada and the Russian Federation

Canada and the Russian Federation regulate shipping in the Arctic under UNCLOS Article 234, as well as under other authorities.

Canada has established special ship construction, equipment and crewing requirements and near zero oil pollution discharge standards through the *Arctic Waters Pollution Prevention Act* (AWPPA) and its regulations. The legislation applies to a 100 nautical mile pollution prevention area, but recent amendments will extend this to the 200 nautical mile EEZ.

Pollution standards for discharges are stricter in Canadian Arctic waters than MARPOL, with only untreated sewage or emergency discharges permitted. The *Canada Shipping Act, 2001* authorizes regulations to be passed establishing vessel traffic services (VTS) zones in an Arctic shipping safety control zone whereby vessel reporting and clearance would be mandatory. To date, only a voluntary non-regulatory VTS zone known as NORDREG has been adopted for the Canadian Arctic. Currently, Canada effectively has a routing requirement in that the Shipping Safety Control Zones (adopted under the



## Research Opportunities

- ❑ Comparative investigation of national construction and equipment standards for ships and their consistency with IACS Unified Requirements for *Polar Class* ships.
- ❑ Comparative examination of the extent to which states have followed the IMO Arctic Guidelines.

AWPPA) stipulate when and where ships of certain ice strength can operate. Recently, the Canadian federal government announced plans to extend the application of the AWPPA to 200 nautical miles and to move NORDREG to a mandatory reporting system for ships entering Canadian Arctic waters.

The Russian Federation has opened the Northern Sea Route for foreign shipping under certain conditions and has increased the number of ports in the Arctic region.

Regulations adopted in 1990 and 1996 allow navigation in the Northern Sea Route on a non-discriminatory basis for ships of all states based on *Regulation for Navigation on the Seaways of the NSR, 1991*; *Guide for Navigation through the NSR, 1995*; and *Regulation for Design, Equipment and Supply of Vessels Navigation the NSR, 1995*. In these documents, priority is given to prevailing international legal standards and appropriate rights of the coastal states to ensure maritime safety and to take measures for preventing the pollution of the marine environment. Pollution standards are stricter than MARPOL. For example, no garbage deposits or oily ballast water discharges from tankers are permitted. The regulations impose various conditions for using the Northern Sea Route. An application to Russian maritime authorities has to be made and they would give careful consideration to navigational safety and environmental concerns. A ship inspection (at the shipowner's expense) is required and at least two pilots need to be taken on board. Crew size must be sufficient to allow for a three-shift watch and the master should at least have a 15-day experience of steering ships under ice conditions along the Northern Sea Route. The NSR fee system is continuously improving. The existing fee system is in place to necessitate financial support for icebreaker assistance and NSR infrastructure throughout the year. In the case of future growth in cargo volumes, the charge for each individual vessel passing by the NSR is expected to decrease as the overall volume increases.

The estimated volumes of maritime traffic are about 40 million tons of oil and gas per year by 2020, which may improve the economic effectiveness of cargo transportation through the NSR.

### In Summary

Governance in shipping is characterized by efforts to promote harmonization and uniformity in international maritime law. The reason for the global approach to shipping governance is that by definition and function, shipping is essentially an international tool in the service of global trade. The term governance highlights the complex range of actors that affect shipping law, policy and practice in the Arctic. Indeed, the largest flag states and suppliers of marine labor do not border the Arctic Ocean.

Natural resource, cruise and maritime trade related shipping in the Arctic is on the increase. As marine insurance at reasonable rates becomes available and an appropriate infrastructure is put in place to service Arctic navigation routes, a concomitant increase in international shipping can be expected. This will raise, among others, safety and marine environment protection concerns. There are complex global and national legal regimes that establish standards for navigation and protection of the marine environment that are applicable in the Arctic, however, for those to be effective, a common understanding of those regimes, along with enhanced regional cooperation in ocean management and greater participation by Arctic states in the global international maritime conventions will be needed. If the Arctic marine environment is to be protected, existing regimes will need to be strengthened by Arctic states and the international community.

Not all Arctic states are parties to important conventions, and indeed not all relevant conventions are in force. There is a dearth of mandatory international standards specifically designed for navigation in the Arctic, as well as voluntary guidelines. Arctic states will need to work closely with global and regional international organizations, the people of the North and the international maritime community in regime-building to facilitate governance of Arctic shipping. ☀

## Findings

- 1] Differing national viewpoints over what waters may legitimately be claimed as internal and what waters constitute straits used for international navigation have yet to be fully resolved and could give rise to future disputes concerning the exercise of jurisdiction over shipping activities.
- 2] Coastal state authority to regulate foreign shipping in the Arctic Ocean in order to prevent, reduce and control marine pollution was bolstered by Article 234 of UNCLOS. However, the precise geographic scope of coverage (waters covered by ice most of the year within the limits of the Exclusive Economic Zone) and the breadth of regulatory powers, in particular the extent to which a coastal state may unilaterally impose special construction, crewing and equipment standards, given the requirements that such standards must give due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence could give rise to differing interpretations.
- 3] The IMO international voluntary *Guidelines for Ships Operating in Arctic Ice-covered Waters* for the safety of ships and seafarers in the Arctic are currently under review. This review provides an opportunity to assess and strengthen guidance in the area of ship construction, equipment and operations and to consider the need for a legally-binding code in the future.
- 4] Safe navigation in ice-covered waters depends much on the experience, knowledge and skill of the ice navigator. Currently, most ice navigator training programs are ad hoc and there are no uniform international training standards. For example, this could be addressed by developing training standards for navigation in polar conditions and in Arctic safety and survival for seafarers that could be incorporated into IMO's *Standards of Training, Certification and Watchkeeping* (STCW 78/95).
- 5] The International Association of Classification Societies (IACS) has developed Unified Requirements for member societies addressing essential aspects of construction for ships of *Polar Class*. The IACS Unified Requirements for member societies are incorporated by reference into the IMO *Guidelines for Ships Operating in Arctic Ice-covered Waters*. If the application of the harmonized *Polar Class* were to be made mandatory, then it could be an effective way to strengthen safety and environmental protection in Arctic waters.
- 6] Specific international construction requirements for cruise ships operating in polar waters have not been adopted. The cruise ship industry has formed a Cruise Ship Safety Forum to further develop specific design and construction criteria for new vessels, but it remains to be seen how navigation in polar waters will be addressed.

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- 7] The *International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978* (MARPOL) sets out minimum international standards for operational discharges and emissions from ships which are also applicable to Arctic waters. Pursuant to Article 234 of UNCLOS, coastal states may unilaterally impose additional, non-discriminatory requirements within the limits of their Exclusive Economic Zone (EEZ) when certain conditions are met. At this time, some national standards for regulating ship-source pollution in the Arctic are not consistent among Arctic states.
  - 8] Stricter environmental standards have neither been proposed nor established by Member States through the IMO for the Arctic. For example, under MARPOL the Arctic Ocean could be designated as a “special area” where more stringent than normal discharge standards would apply under MARPOL Annexes I and V. Such an area could also be considered for designation as an Emission Control Area under Annex VI.
  - 9] Expanded international shipping in the Arctic Ocean increases the possibility of introduction of alien species and pathogens through the discharge of ballast water and through hull fouling. The Ballast Water Convention imposes management (i.e., exchange and treatment) requirements on party ships to protect marine areas from the hazards posed by ballast water from ships and encourages establishment of regional approaches such as the *Guidelines for Ballast Water Exchange in the Antarctic*.
  - 10] In the Arctic Ocean there is very little commercial or government salvage and ship repair response capacity. Salvage and ship repair are important to support commercial shipping and the lack of this capacity is of concern to the marine insurance industry.
  - 11] The availability and cost of marine insurance is a major restraint on shipping in many parts of the Arctic. The underwriting of present shipping activities takes place only on a case-by-case basis.
  - 12] The international liability and compensation regime is fragmented and limited, with separate conventions addressing pollution from oil tankers, bunker fuel from non-tankers, and hazardous and noxious substances from all ships. No convention or protocol addresses damage to the high seas beyond national jurisdiction.