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# The IMO Guidelines for Ships Operating in Arctic Ice-covered Waters

## From Voluntary to Mandatory Tool for Navigation Safety and Environmental Protection?

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**Abstract**

This report explores whether there is a need for strengthened and binding shipping regulations for the safety of navigation and protection of the Arctic marine environment. The various maritime, geopolitical and legal issues raised by the IMO Guidelines for Ships Operating in Arctic Ice-covered Waters are analyzed and discussed.

Following an introduction of navigational and legal issues within the Arctic context, the report explores key elements and structure of the Arctic Guidelines, the roles of the governments, the IMO and classification societies in the law-making process and any shortfalls of the current arrangement. The possible relevance for the Antarctic is also discussed. The key repercussions of a binding legal regime are then presented, while a separate section is devoted to recommendations on the subject.

**Key Words**

Law of the Sea, navigation, environment, Arctic

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## Acronyms

| | |
|---|---|
| ARCOP | Arctic Operational Platform |
| ATCM | Antarctic Treaty Consultative Meeting |
| COLREG | Convention on the International Regulations for Preventing Collisions at Sea |
| CRC | Consolidated Regulations of Canada |
| DE | Sub-committee on Ship Design and Equipment |
| EEZ | Exclusive Economic Zone |
| IACS | International Association of Classification Societies |
| ILM | International Legal Materials |
| IMO | International Maritime Organization |
| MARPOL | International Convention for the Prevention of Pollution from Ships |
| MEPC | Marine Environment Protection Committee |
| MOU | Memorandum of Understanding |
| MSC | Marine Safety Committee |
| NOU | Norges Offentlige Utredninger |
| PAME | Protection of the Arctic Marine Environment (working group of the Arctic Council) |
| PSSA | Particularly Sensitive Sea Area |
| RMC | Ratification of Maritime Conventions |
| SOLAS | International Convention for the Safety of Life at Sea |
| T/S | Turbine Ship |
| UNCLOS | United Nations Convention on the Law of the Sea |
| UNTS | United Nations Treaty Series |

## Executive Summary

This report explores whether there is a need for strengthened and binding shipping regulations for the safety of navigation and protection of the Arctic marine environment. The various maritime, geopolitical and legal issues raised by the IMO Guidelines for Ships Operating in Arctic Ice-covered Waters are analyzed and discussed.

The report is structured as follows: Following an introduction of navigational and legal issues within the Arctic context, the report explores key elements and structure of the Arctic Guidelines, the roles of the governments, the IMO and classification societies in the lawmaking process and any shortfalls of the current arrangement. The possible relevance for the Antarctic is also discussed. The key repercussions of a binding legal regime are then presented, while a separate section is devoted to recommendations on the subject.

The IMO 'Guidelines for Ships Operating in Arctic Ice-Covered Waters' were designed with regard to Arctic conditions only. They set out construction, equipment, operational and environmental provisions with special consideration for the risks of navigating in ice-covered waters. Throughout the Guidelines, the Arctic is recognized as a significant area for international shipping that requires specific attention to human factors such as training and operational procedures.

While the Guidelines do offer important guidance for those involved in Arctic navigation, several sets of questions remain.

For the first, are there any shortfalls of the current arrangement and are the Guidelines applied in practice? One substantial shortcoming is the lack of any model course for ice navigators. Also, there is no requirement as to documented navigation service in Arctic ice conditions. Furthermore, the Guidelines fail to provide sufficient regulations concerning icing – for instance, by referring to the environmental and vessel characteristics that determine the potential for such icing. Provision could have been made for alternative ice-removal equipment and how better to protect vital components on deck.

With explicit reference to the 'Unified Requirements for Polar Ships', adopted by the International Association of Classification Societies, the harmonization process of ice-class rules for Arctic shipping is not fully accomplished. This report cites examples to illustrate that some leeway is accorded to each member society; thus, ships navigating in the Arctic may still be certified under differing standards.

Furthermore, the Guidelines remain *recommendatory* only – not legally binding. No follow-up procedures are provided for, and actual application is evident only through state practice and the extent to which international shipping complies. As of today, no state has implemented the regulations through binding legislation. In that respect, their effect stands untested. On the other hand, even express disclaimers cannot preclude the possibility of practical implementation of the Guidelines – for instance, that they are used for the purpose of training by navigation instructors. For such reasons, the Guidelines even in their current, non-binding form, may also have certain important practical effects.

A further question concerning the Guidelines is whether these should be made applicable to the Antarctic as well? Although patterns and types of transportation differ between the Arctic and the Antarctic, the substantial elements of the Guidelines may have relevance also for Antarctic shipping. There has been a change of attitude as to whether the Guidelines – in somewhat modified form – should be applied also to Antarctic waters. The purely formal changes suggested by the Antarctic Treaty Consultative Meeting in Cape Town prove that the Guidelines are today more acceptable to the Antarctic Treaty Parties. As long as they do not challenge the delicate sovereignty balance in the Antarctic, the Guidelines may serve as an important regulatory supplement to Antarctic navigators as well.

And finally, a set of questions centres on legal and practical aspects that may arise if the current Guidelines are made mandatory. Even though the Guidelines have positive practical effects, it may still be questioned whether they are a satisfactory substitute for treaty law, i.e., whether they should be made mandatory. From a legal-technical perspective, the introduction of Arctic regulations could be easily achieved, with the SOLAS Convention as probably the most appropriate avenue. On the other hand, it is difficult to predict the conduct of both regional, Arctic coastal states and non-regional flag states regarding the introduction of a binding regime.

In all circumstances, binding rules for navigation safety and marine environment protection of the Arctic must take cognizance of many factors. One aspect in particular is noted at the outset: there already exists a framework for a binding legal regime for Arctic navigation. The Arctic is an ocean, and is thus under the regime of the law of the sea. Specifically relevant is national legislation with a basis in Article 234 of UNCLOS, under which both the Russian Federation and Canada have adopted strict legal regimes for navigation in their ice-covered waters. Moreover, several issues remain to be addressed by the Arctic coastal states, also in connection with national sovereignty.

Introducing a compulsory regime must also rely largely on the emerging importance of port state jurisdiction. In Arctic waters, port state control will be practical and relevant. Long-distance voyages will give Arctic port states both the incitement and the opportunity to control compliance with international regulations. In this connection, a binding regime would also depend on active monitoring and navigational advice for vessels. The development of Long Range Identification and Tracking (LRIT) is mentioned as particularly relevant to enable coastal states to better identify and enhance compliance by ships.

In conclusion, the opinion put forward in this report is that the Guidelines in their current non-binding form provide an important, but limited, contribution to safe navigation and marine environmental protection of the Arctic. Given the likely future developments in Arctic shipping, it is of utmost importance that any shortfalls in today's arrangement be addressed in the near future, and that the feasibility of improved and mandatory regulations be considered by the IMO, under the SOLAS Convention.

# 1 Arctic as the Setting

With the International Polar Year commencing in March 2007, key issues relating to the polar regions are once again in focus. Particularly important are questions concerning the safety of navigation and protection of the marine environment in the Arctic.

The Arctic area can be defined by various criteria, including by the Northern Polar Circle, and thus within 66.5° N. latitude. The region measures approximately 30 million square kilometres, about half of which consists of ocean surface. In fact, the Arctic is actually an ocean surrounded by several land masses – which in turn more than justifies a specific focus on marine aspects. Approximately 90 per cent of the sea is permanently ice-covered; the rest is constituted by the territories of the United States (Alaska), the Russian Federation, Norway, Denmark (Greenland), Canada, as well as many islands under the sovereignty of these countries. Shallow continental shelves occupy more than half of the submarine area, a significantly larger proportion than with other oceans.

The Arctic has a human population of about four million, including over thirty different indigenous peoples. It is also a region of vast natural resources, and an as yet clean natural environment compared with most areas of the world.[1]

The extreme climate is the principal factor that gives the Arctic its distinctive nature: low temperatures, high geographic latitude, the special magnetic phenomena and extraordinary light conditions, all of which slow down the processes of organic decomposition and soil formation. In the Arctic waters and deserts, a very specific flora and fauna, and indeed food chains, have developed.

A frozen region once of interest only to a small number of indigenous peoples, scientists and missionaries, today the Arctic has emerged as a region of considerable economic, military and environmental importance. One significant aspect that threatens to alter the face of this region – and also lead to increased human pressure, including from commercial shipping – is climate change.

## 1.1 Extent of Arctic Navigation and Prospective Developments

Historically, Arctic navigation was confined to supplying local communities during the summer season. Many factors hampered human efforts to travel within the region and take advantage of its resources. In 1820, Arctic explorer and scientist William Scoresby wrote:

> The navigation of the Polar seas, which is peculiar, requires in a particular manner, an extensive knowledge of the nature, properties and usual motions of the ice, and it can only be performed to the best advantage by those who have long experience with working a ship in icy conditions.[2]

Navigation in Arctic waters is unique compared to all other ship operations. Due to its remoteness, navigational mistakes can be fatal, for both the operators and the environment. The biggest challenge is ice: from October to June, the Arctic Ocean remains largely ice-locked, making surface navigation impossible for all vessels, except icebreakers.

The presence of ice requires specially constructed ships and navigational skills. Ice in all its forms represents a significant obstacle to ships operating anywhere in polar waters.[3] Large tabular sections of ice-islands break away from ice shelves to join the moving ice-pack. Icebergs, which are much smaller, break off from glaciers in northeastern Canada and in Greenland. These navigational hazards move southward into the shipping lanes of the Atlantic. In recent decades, however, with technological advances in ship design and the receding sea-ice cover, the Arctic operational season has been increasingly extended.

Arctic shipping can be split into many categories: commercial vessels, including tankers and fishing vessels; vessels for recreation and tourism; scientific research vessels; icebreakers for re-supply; and vessels engaged in offshore exploration. Traffic density is concentrated on various specific areas. Additionally, there are ongoing naval navigation and covert submarine operations in the Arctic Ocean, which offers the shortest route between Russia and North America. Several water routes are of special importance.

*The Northwest Passage* is the sea route connecting the Atlantic and Pacific Oceans through the archipelago of Canada. The islands of the archipelago are separated from each other and the Canadian mainland by several waterways.

The Canadian Arctic is mostly an area of destination for traffic calling at ports there. Shipping is nevertheless expected to increase in the years to come, not least since oil and gas activity in the Beaufort Sea is likely to expand. Moreover, recent years have witnessed considerable population growth in Arctic settlements. The native communities of northern Canada have among the fastest rates of population growth in the world, some 16% per decade.[4] Mining is also a driver, with for example the planned deep-sea port in Bathurst Inlet.

As to the Russian Arctic, the *Northern Sea Route* has become the focus of shipping. It stretches approximately 2,800 kilometres along the Russian Arctic coast from Novaya Zemlya to the Bering Strait.[5] Oil and gas constitute the backbone of the Russian economy; and the development of the North is directly linked to the opening of new oil fields, particularly in Western Siberia and Komi.[6] Although significant economic growth has been underway in all regions of Russia since the late 1990s, the Arctic seems to be developing even more rapidly than the rest of country.

The main northern Russian terminals engaged in commercial shipping are Archangelsk, Murmansk, Vitino and Varandey. In the foreseeable future, also the ports of Dikson and Prirazlomnoye will contribute to increased transport. The export of metals has added to the volumes of sea transportation on the *Northern Sea Route*, and forecasts indicate that future

tanker trade in Northwestern Russia will increase substantially over the next years.[7] Concerning safe shipping conditions, there is a need for better communication between ship and shore, among ships and especially between ship and ice-breaker, as well as improved navigational charts and training of the operators.

## 1.2 Possible Implications of Climate Changes for Arctic Navigation

Shipping in the Arctic area is not only affected by social and economic developments: it is also very much determined by sea-ice conditions. Accelerating melting and retreat of the Arctic ice due to global warming has increasingly been documented.

The resultant improvements in accessibility may lead to increased use of the Arctic sea areas. Over time, that might open the Arctic Ocean as a major trade route. However, while reduction of sea-ice may be an advantage for the marketplaces of Western Europe, Asia and North America, policies need to be designed to limit the potential impacts on the Arctic environment. With less sea-ice, the navigable season will be extended, companies will seek new routes and more vessels may be expected to navigate. The military importance of the Arctic may expand, as may other marine uses, such as fisheries and oil/gas exploration. New navigational patterns and volume of traffic will require a stronger focus on the safety aspects and, not least, on the environmental perspectives.

## 1.3 Environmental Impacts

A single major oil tanker accident in the Arctic Ocean may have serious environmental consequences. Ice and snow have extensive absorptive capacity, so moving ice may result in long-distance transfer of pollutants. [8] In addition to accidents, the operational impacts of shipping should be kept in mind – such as the impact on bio-diversity when vessels deballast species alien to the Arctic environment. Local fisheries and the marine environment in general are affected by operational discharges (such as ballast water and oil spillage), hull fouling and similar threats.

Despite these serious concerns for the marine environment, it is important to note that shipping is still considered the safest and most environmentally acceptable form of commercial transport. International law should thus focus on how to prevent, minimize and control the risks arising from shipping activities.

## 1.4 Risks to the Safety of Lives

A considerable number of vessels navigate around Svalbard and along the coast of Greenland every year. In 2006, approximately 150 passenger vessels sailed along the coast of Greenland, most of them coming up from the Caribbean.[9] One incident may serve to illustrate the potential risks arising from this activity.

On 19 June 1989, the T/S ‘Maxim Gorkiy’ underway from Iceland to Spitsbergen entered a field of drifting ice. The ship did not reduce speed,

but continued its journey through the treacherous waters, running at 18.5 knots. It collided with an ice floe and began to sink. Fortunately, a Norwegian Coast Guard vessel arrived at the scene within few hours. By that time most of the 575 passengers and 498 crew members had abandoned ship, holding out in the lifeboats and on ice floes at near-freezing temperatures. Despite the prompt Norwegian reaction, when the ship finally was stabilized the vessel's long bow had already sunk to the main deck. This incident clearly shows that navigating in ice-covered waters is something very different and involves higher risks than shipping operations in most other marine areas.

## 2 Demand for Legal and Policy Framework for Safety of Arctic Shipping and Marine Environmental Protection

Unlike the Antarctic, the Arctic is not covered by a treaty that deals with the region as a whole. The Treaty Concerning Spitsbergen[10] offers a legal framework for a limited geographic area only: the Svalbard archipelago.

Five nations border the Arctic, but only two land boundaries touch the Arctic Ocean: between Russia and Norway, and between the United States and Canada. Controversy continues regarding several marine boundaries in the Arctic Ocean. There is for instance a dispute between Norway and Russia over the EEZ and continental shelf boundary in the Barents Sea, an area rich in oil and gas resources. Another area of controversy concerns the disagreement between the United States and Canada on the maritime boundary in the Beaufort Sea.

According to Article 194 of the UN Convention on the Law of the Sea[11] (hereinafter UNCLOS), all states involved in Arctic shipping share the responsibility for the safety of navigation and environmental protection of the region. Such protection may best be achieved by cooperative and preventive measures under international law.

What legal regime is the most suitable for the Arctic? There is no obvious answer. General international law of the sea is in various aspects not sufficient. On the other hand, a unilateral approach would not result in a balanced regime that takes into consideration the interests of flag states and coastal states. Thus, regional cooperation must complement the global framework and national regulation.

Recent years have seen attempts to develop mechanisms to improve cooperation in the Arctic. In 1989, representatives of the Arctic countries met to discuss cooperative measures to protect the environment. The Arctic Environmental Protection Strategy was developed, and activities were divided among several working groups.[12] One of these was especially designated for the Protection of the Arctic Marine Environment (PAME), mandated to address policy and pollution prevention and control measures related to the protection of the marine environment from both land and sea-based activities. PAME now operates under the auspices of the Arctic Council, which was established in 1996 as an

intergovernmental forum for addressing the common concerns and challenges faced by governments and indigenous peoples of the Arctic.

Concerning legally binding norms, UNCLOS established a global regime for protection and preservation of the marine environment. Cooperative measures are one aspect of the regulatory balance within the Convention,[13] which has been ratified by all Arctic states except the United States. It has been observed that the provisions on prevention of marine pollution reflect 'a fundamental shift from power to duty as the central controlling principle of the legal regime of the marine environment'.[14]

## 2.1 Diversity of Legal Regulations and the Role of the IMO

The importance of protecting the Arctic environment has added a further dimension to the concept of maritime safety.[15] *Maritime safety* is traditionally defined as 'the material state resulting from the absence of exposure to maritime dangers, as well as the organizational and administrative factors designed to create or perpetuate such a situation'.[16] According to this definition, safety at sea comprises the safety of navigation for the purpose of protecting and saving lives. Moreover, maritime safety is a preventive mechanism against those personal and collective risks that generally arise from navigation. The link between maritime safety and protection of the marine environment is thus prominent.

The legal regime under international law of the sea has long since developed rules aimed at preventing accidents. The principle of free use and exclusivity of flag state jurisdiction on the high seas is not to be practised at the expense of the safety of navigation. It has long been recognized that it is in the interest of all states to agree on minimum levels of standards, also in sea areas beyond national jurisdiction. Uncertainty arising from contradictory safety conditions leads to confusion in practice for navigational permits. Regulatory and administrative diversity, for instance between ports of entry, make it difficult for vessels to prove complete seaworthiness on international voyages.

One important aspect of the regulatory regime concerning maritime safety should be noted at the outset: the diversity of regulations. Although governments have the prime responsibility under intergovernmental institutions, important contributions are also made by private actors such as classification societies, NGOs, independent associations, and others.

However, the advancement of safety standards is perhaps best illustrated by the prominent role of the International Maritime Organization. As the leading international organization dealing with maritime safety, the IMO has adopted several key legal instruments for this purpose.

Among these is the International Convention for the Safety of Life at Sea[17] (hereinafter SOLAS Convention). The primary purpose of this convention is to stipulate minimum standards for the construction, equipping and operation of ships, consistent with their safety. Various certificates are prescribed as proof of implementation by the states parties. Control provisions also allow parties to inspect vessels of other parties if there are

clear grounds for believing that the ship and its equipment do not comply with the requirements.

Then there are the Load Line Regulations[18] concerning overloaded vessels; these aim at controlling the quantity of cargo on board. The Collision Regulations (COLREG)[19] relate to marine collisions and groundings. The 1978 International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW)[20] is a further important instrument related to navigational safety.

With regard to marine pollution, central international agreements are the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters, with amendments,[21] and the 1973 International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978 (MARPOL 73/78).[22] The latter includes regulations aimed at preventing and minimizing pollution from vessels, both accidental and operational discharges. MARPOL 73/78 defines 'harmful substances' in broad terms, to include any sea discharge of substances likely to harm living resources and marine life.[23]

Conventions are not the only instruments available to IMO for the establishment of safety standards. Article 2(a) of the Constituent Treaty[24] also stipulates the power to 'consider and make recommendations upon matters' within the scope of the IMO; and various codes, guidelines, recommendations and resolutions have been adopted. With reference to maritime safety, mention should be made of the International Safety Management Code for the Safe Operation of Ships and Pollution Prevention (hereinafter the ISM Code).[25] The main objective of the ISM Code is to provide international standards for the safe management and operation of ships and for the prevention of marine pollution. Under Chapter IX of the SOLAS Convention, this Code has been mandatory for passenger vessels, tankers and bulk carriers since 1998 and for all other vessels since July 2002.

The ISM Code requires that a Safety Management Certificate follow the ship as evidence of compliance with the requirements of the Code. It is emphasized that the responsibility for ensuring such compliance rests with 'the Company'. As explained by Valenzuela, it took many years to recognize in an IMO instrument the fact that shipowners and managers are often in a better position than governments to ensure compliance by their ships.[26]

## 2.2 Specific Focus on Ice-covered Waters in International Law

Article 234 of the UNCLOS is specifically dealing with ice-infested waters. According to this article, titled 'Ice-covered areas':

> Coastal states have the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels in ice-covered areas within the limits of the exclusive economic zone, where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation, and pollution of the marine environment could

> cause major harm to or irreversible disturbance of the ecological balance. Such laws and regulations shall have due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence.

Article 234 allows coastal state regulation in ice-covered waters. It has been described as 'probably the most ambiguous, if not controversial, clause in the entire treaty'.[27] Legal interpretation of coastal state jurisdiction in ice-covered waters based on Article 234 has not been an easy affair under international law. Various interpretations have been offered with regard to the term 'where' as used in the article.[28] Moreover, it has been queried whether the notion of 'due regard' obliges the contracting parties to observe generally international standards for design, construction, manning and equipping of vessels. Also, the relationship between Article 234 and Part III of UNCLOS concerning straits is not clear, which in turn means uncertainty regarding the limits under international law for national legislation regarding navigation in ice-covered waters.[29]

## 2.3 Specific Focus on Ice-covered Waters in National Legislation

As regards regulation of shipping in polar waters specifically, all Arctic coastal states have defined their territorial baselines and in consequence their internal waters. The combination of adjacent exclusive economic zones[30] of the coastal states forms an unbroken belt that encircles the entire Arctic Ocean, leaving only an enclave of the high seas in the centre. Nevertheless, national regulations vary.

### *2.3.1 The USA*

The United States adopted the Oil Pollution Act[31] in direct response to the *Exxon Valdez* accident, when more than 37,000 tonnes of crude oil were spilled into Prince William Sound. The USA has also several principal acts governing marine pollution: the 1980 Comprehensive Environmental Response, Compensation and Liability Act,[32] the Federal Water Pollution Control Act,[33] the Trans-Alaska Pipeline Authorization Act,[34] the Port and Tanker Safety Act,[35] the Refuse Act,[36] the Marine Protection, Research and Sanctuaries Act[37] and the Act to Prevent Pollution from Ships.[38] The latter represents the US enactment of MARPOL 73/78. Moreover, in the Arctic state of Alaska, operation and response are regulated by the Alaska Oil and Hazardous Substances Pollution Control Act[39] and the Alaska Environmental Conservation Act.[40]

### *2.3.2 Russia*

The Russian Federation/former USSR also has adopted various codes regulating navigation. The legislation includes the 1973 USSR Statute on State Maritime Pilots, the 1984 Edict on Intensifying Nature Protection in Areas of the Far North and Marine Areas Adjacent to the Northern Coast of the USSR, the 1985 Statute on the Protection of the Economic Zone of the USSR, the 1985 Statute on the Protection and Preservation of the Marine Environment in the Economic Zone of the USSR, Requirements

for the Design, Equipment and Supply of Vessels Navigating the Northern Sea Route, Law on the Russian Federation's Internal Sea Waters, Territorial Sea and Contiguous Zone of 31 July 1998 and the Federal Act on the Exclusive Economic Zone of the Russian Federation of 2 December 1998. In addition come various national port regulations and federal prescriptions for the *Northern Sea Route*.[41]A new law for the *Northern Sea Route* is recently drafted and might be developed into a federal law in near future.

### *2.3.3 Canada*

The extensive national legislation of Canada has often been considered a model for marine pollution legislation. Canadian maritime jurisdiction is divided into Non-Arctic Waters and Arctic Waters. Arctic waters are further divided into several shipping safety zones, principally governed by the Arctic Waters Pollution Prevention Act and other regulations under this Act.[42] The Arctic Shipping Pollution Prevention Regulations[43] implement the Act of 1970 and provide detailed standards for design, construction and operation.

### *2.3.4 Norway*

Under Norwegian legislation, relevant regulations are contained in the 1903 Seaworthiness Act,[44] which has substantially incorporated MARPOL 73/78. Incorporation of the ISM Code is also possible under Paragraph 1 of Section 9(a) of the Act. The Seaworthiness Act applies to Norwegian ships only. It has recently been replaced by a new Maritime Safety Act, to enter into force on 1 July 2007.

### *2.3.5 Denmark/Greenland*

The principal national legislation of Denmark is the Sea Safety Act of 2002[45] and the Marine Environment Act of 1993.[46] As in most other EU member states, environmental regulations are strictly enforced. The SOLAS Convention is in Danish legislation implemented through Act number 749 of 7 December 1988.[47]

## 3 IMO Guidelines for Ships Operating in Ice-Covered Waters

An important initiative for regulating ship construction, equipping and operations in polar waters took place under IMO auspices in the early 1990s. Prompted by the disaster of *Exxon Valdez* off the coast of Alaska in 1989, the IMO started working on a code for navigation in polar waters. The intention was clear from the very beginning: rudimentary regulation for Arctic shipping was to be harmonized at the international level. A vessel could face differing technical requirements for navigation within the exclusive economic zones of Canada, Norway, Russia and the United States, and it might be impossible to comply with all laws to which it might become subject in the course of one and the same voyage.

The extensive national regulation by Arctic states was not satisfactory to the international community. Furthermore, the various international classification societies had developed rules for shipbuilders, all differing from one organization to another.

Combined with the fact that ships operating the Arctic environment are exposed to unique risks, the work within the IMO aimed not merely at harmonizing existing measures, but also at promoting standards for safety of navigation, recognizing that the best way to do so would be by an integrated approach. In order to build the work on already applicable conventions, it could be necessary to include all actors involved in international shipping. If states, classification societies, shipbuilders, international organizations and other stakeholders were to act independently, regulation and enforcement of shipping standards might become disjointed.

## 3.1 History and Background

In 1991, Germany suggested the inclusion of the following rule in Chapter II-1of the SOLAS Convention: [48]

> Ships intended for service in Polar Waters should have suitable ice strengthening for Polar conditions in accordance with the rules of a recognized classification society.

Member states largely supported Germany's recognition that vessels operating in polar waters needed adequate ice strengthening. The matter was referred to the IMO Sub-Committee on Ship Design and Equipment (DE), which appointed Canada to head an Outside Working Group (OWG) of technical experts to develop specialized rules for ships operating in polar waters. Between 1993 and 1997 the OWG met on annual basis in Germany, Sweden, Norway, Russia, the United States, Canada and Finland, seeking to harmonize technical rules for polar shipping and to create recommendatory provisions.[49] Included in the process were members of national and regional maritime authorities, academics, commercial shipping companies and classifications societies.

The result was the International Code of Safety for Ships in Polar Waters, submitted by Canada, on behalf of the OWG, to the DE's 41st Session in London in 1998. It set out rules for construction, navigation and equipment, with the aim 'to provide that all ship operations in Polar Waters meet internationally acceptable standards.'[50] The DE decided that the draft Polar Code should be sent to the IMO technical committees for further review.

In 1999, the 71st session of the Marine Safety Committee (MSC) reviewed the draft Polar Code. The 1998 Antarctic Treaty Consultative Meeting had already expressed its concern, maintaining that the draft failed to account adequately for the special conditions of the Antarctic, and adding that a Code in a proper form would be highly relevant also for the Antarctic region.[51]

The proposed Code had perhaps gone beyond the technical issues previously considered by the MSC and the DE. The area of application was one point of criticism. The Polar Code had been expanded to apply to

the Antarctic region as well – yet, it was argued, without sufficient consideration of the implications for that region. The draft Code also designated the Arctic and Antarctic as 'Special Areas' for the purposes provided for in MARPOL 73/78. As regards the Antarctic, this would to some extent duplicate the Protocol on Environmental Protection to the Antarctic Treaty[52] and the provisions in Annexes I and II of MARPOL 73/78. With respect to the Arctic, the draft Code was not considered to be the appropriate mechanism for designating the region as a Special Area under MARPOL 73/78. Furthermore, the draft Polar Code was inconsistent with international law of the sea in some important aspects. It required prior notification from ships entering the EEZ of a coastal state – an obligation not contained in UNCLOS. It also provided for separate requirements to, *inter alia*, Regulation 12-1, Chapter II-1 of the SOLAS Convention, by declaring a higher limit on the application of double bottoms than the one stipulated there.

Despite dissatisfaction from IMO member states on some of the solutions set forth in the draft Code, the MSC decided that the Polar Code should be further developed as recommendatory guidelines. However, it was to apply only to the Arctic, thus excluding Antarctica from the area of application. Furthermore, inconsistencies with international treaties would have to be removed, and the future Code should include only rules not already covered by other instruments.

The Marine Environment Protection Committee (MEPC), at its 48th session (October 2002) and the MSC, at its 76th session (December 2002), approved the recommendatory 'Guidelines for Ships Operating in Arctic Ice-covered Waters' (hereinafter the Guidelines). Member states were invited to bring the Guidelines to the attention of shipowners and other parties concerned with the operation of ships in Arctic ice-covered waters.

## 3.2 Elements and Structure of the Guidelines

The Arctic Guidelines include general, construction, equipment and operational parts, subdivided into chapters. A separate section explains the key terms used.

The Preamble lays down general principles of the aim and application of the Guidelines. Recognition of the Arctic as a significant area for international shipping is underlined.[53] It is emphasized that the Arctic environment imposes additional demands on ship systems, and that safe operation in such conditions requires special attention.

With regard to Part D – Environmental Protection and Damage Control – provisions are specifically made 'with due regard to the lack of waste reception and repair facilities, communications limitations, unique navigational and environmental hazards and limited response capabilities of available assistance (…)'.[54]

The Guidelines aim to address *additional* provisions deemed necessary for consideration beyond the existing requirements of any other applicable convention or code. They have not been developed as a stand-alone

document, but rather as a supplement. The SOLAS Convention is especially mentioned in Section 1.2 of the Preamble. But also the obligations of, *inter alia*, MARPOL 73/78, STCW and the ISM Code, are meant to be equally applicable for Arctic navigation.

It is emphasized that the provisions are *recommendatory*.[55] Also, they are not intended to infringe on national systems of shipping control.[56] Just what was originally intended, however, can be deduced from several indicators. The title suggests a binding nature, a 'Code'.[57] The first proposal to include an amendment to the SOLAS Convention also indicates that the regulations were meant to be compulsory. However, this issue was not decided at the MSC meeting in 1997.[58] The status of the regulations was to be determined later.

*Area of application*

The Guidelines relate to ships operating in Arctic ice-covered waters as defined in paragraph G-3.2, and while engaged in international voyages.

'Ship' is defined in Section 3.22 as 'any vessel covered by the SOLAS Convention'. This excludes from the area of application fishing vessels, pleasure yachts, wooden ships of primitive build, cargo ships of less than 500 gross tonnage and naval vessels,[59] whereas passenger ships and cargo ships of 500 gross tonnage and upward engaged on international voyages are thus subject to the Guidelines.

As regards geographical application, 'Arctic ice-covered waters' is defined in Section G-3.2 as:

> [waters] located north of a line from the southern tip of Greenland and thence by the southern shore of Greenland to Kape Hoppe and thence by a rhumb line to latitude 67º03'9 N, longitude 026º33'4 W and thence by a rhumb line to Sørkapp, Jan Mayen and by the southern shore of Jan Mayen to the Island of Bjørnøya, and thence by a great circle line from the Island of Bjørnøya to Cap Kanin Nos and thence by the northern shore of the Asian Continent eastward to the Bering Strait and thence from the Bering Strait westward to latitude 60º North as far as Il'pyrskiy and following the 60th North parallel eastward as far as and including Etolin Strait and thence by the northern shore of the North American continent as far south as latitude 60º North and thence eastward to the southern tip of Greenland; and in which sea ice concentrations of 1/10 coverage or greater are present and which pose a structural risk to ships.

However, certain areas are excluded – for example, all of the mainland coast of Norway, and the waters adjacent to the Kola Peninsula in Russia.


According to section G-3-2 paragraph 2 sea ice concentrations of 1/10 coverage or greater which pose a structural risk to ships is also an unconditional requirement in the definition of 'ice-covered waters'. Determining the precise level of ice coverage is of course difficult, and the Guidelines provide for no objective method in this respect. Also, no time-criterion is reflected, in contrast to Article 234 of UNCLOS, which stipulates that ice must be present 'most of the year'.

*Equipment*

Part B of the Guidelines is concerned with equipment for fire safety, lifesaving and navigation, and applies to both Polar Class and Non-Polar Class Ships.[60]

In view of the extreme Arctic climate, specific guidance is provided for the operation of each category. For fire safety it is, *inter alia,* specified that re-fuelling of ships should be carried out taking into account the special conditions imposed by low temperatures, and that fire-extinguishing systems should be designed or located so that they are not made inaccessible by ice or snow accumulation.[61]

As regards lifesaving, adequate protective clothing and thermal insulating materials are to be provided on all ships operating Arctic waters for all persons on board at any time.[62] There are also specified rules for personal and group survival kits. One important requirement is that all lifeboats carried by Polar Class ships should be of the fully enclosed type, to provide adequate shelter from the elements. Other ships should carry tarpaulins to provide complete coverage of the lifeboats.[63]

Concerning navigational equipment, it is noted that the performance standards and other applicable guidance for equipment in Chapter 12 of the Guidelines should be applied '*mutatis mutandis* as per SOLAS Chapter V'. The provisions of Chapter 12 are thus not to be considered as additional to the requirements stipulated under the SOLAS Convention. Equipment fitted or carried in compliance with Chapter V of the SOLAS Convention should rather be considered as part of the recommended equipment, complemented by relevant provisions of the Guidelines. All Polar Class ships are to be provided with an automatic identification system (AIS) for ships using the broadcast mode.[64] Furthermore, all ships are to carry equipment capable of receiving ice and weather information charts.[65]

*Operational procedures*

Part C of the Guidelines pays special attention to operational procedures, crewing and emergency equipment. All ships operating in Arctic ice-covered waters are to carry an operating manual and a training manual for all ice navigators on board.[66] With regard to crewing, the most important provisions address the Ice Navigator, who is defined as:

> any individual who, in addition to being qualified under the STCW Convention, is specially trained and otherwise qualified to direct the movement of a ship in ice-covered waters.[67]

An Ice Navigator 'should have documentary evidence of having satisfactory completed an approved training program in ice navigation'.[68] The training programme should provide the knowledge required for navigating a vessel in Arctic ice-covered waters – including ice indications, ice manoeuvring, the use of ice forecasts, atlases and codes, ice-breaking operations and effect of ice accretion on vessel stability. The rules in Chapter 14 of the Guidelines complement Section 1.2, which specifies that all ships operating in Arctic ice-covered waters should carry at least one certified Ice Navigator.[69]

Finally, Part D of the Guidelines contains rules on environmental protection and damage control. According to Section 16.1.2, there should be procedures for the protection of the environment both in the ship's operating manual (for normal operations) and in the Shipboard Oil Pollution Emergency Plan according to MARPOL 73/78[70] (for accident conditions).

*Polar Class and Non-Polar Class Ships*

One important aspect of the Guidelines is the introduction of ship classes. The Guidelines differentiate between Polar Class ships and Non-Polar Class ships; to the latter only Part B and C of the Guidelines are to apply.[71] Part A, concerning construction provisions, is to apply to Polar Class ships only.[72]

A Polar Class Ship is defined in Section G-3.18 as 'a ship for which a Polar Class has been assigned'. Taking into consideration the seasonal changes and thus operational needs of the Arctic Ocean, Section 2.7 of the Preamble addresses the development of Polar Classes for ships. The

Guidelines introduce a system developed to designate differing levels of capability for vessels navigating in Arctic waters. Seven Polar Classes are listed, based on environmental conditions. Polar Class 7 is the least capable, limited to vessels operating in summer/autumn in thin first-year ice (with old-ice inclusions), whereas ships of Polar Class 1 are to be capable of operating year-round in all Arctic ice-covered waters.

*Relation to IACS rules*

Sections P-2.7 and 2.1.1 of the Guidelines make reference to the parallel effort undertaken by the International Association of Classification Societies (the IACS).[73] Furthermore, according to Section 1.1.4, all Polar Class ships and their equipment should be:

> designated, constructed and maintained in compliance with applicable national standards of the Administration or the appropriate requirements of a recognized organization which provide an equivalent level of safety for its intended service.

The explicit reference to the IACS underlines the awareness of existing standards for polar ships and the continuous efforts made by private actors and industry. As recently as 1 July 2006, the IACS adopted the 'Unified Requirements for Polar Ships'.[74] They are expected to enter into force in March 2008. Thus, all IACS members will incorporate the IACS Polar Class Rules into their rules in the near future. These rules should be considered supplementary to the Guidelines in technical matters with regard to hull and machinery. In order to be considered for a Polar Class notation, as listed in the Guidelines and the IACS Unified Requirements, a ship must meet specific technical requirements. Throughout the IACS rules, the Polar Class notation is used in order to indicate the differences between classes with respect to operational capability and strength.[75] The rules are divided into three sets of requirements: Polar Class Descriptions and Application,[76] Structural Requirements for Polar Class Ships[77] and Machinery Requirements[78] for Polar Class Ships. The recent adoption of these regulations must be seen as a significant step forward in the harmonization process.

The IACS Unified Requirements have been under development for many years; they cover most of the original Polar Code that was submitted to the IMO in March 1998. According to Victor Santos-Pedro of Transport Canada, the IMO Guidelines today cover the remaining 1/5 of the draft.[79] Consequently, most of the original draft Polar Code is now utilized, either as recommendatory rules by the Guidelines, or as rules currently applied by a classification society.

In contrast to the Guidelines, the IACS Unified Requirements are based on both Arctic and Antarctic conditions for navigation. Section I1.1 of the IACS regulations applies the Unified Requirements to ships intended for navigation in ice-infested 'polar waters (...)', without any geographical limitation. Here, practice seems to have prevailed over politics.

Industry and the classification societies have played a major role with regard to the regulations set out in the Guidelines. Classification is indeed only one element in the regulatory network of maritime safety. However,

as early as 1969, the IACS was accorded consultative status in the IMO. It stands as one of the few non-governmental organizations able to develop and apply rules for the safety of navigation. With regard to Arctic regulations, this status is affirmed by specific references in the Guidelines, and by the long-standing experience and contributions of the IACS in the development of safety standards.

# 4 In Quest of Safer Arctic Navigation

The Guidelines do reflect some of the narrowness of the standards-setting approach of maritime safety regulation. The rules have been designed with regard to Arctic conditions only. They will most likely prove to offer important guidance for all actors involved in navigation in the High North. Nevertheless, several questions remain:

- Are there any shortfalls in the current arrangement?
- Are the Guidelines applied in practice?
- Should they be applied for the Antarctic as well?
- Should they be made mandatory? If so, what legal and practical impediments are likely?

## 4.1 Substantial Shortcomings

The current Guidelines do have certain substantial shortcomings. There exists no model course for ice navigators, or qualification scheme for individuals who are to operate vessels in ice-covered waters. According to Section 1.2.1, all ships operating in Arctic ice-covered waters are to carry at least one ice navigator. The term 'Ice Navigator' is statutorily defined in Section G-3.10 as a person qualified under the STCW Convention, as well as being specially trained and otherwise qualified to navigate in polar waters. Section 14.2 of the Guidelines stipulates further that the Ice Navigator should have documentary evidence of having satisfactorily completed an approved training programme in ice navigation. Section 14.2 is, however, phrased in rather broad terms, stipulating only that a training programme should provide 'knowledge, understanding and proficiency required for operating a ship in Arctic ice-covered waters (…)'.

Even though note is taken of the severe and special circumstances faced by ship operators in ice-covered waters, provision could easily have been made for a more detailed training programme. Moreover, there is no requirement of documented navigation service in Arctic ice conditions. Relevant experience, similar to Section 26 (3)(b) of the *Canadian Arctic Shipping Pollution Prevention Regulations,* should perhaps be a basic requirement. Under Canadian legislation, an Ice Navigator must

> have served on a ship in the capacity of master or person in charge of the deck watch for a total period of at least 50 days, of which 30 days must have been served in Arctic waters while the ship was in ice conditions that required the ship to be assisted by an icebreaker or to make manoeuvres to avoid concentrations of ice that might have endangered the ship.

Moreover, the Guidelines fail to provide sufficient regulations concerning icing. This is a typical phenomenon in the Arctic Sea, when cold temperatures result in spray blown off the sea freezing immediately on contact with a vessel. If the ice is not regularly removed, it will build up on the ship's structure and may cause the vessel destabilize or capsize.

Section 10.4 of the Guidelines determines that '[c]omponents of the fire-fighting system which may be exposed to icing which could interfere with the proper functioning of that component should be *adequately protected*' (emphasis added). Moreover, Section 11.5.3 reads that '[i]ce accretion should be regularly removed from the lifeboats and launching equipment to ensure ease of launching when required [and that an] icing removal mallet should be available in the vicinity of the lifeboats'.[80] This serious hazard of ice-infested navigation should nevertheless have been regulated more extensively within the Guidelines. The Guidelines should have been more explicit on how best to prevent, mitigate and avoid sea-spray icing of vessels, for instance by referring to the environmental and vessel characteristics that determine the potential for such icing – like wind speed, air temperature and ship speed. Also, provision could have been made for alternative ice-removal equipment and how to protect vital components on deck.

In this regard, it may also be queried why only Polar Class Ships are subject to the important provisions of structures, subdivision and stability in Part A, Chapter 2 and 3. Surely, also for vessels without any Polar Class notation, account should be taken of the effect that, for instance, icing may have in stability calculations – see Section 3.1.1 of the Guidelines.

## 4.2 Still a Two-tier Safety Regime – Diversity in Requirements?

As already noted,[81] the Guidelines must be seen in relation to the IACS Unified Requirements for Polar Ships. Section 1.1.4 of the Guidelines expressly provides: '[a]ll Polar Class ships (…) should be designed, constructed and maintained in compliance with applicable national standards of the Administration or the appropriate requirements of a recognized organization which provide an equivalent level of safety for its intended service.'

According to Section I 2.14 of the IACS regulations '[t]he stem and stern frame are to be designed *according to the requirements of each member society*' (emphasis added). Furthermore, Section I 2.15.2 of the regulations provides that the '[l]oad definition and response criteria are to be *determined by each member society*' (emphasis added).

By referring to the rules of individual classification societies, the IACS Unified Requirements show that the process of harmonization is not fully accomplished. For one thing, the examples above show that a certain margin of leeway is accorded to each member society. For this reason, Polar Class ships navigating in Arctic waters may still be certified under differing standards.

## 4.3 Legal Deficiencies of Non-binding Instruments

According to Section 1.3 of the Guidelines:

> their wording [i.e. of the Guidelines] should be interpreted as providing recommendations rather than [in] a mandatory direction.

Further, the Guidelines merely invite the member governments to bring the regulations

> to the attention of shipowners, ship designers, shipbuilders, ship repairers, equipment manufactures and installers and all other parties concerned with the operation of ships in Arctic ice-covered waters.[82]

By definition, such recommendations and guidelines of international organizations are not legally binding. The use of non-binding instruments within international law of the sea is, however, increasing. The multiplicity of regulatory mechanisms reflects both the structural diversity of international law-making and the universal desire for international instruments in complex matters. Moreover, adopting regulations as voluntary rules avoids the need for lengthy procedures and the risk of getting only a limited number of ratifications. However, with regard to the Guidelines, universal consensus proved to be just as difficult and time-consuming to negotiate as a treaty. The decision to agree on non-binding regulations for Arctic navigation was thus perhaps due more to the complexity of the subject matter and the lack of consensus over the wording of precise technical rules.

Still, the Guidelines aim at enhancing their effectiveness through national and international implementation mechanisms. The regulatory paradigm of Arctic shipping includes various actors, under which the ultimate effectiveness not only depends on the power of the IMO to develop universal standards, but largely also upon cooperation from all involved stakeholders – including states, classification societies, shipowners and seafarers.

As regards application, national approaches may of course vary. Since no follow-up procedures are provided for in the Guidelines, actual application is evident only through state practice and the extent to which international shipping complies. Have the member states in fact brought the Guidelines to the attention of the relevant actors? And do the Guidelines have any legal impact on national law?

As of today, no state has implemented the regulations through binding legislation: they remain international *recommendatory* provisions only. In that respect, their effect stands untested. Domestic codification involves great strains and expense. Without a legal obligation to do so, codes of conduct are rarely given compulsory status.

Despite the character of the Guidelines as non-binding, the normative force of the provisions is contingent upon aspects such as the generality or specificity of their content. Even express disclaimers, like that contained in Section 2.8 of the Guidelines, that they ‘are not intended to

infringe on national systems of shipping control', cannot preclude the possibility of practical implementation – for instance, that they are used for the purpose of training by ice captains and navigation instructors.

One example that illustrates the effectiveness of non-binding regulations is the IMO 'Guidelines for vessels with dynamic positioning systems'.[83] Dynamic positioning is a system for automatically maintaining a ship's position and heading by using her own propellers and thrusters. The system is much used in the offshore oil industry. Based on the IMO guidelines, classification societies have issued their own rules for dynamic positioned ships by corresponding class notations. If adopted in a timely manner and substantially relevant, as with that case, regulations of a non-binding nature may also have important practical effects.

## 5 Bi-polar Relevance?

The Antarctic regime aims at covering all activities in the south polar region. It has demonstrated that cooperation among states may be achieved and maintained despite the existence legal controversies.[84] However, it may be of less importance to the Arctic as a model, for at least three reasons. Firstly, the involvement of non-regional states is negligible in the Arctic, but is of high importance in the Antarctic. Secondly, the strategic importance of the Arctic is today far greater than the case of the Antarctic. And finally, the Arctic area is inhabited, while in Antarctica there are scientific bases, etc., but no permanent human settlement.

Nevertheless, the question can be raised whether the Guidelines may become applicable also to shipping in the Antarctic. Regulation of shipping safety has been on the agenda of Antarctic Treaty Parties for years. Norway and the Council of Managers of National Antarctic Programmes (COMNAP) introduced separate working papers at the Antarctic Treaty Consultative Meeting held in Tromsø in 1998, regarding the IMO draft Polar Code. It was noted that the OWG 'had not fully taken cognizance of the environmental, operational, legal and political differences between Arctic and Antarctic'.[85]

As mentioned, the IMO then decided to exclude the Antarctic from the area of application. The ATCM held in Lima in 1999 decided to give priority to the issue of shipping and to convene a meeting of experts to develop draft guidelines for Antarctic navigation. This meeting was held in London, April 2000, and it was decided to submit a series of recommendations to the next ATCM, in July 2000.[86]

Here, some Antarctic Treaty parties expressed the view that it would be better to postpone the Antarctic shipping guidelines until the IMO had finalized its work on Arctic regulations. Others felt it more appropriate to continue the work, with a focus on specific Antarctic aspects.[87] The ATCM in St. Petersburg decided to further consider the issue at the next meeting.[88]At that next ATCM, held in 2001 in Warszawa, it was decided to await the completion of the IMO Guidelines and to consider the issue in detail at the next meeting in Madrid. In short, the issue was postponed from meeting to meeting, and from one year to the next.

At ATCM XXVII in Cape Town in 2004, it was decided to transmit revised guidelines to the IMO with a request that they be considered at the earliest opportunity.[89] Only small revisions to the Guidelines were made in the proposal forwarded to the IMO. As of February 2007, the proposed revision of the Guidelines is still pending consideration by the IMO.

As noted, there are differences between the two polar regions, also with regard to shipping. Vessel operations in the Southern Ocean basically involve passenger and re-supply ships. Commercial transport is far less important, as is transit. Moreover, navigational conditions differ significantly. Sea-ice differs between the two regions, primarily because of contrasting geography. Due to the semi-enclosed characteristics of the Arctic, the sea-ice tends to stay in the cold Arctic water. The situation in Antarctic is almost the opposite: Antarctic is a land mass surrounded by sea. Open sea allows the forming sea-ice to move more freely, which in turn means that almost all the sea-ice formed during the Antarctic winter melts during the summer.

Nevertheless, the process within the Antarctic Treaty Consultative Meetings now shows the change of attitude, for example as to applying the Guidelines also to Antarctic waters albeit in somewhat modified form. For many reasons, the IMO should give serious consideration to this development and the proposed amended draft of the Guidelines.

Although patterns and types of transportation differ between the Arctic and the Antarctic, the substantial elements of the Guidelines will be important also for Antarctic shipping. The purely formal changes suggested by the Consultative Meeting in Cape Town prove that the Guidelines of today are generally acceptable to the Antarctic Treaty Parties. Thus, the Guidelines may serve as an important regulatory supplement to Antarctic navigators as well. As long as they do not challenge the delicate sovereignty balance in the Antarctic, *technical* requirements for the ships involved in the Antarctic navigation, with due regard for the practicalities of that navigation (base supply etc.), may stand a good chance of being positively received in Antarctic circles.

Moreover, the IACS Unified Requirements apply to *all* 'polar' ships and are not restricted to Arctic vessels. The process within the maritime industry has thus continued, regardless of the previous desire for postponement by the Antarctic Treaty Consultative Parties and the IMO decision to regulate Arctic navigation only. Despite the differences in shipping activity in the Arctic and the Antarctic, navigation in both polar regions exposes crew, vessel and the environment to many of the same ice-related risks and challenges.

## 6 Binding Arctic Regulations?

Even though the Guidelines may have positive practical effects, it may still be questioned whether they are a satisfactory substitute for treaty law. What are some possible repercussions for introducing mandatory regulations?

Many codes of conduct are incorporated in conventions by means of amendments, upon which they become binding on signatory states. From a legal-technical perspective, the introduction of mandatory Arctic regulations could be easily achieved. One possibility could be to use the 'ISM model' and adopt them, as first intended, under the SOLAS Convention.

Binding Arctic regulations may have foreseeable scenarios with regard to enforcement and introduction. As regards the latter, it is important to stress that, on a global scale, Arctic shipping is a marginal activity. Moreover, many non-regional states will have to be involved in any ratification process. Among IMO members it may be difficult to mobilize the necessary interest from flag states that are not much involved in Arctic shipping. Also, the world merchant fleet consists of many vessels sailing under flags of convenience. Such arrangements may hamper the effectiveness of important conventions – such as a binding legal regime for Arctic shipping.

## 6.1 Coastal State Regime in the Arctic

Binding rules must take cognizance of the jurisdictional issues yet to be resolved in the Arctic Ocean. As mentioned, the jurisdictional map of the Arctic Ocean is still a work in progress. Several issues remain to be addressed by the Arctic coastal states in order to achieve equitable projections of national sovereignty and jurisdiction. The Arctic is not unusual in this respect: all over the globe there are numerous unresolved maritime limits and boundaries .

However, there is a legal incentive for Arctic coastal states to implement a regional framework of cooperation that would enable them to devise effective solutions to shared problems, such as shipping. Part IX of UNCLOS advocates cooperation among coastal states that border enclosed or semi-enclosed seas. Specifically, Part IX encourages states to work together, through the involvement of other interested states or organizations, in the protection and preservation of the marine environment. Arctic States would probably benefit by maintaining an ongoing and wide-ranging dialogue with a view to harmonizing rules and standards.

Of course, it is difficult to predict the conduct of coastal states regarding the introduction of binding regulations. The Guidelines' area of application today covers the territorial waters of all states that border the Arctic Ocean. Cooperation in the Arctic without the consent of *all* regional states will be difficult.

Having said this, the remaining issue of defining coastal state jurisdiction in the Arctic Ocean is not by itself in contradiction with a binding regime for polar shipping. All Arctic States are already obliged by international treaties that, to a great extent and if implemented, impose obligations also within their territorial waters and economic zones.

## 6.2 Control of Safety Regulations

### *6.2.1 Port State Control*

With regard to the enforcement of safety standards, the role of the flag state is of crucial importance. A ship shall always carry a flag of some state – normally the flag of the state in whose register the ship is entered. In addition to identifying the nationality of the ship, primary responsibility for legislative and enforcement jurisdiction of the ship rests with the flag state.[90]

Nevertheless, introducing a compulsory regime will have to rely largely on the emerging importance of port state control. By creating a sort of universal jurisdiction, Article 218 of UNCLOS represented a novel development.[91] A port state has the power to undertake investigations and prosecute discharge violations *wherever* they have taken place beyond national jurisdiction. Extension of port state jurisdiction is also provided for in Article 211(3) of UNCLOS, where states are authorized to 'establish[ed] particular requirements for the prevention, reduction and control of pollution of the marine environment' as a condition for entry into their ports or internal waters, subject only to the requirement of publicity and communication to the IMO. Relating to this, note should be taken of the 1982 Paris Memorandum of Understanding on Port State Control in implementing Agreements on Maritime Safety and Protection of the Marine Environment.[92] The Paris MOU applies between the maritime authorities of 25 countries, including all Arctic states. The authorities commit themselves to maintaining an effective system of port state control to ensure that foreign merchant ships calling at a port of any of the states concerned comply with the standards stipulated in such relevant instruments as the 1966 Convention of Load Lines, MARPOL 73/78, the STCW Convention, the SOLAS Convention and the ISM Code.

The reason for this trend is the determination of coastal and port states to be actively involved in improving safety at sea and the protection of the marine environment. In Arctic waters, port state control will be practical and relevant, except for ships in transit. Long-distance voyages in foreign maritime zones will give Arctic port states both the incitement and the opportunity to monitor compliance with international regulations. Even though primary responsibility for the effective application of legal standards rests with the authorities of the flag state, port state control has proven to support a regional approach in preventing substandard vessels from operating.

### *6.2.2 Maritime Traffic Management*

Compulsory Arctic regulation will also depend heavily upon active monitoring and navigational advice for vessels. Maritime traffic has for a long time been managed by means of Vessel Traffic Services (VTS). According to Annex 1 to IMO Resolution A.857, a VTS is

> a service implemented by a competent authority, designed to improve the safety and efficiency of vessel traffic and to protect the environment. They should have the capability to interact with the traffic and to respond to traffic situations developing in the VTS area.

There are two main categories of such measures: surveillanced and non-surveillanced. Surveillanced systems consist of one or more land-based sensors (like a radar or an Automatic Identification System), which output their signals to a central location where operators monitor and manage vessel traffic movements. Non-surveillanced systems consist of reporting points at which ships are required to report their identity, course and speed etc. to the monitoring authority. They encompass a wide range of techniques and capabilities aimed at preventing accidents.

AIS[93] will not be sufficient with regard to all potential vessel movements within the Arctic. The development of Long Range Identification and Tracking (LRIT) is more relevant. At its 81st session in May 2006, the Maritime Safety Committee adopted new regulations for LRIT under chapter V of the SOLAS Convention. LRIT will be introduced as a mandatory requirement for all passenger ships and cargo ships of 300 gross tonnage and upwards engaged in international voyages.[94] The regulations maintain the right of the flag state to protect appropriate information about its own ships, while giving coastal states access to information about ships sailing off their coasts. The main difference between this and the AIS is the range. Under the SOLAS regulations, coastal states are entitled to receive information about ships navigating within a distance of 1000 nautical miles off their coast.[95]

This measure will enable coastal states to better identify and enhance compliance by vessels. Installation of the necessary equipment should, however, be made mandatory upon the introduction of binding Arctic regulations – a process which involves both legal and financial obstacles not addressed in the present Guidelines. Even though such difficulties should not obscure the environmental and safety reasons, it is a fact that the development, priority and extent of such technology vary significantly from state to state.

# 7 Conclusions and Recommendations

The IMO decision to adopt specific Guidelines for Arctic shipping underlines both the interest and the necessity to improve navigation safety and protection of the polar marine environment. The Guidelines represent an important step towards improved regulatory framework for an emerging segment of global shipping, the ice-infested waters.

The current Guidelines do contain some consequential provisions for Arctic navigation, for instance the introduction under international law of polar classes for ships and the requirement to carry an ice navigator on board when operating in ice-covered waters. It is nevertheless the opinion here that the Guidelines can be further improved, for instance by more detailed prescriptions for the qualification of the ice navigator. Moreover, regulation of specific ice-infested risks, such as icing, is not sufficiently provided for.

As noted above, the Guidelines must be considered in relation to the IACS Unified Requirements for Polar Ships. This is not only affirmed by an explicit reference in the text of the law; knowledge of the substantial rules with regard to hull and machinery for each and every polar class

ship can only be achieved by studying the classification rules. The Guidelines have thus not been developed as a stand-alone document: they represent only one segment of a harmonization process aimed at coordinating standards for the operation and construction of vessels navigating the Arctic. It must be noted that this process is not fully accomplished – the Unified Requirements for Polar Ships accord each member society a certain margin of leeway; moreover, they are not the only instrument adopted by classification societies to deal with polar navigation. It is also important to follow closely the development of rules by individual classification societies, such as Det norske Veritas' 'Winterization-rules', which cover other aspects of ice-navigation than the Unified Requirments.

Should the Guidelines also be applied to the Antarctic? There are differences between the two polar regions with regard to navigation. It is nevertheless the conclusion here that the more recent view of the Antarctic Treaty Parties to apply the Guidelines to Antarctic shipping as well, should be endorsed by the IMO. Technical requirements for ships involved in Antarctic navigation are necessary, and the provisions of the Guidelines do not appear to challenge the delicate sovereignty balance in the Antarctic. In favour of this view is also the fact that the IACS Unified Requirements apply to all 'polar' ships, with no geographical limitation indicated.

In a non-binding form, the Guidelines' contribution to maritime safety in ice-covered waters seems rather limited. The regulations impose no legal obligations upon the member governments. In consequence, no state has yet incorporated the Guidelines through national legislation.

However, the ultimate practical impact of the regulations depends on national acceptance and actual application, and not only which legal status they acquire upon adoption in global fora. Practical implementation of the Guidelines is, for instance, observed in Norway, where the regulations are used for the purpose of training by navigation instructors. Other examples cited above indicate that non-binding instruments very well might have a normative impact.

Having said this, another question is whether there is a need to adopt binding regulations. The conclusion here is that such regulations would best fit as an amendment to the SOLAS Convention. It is hard to disunite the link between safety *and* environmental protection, and the Guidelines might also serve their purpose well as an amendment to MARPOL 73/78. The SOLAS Convention is nevertheless generally regarded as the key international treaty concerning the safety of merchant ships.

However, it is stressed that adopting the Guidelines as a binding instrument will have foreseeable repercussions under international law. There is already an international legal framework for a binding legal regime for shipping in the Arctic. Although there is currently no treaty that deals with the region as a whole, the Arctic Ocean is under the regime of the law of the sea. The uncertain approach with regard to Article 234 of UNCLOS was emphasized above, but both Russia and Canada have already adopted extensive prescriptions concerning requirements for

construction and operation of vessels in their ice-covered waters. Moreover, the SOLAS Convention and the ISM Code certainly address many of the same safety aspects as the Guidelines. It is the opinion here that binding Guidelines would offer an added value, both for environmental and safety reasons. A similar example of such *lex specialis* is the regulation of design and safety for high-speed crafts, now reflected in Chapter X of the SOLAS Convention.[96] It is of course difficult to predict the conduct of both regional Arctic coastal states and non-regional flag states regarding the introduction of binding Guidelines. In that respect, the development of legal enforcement mechanisms will remain of crucial importance.

## Notes

[1] See the Arctic Council webpage: http://www.arctic-council.org/.

[2] Scoresby, William, 'An Account of the Arctic Regions With a History and Description of The Northern Whale-Fishery', p. 28.

[3] Brigham, Lawson, 'The Emerging International Polar Navigation Code: Bipolar relevance?', p. 245.

[4] Bob Gorman of *Enfotec Technical Services & Tom Paterson, Canada*. Presentation *Arctic Marine Transport Workshop*, 28–30 September 2004.

[5] Seven ports along the route are open all year round: Murmansk on the Kola Peninsula, Dudinka in Yenisey, Petropavlovsk in Kamchatka, and Magadan, Vanino, Nakhodka and Vladivostok on the Pacific seaboard of the Russian mainland.

[6] Kryukov and Moe, 'Hydrocarbon Resources and Northern Development', p. 125.

[7] Sverre Bjørn Svenning, *The International Shipping Community and Oil Transportation in the North, Russia,* in ARCOP Report of Workshop 7, pp. 31–32.

[8] See Roginko, Alexei and Matthew LaMourie, 'Emerging Marine Environmental Protection Strategies for the Arctic', in *Marine Policy*, Volume 16 Number 4 July 1992, pp. 259–27**.**

[9] Interview with Senior Research Fellow Douglas Brubaker, Fridtjof Nansen Institute, 13 January 2007.

[10] Published in *League of Nations Treaty Series,* Vol. 2, p. 7.

[11] UN doc. A/CONF.62/122. Reprinted in *ILM*, Vol. 21, 1982, pp. 1,26 l ff.

[12] The Rovaniemi Declaration on the Protection of the Arctic Environment, June 14, 1991.

[13] Examples of such cooperation are found for instance in Articles 63, 65, 200, 207, 208, 210, 211 and 212.

[14] Alan E. Boyle, 'Marine pollution under the Law of the Sea Convention', *American Journal of International Law*, Vol 79, No 2, April 1995, pp 347–372, p. 370.

[15] See Gold, *Gard Handbook on Protection of the Marine Environment*, p. 160.

[16] Boisson, *Safety at Sea*, p. 31.

[17] International Convention for the Safety of Life at Sea, London, 1 November 1971. Published in *UNTS*, Vol. 1184, p. 2.

[18] International Convention on Load Lines, 1966. Reprinted in *RMC*, Vol. I.3.50.

[19] Convention on the International Regulations for Preventing Collisions at Sea, 1972, as amended. Reprinted in *RMC*, Vol. I.3.250.

[20] Reprinted in *RMC*, Vol. I.3.90.

[21] Reprinted in *RMC*, 4. Vol. loose-leaf service (London: Lloyd's Press, 1990–2005) Vol. I.7.160/170.

[22] Reprinted in *ILM*; Vol. 12, 1973, pp. 1,319ff (Convention) and ILM, Vol. 17, 1978, pp. 546ff (Protocol).

[23] Gold, Edgar, *Gard Handbook on Protection of the Marine Environment*, p. 202.

[24] Inter-Governmental Maritime Consultative Organization, Basic Documents, Vol. 1 (1979 ed.), Vol. 2 (1969 ed.).

[25] IMO Resolution A. 741(18) of 4 November 1993.

[26] Valenzuela, 'Enforcing Rules against Vessel-Source Degradation of the Marine Environment: Coastal, Flag and Port State Jurisdiction', p. 502.

[27] Lamson, Cynthia, 'Arctic Shipping, Marine Safety and Environmental Protection', in *Marine Policy*, Volume 11, 1987, pp. 3–4.

[28] See McRae, D. and Goundrey, D., 'Environmental Jurisdiction in Arctic Waters: The Extent of Article 234', in *University of British Columbia Law Review*, Volume 16, pp. 218–222.

[29] See Brubaker, Environmental Protection of Arctic Waters – The Northern Sea Route, p. 31.

[30] According to UNCLOS Article 55, '[t]he exclusive economic zone is an area beyond and adjacent to the territorial sea (…). Article 57 states that '[t]he exclusive economic zone shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured'.

[31] 33 United States Codes § 2701–2761 (1990).

[32] 42 United States Codes §§ 9601–9657 (1980).

[33] 33 United States Codes §§ 151–160 (1948) as amended.

[34] 43 United States Codes §§ 1651–1655 (1973).

[35] 33 United States Codes §§ 1221–1236 (1978).

[36] 33 United States Codes §§ 407.

[37] 16 United States Codes c.32 (1972).

[38] 33 United States Codes §§ 1901–1903

[39] Gold, Edgar, *Gard Handbook on Protection of the Marine Environment*, p. 369.

[40] *Ibid*.

[41] Brubaker, Douglas, *The Russian Arctic Straits*, pp. 58–60 and Gold, Edgar, *Gard Handbook on Protection of the Marine Environment*, p. 320.

[42] Reprinted in *ILM*, Volume 9 (1970), pp. 543–552.

[43] Arctic Shipping Pollution Prevention Regulations, *CRC*, 1978, chapter 356, as amended.

[44] Lov om Statskontrol med Skipeds Dyktighed of 9 June 1903. Published in *Norges Lover*.

[45] Act No. 627/2002.

[46] Act No. 476/1993.

[47] Lov om Kort og Matrikelstyrelsen.

[48] IMO doc. MSC 59/30/32 (12 April 1991).

[49] Report of the MSC on the 68th session. IMO doc. MSC 68/23 (12 June 1997), Section 20.5.

[50] International Code of Safety for Ships in Polar Waters. IMO doc. DE 41/10, Annex 1, p. 3.

[51] See Final Report of the 22nd ATCM in Tromsø, 25 May–5 June 1998, paras. 85–95.

[52] Protocol on Environmental Protection to the Antarctic Treaty, 4 October 1991. Text reprinted in *ILM*, Volume 30, p. 1461. The Antarctic Treaty published in *UNTS*, Vol. 402, pp. 71–102.

[53] See Preamble Sections 1.1, 1.2, 2.3, 2.5 and 2.6.

[54] Section 16.1.1.

[55] The Guidelines Preamble Section 1.3.

[56] The Guidelines Preamble Section 2.8.

[57] Referring to the 'International Code of Safety for Ships in Polar Waters', as submitted to the DE's 41st session. Note 51 above.

[58] Report of the MSC on the 68th session. IMO doc. MSC 68/23 (12 June 1997), Section 20.5.

[59] See Regulation 3, Chapter I of the SOLAS Convention.

[60] Section 1.1.3.

[61] Sections 10.1 and 10.3.

[62] Section 11.1.1.

[63] Section 11.5.1.

[64] Section 12.7.

[65] Section 12.12.1.

[66] Section 13.1.

[67] Section G-3.10.

[68] Section 14.2.

[69] Section 1.2.1.

[70] Regulation 26 of Annex I of MARPOL 73/78 requires that oil tankers of 150 tons gross tonnage or more and all ships of 400 tons gross tonnage or more carry an approved shipboard oil pollution plan (SOPEP). The OPRC Convention, 1990, also requires such a plan for certain ships.

[71] Sections 1.1.2 and 1.1.3.

[72] Section 1.1.2.

[73] IACS is formed by ten of the more than 50 organizations worldwide which define their activities as providing marine classification. The members are American Bureau of Shipping (ABS), Bureau Veritas (BV), China Classification Society (CCS), Det norske Veritas (DNV), Germanischer Lloyd (GL), Korean Register of Shipping (KR), Lloyd's Register (LR), Nippon Kaiji Kyokai (NK), Registro Italiano Navale (RINA) and Russian Maritime Register of Shipping (RS), in addition to two associated members, Hrvatski registar brodova (CRS) and Indian Register of Shipping (IRS).

[74] According to Regulation I/1.1, the IACS rules apply to ships constructed of steel and intended for navigation in ice-infested polar waters, except ice-breakers. The Unified Requirements apply only to ships contracted on or after 1 July 2007; see reference from section I/1.1.

[75] Section I/1.2.2 of the IACS Unified Requirements for Polar Ships.

[76] Regulation I 1.

[77] Regulation I 2.

[78] Regulation I 3.

[79] Telephone interview with Santos-Pedro, 1 November 2006.

[80] See also Sections 11.6.1 and 12.10.1 of the Guidelines.

[81] See Section 3.2 above.

[82] See MSC/Circ. 1056, MEPC/Circ. 399. IMO doc. 23 December 2002.

[83] IMO doc. MSC/Circ. 645.

[84] The legal regime of Antarctic centres on the Antarctic Treaty, the Convention for the Conservation of Antarctic Seals (June 1, 1972, text reprinted in *ILM*, Volume 11, 1972, pp. 251–261), the Convention on the Conservation of Antarctic Marine Living Resources (May 20, 1980, text reprinted in *ILM*, Volume 19, 1980, pp. 841–859) and the Protocol on Environmental Protection to the Antarctic Treaty.

[85] ATCM XXII, Final Report, para 86.

[86] ATCM XXIV/WP 26.

[87] ATCM XXIV, Final Report, paras 89–90.

[88] ATCM XXIV, Final Report, para 92.

[89] ATCM XXVII, Final Report, Decision 4.

[90] Article 92 of UNCLOS.

[91] Valenzuela, Mario, 'Enforcing Rules against Vessel-Source Degradation of the Marine Environment: Coastal, Flag and Port State Jurisdiction', p. 496.

[92] *RMC*, Volume I.2.100. The Paris MOU on Port State Control entered into force on 1 July 1982.

[93] See Regulation 19, chapter V of the SOLAS Convention – *Carriage requirements for ship borne navigational systems and equipment*. The regulations provide that navigational equipment shall be carried on board ships, according to ship type. In 2000, IMO adopted new requirements under chapter V for all ships to carry AIS's capable of providing relevant information between ships and to coastal authorities automatically.

[94] The regulations are expected to enter into force on 1 January 2008 and will apply to ships constructed on or after 31 December 2008.

[95] Another distinction is that the AIS is a broadcast system while information derived from LRIT will be available only to recipients who are entitled to receive such information. Furthermore, the SOLAS regulations also provide for safeguards concerning confidentiality of the data collected.

[96] This amendment makes the High Speed Craft Codes of 1994 (adopted by the MSC by resolution MSC.36(63) and 2000 (adopted by the MSC by resolution MSC.97(73) mandatory (see Chapter X, Section 1.1 of Regulation 3 of the Consolidated text of the annex to the SOLAS Convention and the 1988 Protocol relating thereto).

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