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## International law and governance of the arctic in an era of climate change

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## 2.1 INTRODUCTION

This chapter focuses on navigational and shipping issues in the Arctic Ocean. The starting point is the operating environment itself and, in particular, the prospect of an ice-free Arctic summer, a season covering the period between July and October, as predicted since 2010. In September 2012, scientists revised these predictions to project that an ice-free summer, at least free from multi-year ice, is likely in four years.<sup>2</sup> This prediction has been conformed and since 2015 vast areas of the Central Arctic Ocean are ice-free during the summer. This means shipping forecasts must be revised as commercial navigation is expected to occur during the summer, although some Arctic States have a year-round navigation capability, in particular for high-class ice-breakers.

The ice-free image often conveyed by the media masks the reality of navigation in the Arctic environment: an ice-free summer will not make Arctic navigation comparable to its equivalent in non-polar regions.<sup>3</sup> Navigation can be expected to remain hazardous during the relevant months, while impossible during the rest of the year except for high polar class vessels. The term 'ice-free' is misleading; a better term would be 'open water' (emphasising the navigable space). Ice is still likely to be present in that 'open water', albeit in limited amounts, and its movement may be unpredictable, raising safety

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1 For main Arctic routes that are mentioned in this chapter, please check on table of maps, map 2.

2 Scientists predict seasonal ice-free Arctic by 2020, <http://www.washingtonpost.com/blogs/ezra-klein/wp/2012/09/20/when-will-the-arctic-be-ice-free-maybe-four-years-or-40/>; Senate (Canada), Standing Senate Committee on Fisheries and Oceans, 'The Coast Guard in Canadas Arctic: Interim Report, Fourth Report,' June 2008, 5, available online at: <http://www.parl.gc.ca/39/2/parlbus/commbus/senate/com-e/fish-e/rep-erepO4jun08-e.pdf>. Earlier, the Inter-governmental Panel on Climate Change (IPCC) has indicated that "In some projections, arctic late-summer sea ice disappears almost entirely by the latter part of the 21st century. The decline for ice extent is larger for summer than for winter.", Summary for Policy-Makers, IPCC Fourth Assessment Report, available online at <http://www.ipcc.ch/ipccreports/ar4-wgl.htm>.

3 However, one view is that "... conditions will become similar to those in the St. Lawrence Seaway in winter." Comment ascribed to L. Fortier, Scientific Director, Arctic Net, in Senate (Canada), *supra*, at 6.

concerns.<sup>4</sup> More realistic is the expectation that a ship navigating in the Arctic can encounter a mixture of open water and different ice regimes. The US Coast Guard ice-breaker *'Healy'* encountered 118 different ice regimes sailing between East Newfoundland and the Davis Strait alone.<sup>5</sup>

Ships will need to navigate pursuant to an ice regime system that defines the requirements for operating vessels in an environment where ice conditions can change very significantly within a short period of time.<sup>6</sup> Ships will operate in extreme cold. Many areas are uncharted or the charts are not up-to-date.<sup>7</sup> There are difficult choke-points to manoeuvre and some narrow channels are draught-restricted. Along the likely new navigation routes, fog, variable light and other conditions will reduce visibility.<sup>8</sup> The reality is that the "challenges faced by navigators while transiting arctic ice regimes" can be expected to be "beyond the scope of present or even future expectations of average mariner training and experience."<sup>9</sup>

The routes through the region do not enjoy the services normally available to shipping on major trade routes. Although shipping safety control zones are designated (e.g. in the Canadian or Russian Arctic), the likely routes are mostly located in remote areas where relatively few navigation aids are avail-

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- 4 Office of Naval Research, Naval Ice Center, Oceanographer of the Navy and the Arctic Research Commission, Naval Operations in an Ice-Free Arctic, Symposium, 17-18 April 2001, Final Report, US Office for Naval Research, Arlington, VA, 2001. In Canada "Open Water" is defined as: "A large area of freely navigable water in which ice is present in concentrations of less than 1/10. No ice of land origin is present." Transport Canada, Arctic Ice Regime System Standards, Transport Canada, Ottawa, 1998.
  - 5 The *'Healy'* was intentionally navigated into different ice conditions. In some areas, it encountered hard and thick ice (including multi-year ice) where considerable backing and ramming was needed, considerably slowing down navigation speed. M. Johnston, R. Gorman, G. Timco, Ice Regimes Encountered during the USCGC Healy Ice Trials, presented at Port and Ocean Engineering under Arctic Conditions, Ottawa, August, 12-17 (2001), available online at <ftp://ftp2.chc.nrc.ca/CRTreports/TC/POAC I -Healy- Regimes.pdf>.
  - 6 G.W. Timco, R.M.W. Frederking, V.M. Santos-Pedro, A Methodology for Developing a Scientific Basis for the Ice Regime System, Proceedings of the 17th International Offshore and Polar Engineering Conference (2007), Honolulu, Vol. 2, available online at <http://www.isopec.org/publications/proceedings/ISOPE/ISOPE%202007/toc.htm>.
  - 7 For example, the Canadian Hydrographic Service estimates that only about 10% of their Arctic charts meet modern standards. Apparently many passage charts were prepared on a large grid that may omit shallow-draft features such as seamounts. The updating of Arctic charts is recognized as a priority. See C. Wright, Arctic Navigation: The Canadian Experience, POAC (2001) online available at <https://trid.trb.org/view.aspx?id=1395862>.
  - 8 D.L.V. Zwaag, A. Chircop et al., Governance of Arctic Marine Shipping, a report to the Arctic Marine Shipping Assessment (AMSA), October 11 (2008), available online at <http://arcticportal.org/uploads/vZ/6u/vZ6uVo9aTTQv45iw93oFw/AMSA-Shipping-Governance-Final-Report-Revised-November-2008.pdf>.
  - 9 D. Snider, Ice Navigation in the Northwest Passage, paper presented at Ocean Innovation 2005, Rimouski, Quebec, 23 October 2005, available online at <http://www.martechpolar.com/Publications/Ice%2ONav%20in%20the%20NWPPdf>.

able.<sup>10</sup> Navigation areas within the World-Wide Navigational Service in the Arctic were proposed for revision and initiatives to strengthen ice and meteorological forecasting already exist. Navigation incidents resulting in damage to navigating ships are likely,<sup>11</sup> very few ports and harbours exist where ships can re-supply and undertake repairs for ice damage. The remoteness of the region also poses special challenges for search and rescue operations. For example, in 2007, bad weather delayed the rescue of a hunter stranded on an ice floe off Cape Perry in the Canadian Arctic.<sup>12</sup> Because of its low temperature and circulation patterns, a low dissipation rate prevails in the Arctic for pollutants such as oil. Theoretically, even a few ships could threaten the fragile Arctic environment, because even a small discharge of a pollutant such as fuel oil can cause significant damage,<sup>13</sup> but currently there is very little salvage and pollution response capacity.

Safe and environmentally sound commercial navigation in the Arctic requires the development of rules, standards and 'best practices' that are more demanding than those in place in marine regions considered less hazardous to navigate and possessing the appropriate infrastructure. Clearly a high safety of navigation standard is appropriate for Arctic navigation, but the question is: at what level should it be formulated and adopted?

## 2.2 THE EXISTING LEGAL FRAMEWORK OF THE INTERNATIONAL STRAITS

The legal concepts underpinning Part III of UNCLOS and the regime of straits used for international navigation can be traced back to the 1949 *Corfu Channel Case*.<sup>14</sup> In the absence of a multilateral convention on the law of the sea or a specific treaty regulating the Corfu Channel, the International Court of Justice was required to determine its status before assessing the legal regime that applied within its waters. The Court sought to develop a legal test to classify a particular body of water that had the characteristics of a strait and was also used for international shipping. The Court noted:

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10 At present the Canadian Coast Guard places and maintains over 1,500 visual and aural aids in the Mackenzie River from Great Slave Lake to Tuktoyaktuk. However, there are only 300 aids across the Arctic Ocean. There are also 30 aids in Hudson Bay and James Bay. Senate (Canada), *supra*, at 3. Aids in the Passage are insufficient for safe navigation.

11 For instance see Wright, *supra*, at 4.

12 Two of the rescuers were compelled to spend the night on the ice floe in a temperature of -30° C. Hunter rescued from Arctic ice floe, CBC News, 18 February 2007, available online at <http://www.cbc.ca/canada/story/2007/02/18/arctic-rescue.html>.

13 Arctic Council, Arctic Oil and Gas Assessment, Arctic Monitoring and Assessment Programme, Oslo, 2007.

14 *Corfu Channel Case (United Kingdom v Albania)*, Judgment, [1949] *I.C.J. Rep.* 4, at 28.

“... in the opinion of the Court the decisive criteria is rather its geographical situation as connecting two parts of the high seas and the fact of its being used for international navigation.”<sup>15</sup>

The Court went on to observe that it was not “decisive” that the Corfu Channel was not a necessary route between two parts of the high seas, but only an alternative route of passage between the Aegean and Adriatic Seas. It noted that the Corfu Channel had nevertheless “been a useful route for international maritime traffic.”<sup>16</sup>

The *Corfu Channel Case* proved to be influential when the ILC came to consider the regime of the territorial sea in the 1950s. The ILC recommended in its Draft Articles that there should be no suspension of innocent passage through straits “normally used for international navigation between two parts of the high seas.”<sup>17</sup> The insertion of the word “normally” was stated to be in conformity with the decision of the International Court of Justice.<sup>18</sup> This wording found its way into Article 16 (4) of the 1958 Convention on the Territorial Sea and Contiguous Zone dealing with international straits.

At the time of the Third United Nations Conference on the Law of the Sea (UNCLOS III), a pivotal issue for consideration in the regime of straits was whether special navigational privileges akin to the territorial sea would apply within all straits, or whether there could be different categories of straits. As momentum was building for the recognition of a 12-nautical-mile territorial sea, with the effect that many more bodies of water within a strait would fall under the territorial sea regime, this was an issue, not only of legal, but also of strategic significance. Part III of UNCLOS, titled “Straits Used for International Navigation,” addresses how a strait used for international navigation is to be classified. The title suggests both a geographical and functional element. The geographical element relates to a strait being a body of water that lies between two areas of land, either continental landmasses,<sup>19</sup> a continent and an island,<sup>20</sup> or two islands.<sup>21</sup> Yet there is no guidance as to how proximate the bodies of land must be to one another, or at which point the width of the body of water that separates the two areas of land is no longer considered

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15 *Ibid.*, at 28.

16 *Ibid.*

17 International Law Commission, Articles Concerning the Law of the Sea with Commentaries, [1956] 2 Y.B. Int'l L. Comm'n 273, where Draft Article 17(4) provided: “There must be no suspension of the innocent passage of foreign ships through straits normally used for international navigation between two parts of the high seas.”

18 *Ibid.*

19 An example is the Bering Strait separating continental Asia and North America.

20 The Dover Strait lies between the continent of Europe and an island of the United Kingdom.

21 The Cook Strait separates the North and South Islands of New Zealand.

a strait but rather a sea or an ocean.<sup>22</sup> For practical purposes, this distinction may not be of great relevance as most bodies of water that separate sufficiently proximate areas of land are referred to as straits or have equivalent titles.<sup>23</sup> Nevertheless, the recognition of a body of water as a 'strait' is an important starting point in the application of the Part III legal regime.<sup>24</sup>

The functional element was drawn from the *Corfu Channel Case* where the Court emphasised that the strait was being "used for international navigation".<sup>25</sup> While there was no analysis as to what volume of navigation through a strait would be required to meet the usage requirement, reference was made to the volume of navigation through the Corfu Channel between 1936 and 1937 which, in the view of the Court, assisted the determination that the Corfu Channel had been "a useful route for international maritime traffic."<sup>26</sup> Therefore, while this functional element remains a feature of UNCLOS, it is unclear what level of international navigation is required for a strait to be appropriately classified as an "international strait." It is doubtful whether infrequent or irregular use of a strait would suffice to meet the functional criterion. Likewise, the strait must have been used by foreign-flagged vessels and not only by local vessels. UNCLOS is silent on the matter whether a distinction should be drawn between surface navigation and subsurface navigation of a strait. This has particular relevance in the Arctic due to evidence of submarine navigation throughout the region, especially during the cold war.<sup>27</sup> Since UNCLOS does not distinguish between the various types of navigation, nothing bars subsurface submarine navigation from being taken into account in the determination whether a strait is used for the purpose of 'international navigation'.<sup>28</sup>

In straits used for international navigation between different parts of the high seas or the EEZ, the transit passage regime applies, so that ships engaged in international navigation are able to pass through a strait relatively un-

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22 K. Walker, Definitions for the 1982 Law of the Sea Convention – Part II: Analysis of the IHO Consolidated Glossary, 33 *California Western International Law Journal* 219 (2003), at 298, observed that "The geographic definition of a strait is a narrow passage of water between two land masses or islands, or groups of islands connecting two sea areas."

23 Of which the term channel is in state practice used as an alternate to strait, as in the *Corfu Channel*. Alternate terms that are used include *belt*, *mouth*, and *sound*, see ILC, *supra*.

24 D.R. Rothwell, International Straits and Trans-Arctic Navigation, 43 *Ocean Development & International Law* 267 (2012), at 270.

25 *Corfu Channel Case*, *supra* note 13, at 28.

26 *Ibid.*

27 K. Zysk, Military Aspects of Russia's Arctic Policy: Hard Power and Natural Resources, in *Arctic Security in an Age of Climate Change* 85 (James Kraska ed., 2011), at 91–94; D.W. Titley, Courtney C. St. John, Arctic Security Considerations and the U.S. Navy's "Arctic Roadmap", in *Arctic Security in an Age of Climate Change* 267 (James Kraska ed., 2011), at 274–275; and, more generally for incidents during the cold war, H. Critchley, Polar Deployment of Soviet Submarines, 39 *International Journal* 828 (1984).

28 D. Rothwell (2012), *supra*, at 271.

hindered.<sup>29</sup> Part III of UNCLOS also deals with other categories of straits, including:

- Straits regulated in whole or in part by long-standing international conventions;<sup>30</sup>
- Straits providing a route through the high seas or EEZ of similar convenience;<sup>31</sup>
- Straits between the mainland and an island where, seaward of the island, there is a route through the high seas or EEZ of similar convenience;<sup>32</sup> and
- Straits used for international navigation between one part of the high seas or EEZ and the territorial sea of a foreign State.<sup>33</sup> Within these straits, transit passage does not apply. Instead, alternate navigation regimes are recognised.<sup>34</sup>

Where there is a high seas or EEZ route through a strait, providing that route is of similar convenience regarding its navigational and hydrographical circumstances, then Part III does not apply.<sup>35</sup> In theory, this exception includes all straits that are broader than 24 nautical miles, although in marginal cases (e.g., where the breadth of the waters barely exceeds 24 nautical miles at its narrowest point), there may be discussion whether a narrow channel through the EEZ is one of 'similar convenience'.<sup>36</sup>

### 2.2.1 The Arctic Ocean and shipping

When these developments in the law of the sea are considered in the context of the Arctic, it is clear that they have considerable ramifications with respect to navigational rights and freedoms within the Arctic Ocean, and particularly with respect to the straits that make up the Northwest Passage and the Northeast Passage/Northern Sea Route. They are also significant for those sea routes that provide access to and from the Arctic Ocean. These issues were highlighted by the 2009 *AMSA Report*, which addressed the existence of certain

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29 UNCLOS, 1833 UNTS 397, Art. 37.

30 *Ibid.*, art. 35(c).

31 *Ibid.*, Art. 36.

32 *Ibid.*, Art. 38(1).

33 *Ibid.*, Art. 45.

34 See H. Caminos, *Categories of International Straits Excluded from the Transit Passage Regime under Part III of the United Nations Convention on the Law of the Sea*, in *Law of the Sea, Environmental Law and Settlement of Disputes 280* (T. M. Ndiaye and R. Wolfrum eds., 2007).

35 UNCLOS, art. 36.

36 See an expanded discussion on this point L.M. Alexander, *Exceptions to the Transit Passage Regime: Straits with Routes of Similar Convenience*, 18 *Ocean Development and International Law* 479 (1987).

chokepoints in the Arctic.<sup>37</sup> Chokepoints are navigation routes that are frequented by large volumes of ships due to their geographical location or strategic significance. As a result, the legal regime regulating the passage, and the geopolitical factors within those waters, take on particular significance for the international community. Navigational chokepoints that have traditionally attracted attention because of their strategic significance include the Straits of Dover, Taiwan, Gibraltar, Hormuz, Lombok, Malacca and Singapore, and Sunda.<sup>38</sup>

The Arctic Ocean also has significant chokepoints, being straits and associated waterways that allow for access to and from the Arctic Ocean and, ultimately, facilitate trans-Arctic shipping.<sup>39</sup> As a complementary counterpoint, Honderich has observed that the Arctic Ocean has few “exit” points:

“What points there are, are guarded and narrow. Exit from the Arctic can be made from only four points: out the Bering Sea, which is treacherously shallow; out through the thin gap between Greenland and Canada; out through the maze of the Canadian archipelago and the Northwest Passage; and finally out the widest route, the Greenland-Iceland-United Kingdom (GIUK) Gap, which is carefully monitored by NATO.”<sup>40</sup>

The Bering Strait and Fram Strait are of particular significance because they allow for a corridor between the Pacific and Atlantic Oceans via the Arctic Ocean,<sup>41</sup> thereby removing the need for shipping to navigate via the Suez or Panama Canals.<sup>42</sup> In this respect, the Arctic Ocean is distinctive from the world’s other oceans in that it is the only ocean surrounded by continents. There is only one major high seas point of access through the Greenland and Norwegian Seas.<sup>43</sup>

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37 AMSA Report available online at [http://www.arctic.noaa.gov/detect/documents/AMSA\\_2009\\_Report\\_2nd\\_print.pdf](http://www.arctic.noaa.gov/detect/documents/AMSA_2009_Report_2nd_print.pdf).

38 K. Booth, *Law, Force and Diplomacy at Sea*, Boston: George Allen & Unwin (1985), 98–99. See also the commentary in *World Oil Transit Chokepoints*, *Eurasia Review*, 20 January 2011, available online at [www.eurasiareview.com/20012011-world-oil-transit-chokepoints](http://www.eurasiareview.com/20012011-world-oil-transit-chokepoints).

39 *Supra* note 37.

40 J. Honderich, *Arctic Imperative: Is Canada Losing the North?*, University of Toronto Press (1987), 93–94. For further assessment of the GIUK Gap and its strategic significance, especially during the cold war, see H. Faringdon, *Strategic Geography: NATO, the Warsaw Pact, and the Superpowers*, 2nd ed. (London: Routledge, 1989), pp. 175–179.

41 AMSA Report (2009), *supra*, at 18.

42 E.J. Molenaar, R. Corell, *Background Paper: Arctic Shipping, Arctic Transform*, February 12 (2009), available online at [www.arctic-transform.eu](http://www.arctic-transform.eu), distinguish between trans-Arctic and intra-Arctic shipping – the latter being shipping within the confines of the Arctic Ocean along the Northwest Passage and the Northeast Passage/Northern Sea Route.

43 The Greenland Sea is the body of water to the north of Iceland that lies between Greenland and Svalbard, which via the Fram Strait provides access to the Arctic Ocean. The Norwegian Sea is the body of water off the coast of Norway, which between Svalbard and Norway provides access to the Barents Sea and the Northern Sea Route.

The points of access to the Arctic Ocean are through different bodies of water, all of which are referred to as straits but which have varying legal status under the law of the sea. Those straits and their littoral States are:

- the Bering Strait – between the Bering Sea and the Chukchi Sea with Russia and the United States as littoral States;
- the Nares Strait – between Baffin Bay and the Lincoln Sea with Canada and Denmark (Greenland) as littoral States;
- the Davis Strait – between the Labrador Sea and Baffin Bay with Canada and Denmark (Greenland) as littoral States;
- the Fram Strait – between the Arctic Ocean and the Greenland Sea with Denmark (Greenland) and Norway (Svalbard) as littoral States; and
- the Denmark Strait – between the Atlantic Ocean and the Greenland Sea with Denmark (Greenland) and Iceland as the littoral States.<sup>44</sup>

The Norwegian Sea between Iceland and Norway provides access to the Fram Strait; however, navigation through this body of water is predominantly through high seas equivalent areas so the Fram Strait is not considered to be part of an international strait or equivalent waterway.<sup>45</sup>

All relevant coastal States are parties to UNCLOS, except for the United States, which accepts that significant parts of the Convention are reflective of customary international law.<sup>46</sup> Of the Arctic State parties to the Convention that have significant international straits within their waters, none have made any declarations accompanying their ratification of the Convention that are relevant for the present purposes. Denmark made a declaratory statement on ratification with respect to the Danish straits and the application of Article 35(c) of UNCLOS to those straits.<sup>47</sup> This declaration has no implications for Danish interests in the Arctic.

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44 For more detail understanding, see the analytical map of the area available online at <http://maps.grida.no/arctic/#>.

45 Likewise, the waterway that exists between Svalbard and Franz Joseph Land is not considered in this article for the principal reason that it provides access to the Barents Sea and not to the North Atlantic other than via the Norwegian Sea.

46 The Interagency Group on the Law of the Sea and Ocean policy of USA is an advisory legal body under the auspices of the White House and its recommendations are very frequently followed by the president of the USA. For more information: <http://www.lawofrenewableenergy.com/tags/interagency-ocean-policy-task>.

47 Denmark ratified UNCLOS on 16 November 2004, available online at [http://www.un.org/depts/los/reference\\_files/chronological\\_lists\\_of\\_ratifications.htm](http://www.un.org/depts/los/reference_files/chronological_lists_of_ratifications.htm).

## 2.2.2 The Arctic straits and trans-Arctic shipping

### 2.2.2.1 The Bering Strait

The Bering Strait may be the most strategic of the Arctic chokepoints due to its location at the northern limit of the Pacific Ocean;<sup>48</sup> the direct access it provides between the Bering Sea and Chukchi Sea into the Arctic Ocean; its potential for shipping using the Northern Sea Route to access the Pacific Ocean and Asian markets; and its proximity to major trading powers such as China, Japan, and South Korea.<sup>49</sup> The potential for the Bering Strait to play a pivotal role in trans-Arctic shipping has received increased attention as a result of several successful commercial voyages undertaken in 2009 – 2011 between the Russian Arctic and Asia.<sup>50</sup> For example, in 2010, the M/V *Nordic Barents* with 40,000 tonnes of iron ore transited from Norway to China via the North-east Passage and Bering Strait, resulting in fuel savings of US\$550,000.<sup>51</sup> The Bering Strait has been referred to as the “next Panama Canal”<sup>52</sup> and awareness is growing in Alaska of the need to maintain appropriate navigational aids within the strait.<sup>53</sup> The presence of six commercial ports within the Bering Strait region – three U.S. and three Russian – located to the south of the strait further emphasises the commercial capacity for shipping through the region.<sup>54</sup>

The Bering Strait, bordering Russia to the west and the United States (Alaska) to the east, is, at its narrowest point, 53 nautical miles wide. The northern approach through the Chukchi Sea is relatively wide before it gradually narrows on approaching the strait, while the southern approach has the Aleutian Islands (United States) as a barrier to the east. High seas

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48 China and Russia are building up coalitional agreements on managing the potential opportunities that may be available to them pretty soon due to the opening of the Bearing Strait and its fully functional capacity. See <http://www.longshoreshippingnews.com/2010/03/melting-arctic-bering-strait-is-the-next-panama-canal/>; <http://www.pbs.org/newshour/rundown/china-has-a-new-short-cut-thanks-to-melting-arctic-ice/>.

49 The strait also has significant environmental dimensions. See AMSA Report (2009), *supra*, at 147.

50 J. Vidal, Arctic Sea Ice Melt Ushers in Fast Route for Shipping, *The Guardian*, 6 October 2011, at 34; German Ships Blaze Arctic Trail, *BBC News*, 11 September 2009, available online at [news.bbc.co.uk/go/pr/fr/1/2/hi/Europe/8251914.stm](http://news.bbc.co.uk/go/pr/fr/1/2/hi/Europe/8251914.stm).

51 H. Mahony, Arctic Shipping Routes Unlikely to Be ‘Suez of the North’, *Euobserver*, 6 July, 2011, online available at [euobserver.com/882/32483](http://euobserver.com/882/32483); W. Gibbs, Cargo Ship Embarks on Historic Arctic Passage, 4 September 2010, *Reuters* (U.S. edition), available online at [www.reuters.com/article/idUSTRE68318D20100904](http://www.reuters.com/article/idUSTRE68318D20100904).

52 A. Rogoff, Melting Arctic: Think of the Bering Strait as the Next Panama Canal, *Alaska Dispatch*, 28 February 2010, available at [alaskadispatch.com](http://alaskadispatch.com).

53 NOAA Ship Fair weather Maps Aid Shipping Through Bering Straits, *Energy Daily*, 22 July 2010, available online at [www.energy-daily.com](http://www.energy-daily.com).

54 AMSA Report (2009), *supra*, at 108. The U.S. ports are Nome, Kotzebue, and the DeLong Mountain Transportation System port that serves Red Dog Mine; the Russian ports are Provideniya, Anadyr, and Egvekinot.

navigation through the central Bering Sea presents no difficulties until St. Lawrence Island (United States) is reached immediately to the south of the strait proper. St. Lawrence Island straddles the southern entrance to the Bering Strait, forcing shipping to route to the east or to the west between the island and the Russian mainland. The distance between the southeast point of Cape Chukoski (Russia) and Northwest Cape on St. Lawrence Island is approximately 72 km (38 nm) while the Alaskan mainland is approximately 200 km (124 nm) at its closest point, allowing for navigation via a high seas corridor on either side of St. Lawrence Island before the Bering Strait is entered.

At the midpoint of the strait, there are two islands – Big Diomedé (Russia) and Little Diomedé (United States) – effectively creating three navigational channels: Bering Strait-East (between the Russian mainland and Big Diomedé Island), Bering Strait-West (between the United States mainland and Little Diomedé Island), and the Diomedé Channel (a 2.5 nm channel separating the Big Diomedé and Little Diomedé Islands).<sup>55</sup> Bering Strait-East and Bering Strait-West are recognised by the US Navy as international straits for the purposes of UNCLOS.<sup>56</sup>

The Bering Strait is the subject of a maritime boundary delimitation agreement between Russia and the United States, which extends in the south from the Bering Sea, through the Strait, into the Chukchi Sea. This 1990 Agreement Between the United States and former-Soviet Union on the Maritime Boundary<sup>57</sup> has as its principal focus the delimitation of the respective EEZ and continental shelf areas within the region and, at approximately 1,600 nm in length, is one of the longest maritime boundaries in the world.<sup>58</sup> The 1990 Agreement mirrors some of the principal provisions embedded in the 1867 Convention Ceding Alaska between Russia and the United States:<sup>59</sup> Articles 1 and 2 of the 1990 Agreement recognise the maritime boundary through the middle of the Bering Strait, and accordingly reflect the relative positions on either side of the boundary of Big Diomedé and Little Diomedé.<sup>60</sup> While the 1990 Agreement makes no express reference to navigational rights in the Bering

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55 There does not appear to be an official name for the body of water that separates the two islands, other than that the waters fall within the Bering Strait. Accordingly, it is referred to as the Diomedé Channel.

56 A. R. Thomas and James C. Duncan (eds.), *Annotated Supplement to The Commanders Handbook on the Law of Naval Operations*, International Legal Studies 73 (1999): 205, Table A2–3.

57 *Agreement between the United States and the Union of Soviet Socialist Republics on the Maritime Boundary*, 1 June 1990, International Legal Materials 29 (1990): 941.

58 E. G. Verille, *United States-Soviet Union*, in Jonathan I. Charney and Lewis M. Alexander (Eds.), *International Maritime Boundaries*, Vol. 1 (Dordrecht: Martinus Nijhoff, 1993), p. 447.

59 *Convention Ceding Alaska Between Russia and the United States*, 30 March 1867, in ed. C. Parry, 134 Consolidated Treaty Series 331.

60 This part of the 1867 Convention, *ibid*, also provided for the boundary between St. Lawrence Island and the Russian mainland, which passes through a midway point between the island and Cape Chukotski (Russia). Verille, *supra* note 52, at 450–451.

Strait, it is recognised that while the maritime boundary limits the extent of coastal State jurisdiction,<sup>61</sup> in all other respects the boundary does not affect or prejudice the rights of either State with respect to “the exercise of sovereignty, sovereign rights or jurisdiction with respect to the waters” of the area.<sup>62</sup> Other than the delimitation of the maritime boundary through the Bering Strait, the 1990 Agreement has no direct impact on the navigational regime that applies within those waters. This is in contrast to other boundary agreements dealing with international straits which expressly acknowledge the right of transit passage.<sup>63</sup> The 1990 Agreement has not been ratified by Russia, yet has been provisionally applied since 15 June 1990.<sup>64</sup>

The Bering Strait meets all geographical requirements of a strait for the purposes of Part III of UNCLOS: it is a body of water that connects one part of the EEZ/high seas (Bering Sea) with another part of the EEZ/high seas (Chukchi Sea). Although technically there may exist three geographic straits within the body of water known as the Bering Strait (Bering Strait-East, Bering Strait-West, and the Diomed Channel), this is irrelevant for the purposes of UNCLOS. There are many other international straits throughout the world that are formed by two opposite landmasses within which small islands may be scattered.<sup>65</sup> Whether the Bering Strait is used for “international navigation”, as per the *Corfu Channel Case*, may have been contestable in the past but based on emerging usage, the strait is currently certainly considered useful for international navigation.<sup>66</sup> While some caution needs to be exercised as this usage derives primarily from Russian-flagged shipping, projections predict clearly that in the future many ships, other than those flagged by Russia and the United States, will use the strait. On that basis, the Bering Strait meets the requirements of an international strait under Part III of UNCLOS so the regime of transit passage applies.<sup>67</sup>

A unique feature of the Bering Strait is that international shipping has effectively two viable routes through the strait: the Russian route to the west of the Diomed Islands through the Russian territorial sea; and the United

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61 U.S.-Soviet Union Boundary Agreement, *supra* note 55, art. 1(2).

62 *Ibid.*, art. 4.

63 This is the case with the 1978 Treaty Between Australia and the Independent State of Papua New Guinea Concerning Sovereignty and Maritime Boundaries in the Area Between the Two Countries, Including the Area Known as Torres Strait, and Related Matters (Torres Strait Treaty) [1985] Australian Treaty Series No. 4.

64 Verille, *supra*, at 452.

65 The Torres Strait (Australia/Papua New Guinea) and the Singapore Strait (Singapore/Indonesia) are significant examples.

66 AMSA Report (2009), *supra*, at 109, noted that: “150 large commercial vessels pass through the Bering Strait during the July-October open water period, with transits of these vessels most frequent at the beginning (spring) and end of the period (autumn).”

67 The view is also endorsed by the AMSA Report (2009), *supra*, at 109, which states that: “The Bering Strait region is an international strait for navigation and a natural chokepoint for marine traffic in and out of the Arctic Ocean from the Pacific Ocean.”

States route to the east of the Diomedede Islands through the United States territorial sea. The Diomedede Channel, at only 2.5 nm does not appear to be wide enough to be attractive to commercial shipping when compared to alternate routes. The waters between the islands fall within the Russia/United States maritime boundary so shipping would be subject to both Russian and US law at different times as they complete their transit.

In principle, the existence of US and Russian routes through the strait does not raise any significant international legal issues given that UNCLOS standards are equally applicable to each route, regardless whether the strait is a “one-State” or “two-State” strait. While US practice has been to adhere consistently to the transit passage regime and to accept its status as part of customary international law,<sup>68</sup> the fact that the US is not a party to UNCLOS creates a potential for variations in State practice in the interpretation of transit passage on either side of the strait. It also raises the prospect of different laws and regulations applying within the Russian and the US side of the strait. This is consistent with Article 42 of UNCLOS, though such laws must be non-discriminatory and must not deny, hamper, or impair the right of passage. Given the environmental sensitivity associated with all forms of shipping in the Arctic, consideration could be given to the establishment of sea-lanes and a traffic separation scheme through the Bering Strait, facilitating one-way north-south and south-north traffic on either side of the Diomedede Islands. Such measures would be consistent with Article 41 of UNCLOS, but require cooperation between Russia and the US in referring such a proposal to the International Maritime Organization for adoption. The 2009 *AMSA Report* noted that there were no vessel-routing measures within the Bering Strait and few aids to navigation. Given the significant potential of this strait for increased maritime traffic and the difficult navigational conditions, such arrangements need to be put in place soon.<sup>69</sup>

In 2010, the United States Coast Guard commenced a “Port Access Route Study” to assess the need to create new vessel-routing measures in the Bering Strait. While the area under review encompasses only US waters in the strait,

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68 See United States Presidential Proclamation 5928 (27 December 1988) in which President Ronald Reagan stated that: “In accordance with international law, as reflected in the applicable provisions of the 1982 United Nations Convention on the Law of the Sea, with the territorial sea of the United States, ... the ships and aircraft of all countries enjoy the right of transit passage through international straits.” See, generally, J.A. Roach, R.W. Smith, *United States Responses to Excessive Maritime Claims*, Martinus Nijhoff (2<sup>nd</sup> ed., 1996), 284–285.

69 *AMSA Report* (2009), *supra*, at 109. Olin Strader, A Bering Strait Vessel Traffic Service: Critical Infrastructure for an Opening Arctic (Part I), The Arctic Institute Center for Circumpolar Security Studies, 6 February 2012, available at [www.thearcticinstitute.org/2012/02/1278-bering-straitvessel-trafc-service.html](http://www.thearcticinstitute.org/2012/02/1278-bering-straitvessel-trafc-service.html), argued for the establishment of a Bering Strait Vessel Traffic Service.

this study offered the appropriate tools to facilitate the appropriate bilateral arrangements with Russia, insofar as deemed appropriate.<sup>70</sup>

### 2.2.2.2 *The Nares Strait*

The Nares Strait, situated between Ellesmere Island (Canada) and Greenland (Denmark), connects the Lincoln Sea on the fringe of the Arctic Ocean with Baffin Bay, eventually leading to the Davis Strait, Labrador Sea, and the Atlantic Ocean. The Nares Strait is distinctive, as it comprises a number of smaller interconnecting channels that were named by Arctic explorers, such as the Kennedy Channel and Robeson Channel.<sup>71</sup> The Nares Strait is the most northern strait providing direct access to the Arctic Ocean. Shipping coming from Asia via the Bering Strait might, subject to the presence of ice, find the Northwest Passage a shorter route when seeking access to North American ports. Likewise, the Fram Strait would be the preferred routing for ships making their way from the Bering Strait across the Arctic Ocean to Russian, Scandinavian, and southern European ports. The Nares Strait only presents an option for some forms of international shipping, as it has traditionally been heavily ice-clogged making it impassable for any form of surface shipping other than by icebreakers.

The waters of the Nares Strait have been delimited as part of the Canada/Denmark continental shelf maritime boundary. This 1973 Agreement between Canada and Denmark Relating to the Delimitation of the Continental Shelf between Greenland and Canada<sup>72</sup> extends from a southern point in the Davis Strait to the northern end of the Nares Strait and entrance to the Lincoln Sea. While predominantly a maritime boundary dealing with the continental shelf in the broad expanses of Baffin Bay and the Davis Strait through the Nares Strait, the Agreement effectively delimits the territorial sea. In places throughout the strait, this sea is only 20 nm in breadth. The Agreement predates the conclusion of UNCLOS and reflects continental shelf rights as provided for in the 1958 Convention on the Continental Shelf, as it technically only applies to the delimitation of the continental shelf.<sup>73</sup> The boundary also excludes Hans Island, located in the Nares Strait, which remains the subject of an unresolved sovereignty dispute between Canada and Denmark.<sup>74</sup>

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70 U.S. Department of Homeland Security: United States Coast Guard, Port Access Route Study: In the Bering Strait, 33 CFR Part 167, Federal Register 75 (No. 215), November 8, 2010.

71 A. R. Thomas, J. C. Duncan, Annotated Supplement to the Commanders Handbook on the Law of Naval Operations, 73 International Legal Studies 205 (1999), at 205, TableA2-3.

72 Agreement Between Canada and Denmark Relating to the Delimitation of the Continental Shelf Between Greenland and Canada, 17 December 1973, ILM 13 (1974): 506.

73 *Ibid.*, Art. 1.

74 L. M. Alexander, Canada-Denmark (Greenland), in International Maritime Boundaries, Vol. 1, 372 (Jonathan I. Charney and Lewis M. Alexander eds., Martinus Nijhoff, 1993).

The Nares Strait and its associated channels is clearly a strait connecting one area of the EEZ/high seas (Lincoln Sea and Arctic Ocean) with another area of the EEZ/high seas (Baffin Bay). It falls predominantly, though not exclusively, within the territorial sea of both Canada and Denmark.<sup>75</sup> However, while the Nares Strait meets the geographic criteria of an international strait in UNCLOS, doubt arises as to whether the strait, at this point in time, meets the functional criteria of a strait “used for international navigation” given the very low level of reported passages through it. Unlike the Northwest Passage, Northern Sea Route, or Bering Strait, there have been no reports of significant international maritime traffic using the Nares Strait to date.<sup>76</sup> This position may alter over time, but presently it is difficult to assert that the Nares Strait meets the criteria of a strait used for international navigation as referred to in Article 37 of UNCLOS. However, this does not give Canada or Denmark the right to bar navigation through the Nares Strait subject to Article 25(3) (temporary suspension of innocent passage), and there is no evidence that either State has sought to do so. It does mean that, instead of a right of transit passage applying through the strait, the innocent passage regime of the territorial sea applies, which gives the littoral States the right to regulate the ships passing through those waters.

### 2.2.2.3 *The Davis Strait*

The Davis Strait lies to the south of the Nares Strait and is principally located between Baffin Bay and the Labrador Sea and fringed to the west by Baffin Island (Canada) and Greenland (Denmark). The breadth of the strait varies from between 160 and 510 nm. In addition to providing an access route to and from the Nares Strait, it also provides an access route to and from the Northwest Passage. The strait is therefore very important for facilitating ease of access to and from the Northwest Passage for shipping *en route* from east coast Canadian and US ports. Another feature of the Davis Strait is that, like the Nares Strait, it has been the subject of continental shelf delimitation by means of the 1973 Canada/Denmark Agreement.<sup>77</sup> However, given the width of the strait, this had no implications for the delimitation of the territorial sea and there is no area of overlapping territorial sea within the strait.

While the Davis Strait is considered by some international commentators to be an international strait of more than 24 nm in breadth,<sup>78</sup> it is clearly a strait with a significant high seas corridor. As such, it is not subject to the transit passage regime. Instead, the freedoms of the high seas, such as naviga-

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75 Parts of the Kane Basin are beyond the limits of the Greenland territorial sea.

76 However, there remain reports of submerged submarine transits through the Nares Strait. See Critchley, *supra*, at 859–861.

77 Canada-Denmark Agreement, *supra*.

78 A. R. Thomas, J. C. Duncan, (1999), *supra*, at 205, Table A2–3.

tion, prevail. Given the increased level of international shipping – commercial and, increasingly, cruise traffic – passing through parts of the strait, there is little difficulty in classifying the Davis Strait as an international strait, albeit one in which the right of transit passage does not apply because the high seas freedom of navigation prevails. Therefore, other than the application of Canadian and Danish marine environmental measures within their respective territorial seas and EEZs, the legal regulation of navigation within the strait is not particularly contentious.

#### 2.2.2.4 *Fram Strait*

The Fram Strait is a large body of water within the Greenland Sea that lies between Greenland (Denmark) and Svalbard (Norway). It provides the most northern accessible route from the Atlantic Ocean (via the Denmark Strait or Norwegian Sea) to the Arctic Ocean and has the potential to become a significant trans-Arctic shipping route in conjunction with the Bering Strait.<sup>79</sup> The strait is historically renowned for the large volumes of ice that pass through it. Reference to this body of water as being a strait is something of a misnomer. While there are territorial sea claims asserted by both Denmark and Norway, the strait, at approximately 253 nm at its narrowest point, has a significant high seas corridor. This eliminates the need, in the normal course of events, for any ships passing through the strait to enter the territorial sea. In 2006, an agreement was reached between Denmark and Norway on a maritime boundary between Greenland and Svalbard concerning the respective continental shelf and EEZ areas.<sup>80</sup> The boundary agreement makes no reference to navigational issues. Since the Fram Strait is not a strait overlapped by territorial sea claims, and there is a significant high seas corridor within the strait, transit passage does not apply within the strait. Rather, the normal freedoms of high seas navigation apply. This means that one of the two major trans-Arctic navigation chokepoints is free of any significant level of strait State regulation, in contrast to, for example, the Bering Strait.

#### 2.2.2.5 *The Denmark Strait*

The Denmark Strait lies between Greenland (Denmark) and Iceland. Like the Davis Strait, it does not provide direct access to and from the Arctic Ocean. The Arctic Ocean can only be entered via the Fram Strait to the north or via

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79 D. Rothwell (2012), *supra*, at 276.

80 Agreement Between Norway and Denmark Together with the Home Rule Government of Greenland Concerning the Delimitation of the Continental Shelf and the Fisheries Zones in the Area Between Greenland and Svalbard, 20 February 2006, reproduced in A.G. Oude Elferink, *Maritime Delimitation between Denmark/Greenland and Norway*, 38 *Ocean Development and International Law* 375 (2007).

the Northern Sea Route through the Norwegian and Barents Seas to the east. The strait is widest at its southern entrance where the Greenland and Iceland coasts are separated by nearly 485 nm. At its narrowest point the strait is approximately 161 nm in breadth. Even though the Denmark Strait has been listed as an international strait for the purposes of Part III of UNCLOS,<sup>81</sup> it contains a broad high seas corridor of at least 137 nm. There are no significant navigational constraints that would require shipping to pass close to the coastline and through the territorial sea. While it is not a strait through which the right of transit passage applies, like the Fram Strait, high seas freedoms of navigation principally apply to the Denmark Strait.

The future strategic and commercial significance of the Denmark and Fram Straits should not be underestimated. They may become a significant maritime highway for trans-Arctic shipping *en route* (?) to the east coast of the United States and for shipping passing from the Northern Sea Route across to the Norwegian Sea to access US ports. Recognising its strategic location at the entrance to the Atlantic for Arctic shipping routes, Iceland is actively considering how to maximise economic opportunities arising from an increase in Arctic shipping.<sup>82</sup>

## 2.3 MULTIPLE LEVELS OF ARCTIC SHIPPING GOVERNANCE

### 2.3.1 Global level

Like global shipping, Arctic shipping is subject to the International Maritime Organization (IMO)'s governance structures, processes, rules and standards. A special agency of the United Nations, the IMO provides machinery for intergovernmental cooperation in the technical regulation of shipping engaged in international maritime trade.<sup>83</sup> It promotes the highest practicable standards for maritime safety, navigation efficiency and vessel-source pollution, encourages the removal of discriminatory practices by States, and supports the availability of shipping services to world commerce. Furthermore, it provides for the exchange of information among member States on matters under consideration. The IMO pursues these purposes irrespective of marine region, hence its significance for Arctic shipping.

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81 A. R. Thomas, J. C. Duncan, (1999), *supra* n. 51, at 205, Table A2–3.

82 See, generally, the papers prepared and conference summary of the conference “Breaking the Ice” Akureyri, Iceland, March 27–28 (2007), available online at [www.arcticportal.org/breaking-the-ice](http://www.arcticportal.org/breaking-the-ice).

83 Convention on the International Maritime Organization (adopted 6 March 1948, entered into force 17 March 1958) 289 UNTS 48; as amended, see Institute of Maritime Law, *The Ratification of Maritime Conventions* 4 Vols. Up-dated, Loose-leaf Service (Lloyd’s Press, London, 1991-2003), Vol. 1. 1.10.

The IMO's maritime safety tools can assist to promote appropriate construction, equipment and seafaring standards for the Arctic. Adopted within the framework of the 1974 International Convention on Safety of Life at Sea (SOLAS), these tools provide a comprehensive range of rules and standards for virtually every aspect of ship construction, equipping, operation and crewing.<sup>84</sup> At present, no mandatory rules and standards specifically address the particular challenges of Arctic navigation so only general rules apply. Equally, the environmental protection tools could extend to the protection of the Arctic environment. UNCLOS allocates the competent international organisation (generally understood as referring to the IMO) the role of forum for the adoption of international rules and standards for vessel-source pollution and routing schemes.<sup>85</sup> Under the 1973/78 International Convention on the Prevention of Pollution from Ships (MARPOL), the IMO has designated special areas where vessel discharges are further restricted in several sensitive marine regions around the world. These regions include the Antarctic Waters and the Baltic, Caribbean, Mediterranean and North Sea.<sup>86</sup> Upon request of a member State, the IMO addresses the protection needs of particular areas in that State's maritime zone by adopting special mandatory measures and/or establishing a Particularly Sensitive Sea Area (PSSA) and associated protective measures (APMs).<sup>87</sup> Irrespective of special area and PSSA designation, the IMO has also approved routing measures to achieve particular environmental protection and conservation goals.<sup>88</sup> At present, the IMO has not designated special areas, PSSAs, special mandatory measures or routing measures in the Arctic Ocean. However, the northernmost section of the Western European PSSA at 62°N (United Kingdom, off the Shetland Islands) and some routing

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84 International Convention for the Safety of Life at Sea (adopted 1 November 1974, entered into force 25 May 1980) 1334 UNTS 2; Protocol of 1978 (adopted 17 February 1978, entered into force 1 May 1981) 1276 UNTS 237; Protocol of 1988 (adopted 11 November 1988, entered into force 3 February 2000) U.S. Treaty Doc. 102-2.

85 UNCLOS art. 211(1).

86 International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (adopted 17 February 1978, entered into force 2 October 1983), as amended, in MARPOL, Consolidated Edition (IMO, London, 2007). The IMO Assembly adopted guidelines for special area designation: Guidelines for the Designation of Special Areas under MARPOL 73/78, IMO Doc. A.22/Res 927, 15 January 2002; available online at [http://www.imo.org/includes/blastDataOnly.asp/dataid%3DI\\_0469/927.pdf](http://www.imo.org/includes/blastDataOnly.asp/dataid%3DI_0469/927.pdf).

87 Under UNCLOS Art. 211(6), the IMO may, on the request of a State Party, adopt special mandatory measures to address the needs of PSSAs within the EEZ. The IMO has not yet used this power. However, it has designated PSSAs under its own environmental mandate set out in its constitutive convention. The PSSA Guidelines were adopted under this mandate. Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas, IMO Doc. A.9822(4), 1 December 2005, available online at [http://www.imo.org/includes/blastDataOnly.asp/data\\_id%3D14373/982.pdf](http://www.imo.org/includes/blastDataOnly.asp/data_id%3D14373/982.pdf).

88 These are published in International Maritime Organization, *Ships' Routing* (9th ed.) (IMO, London, 2008).

schemes also located, at least in part, north of that latitude, spill into the Arctic Circle.<sup>89</sup>

The IMO has considered Arctic-specific safety issues in its various committees. In 2010, the Assembly adopted the Guidelines for Ships Operating in Arctic Ice-covered Waters (Arctic Guidelines).<sup>90</sup> The adoption followed consideration by the Sub-Committee on Ship Design and Equipment (DE) and approval by the Maritime Safety Committee (MSC) and the Marine Environment Protection Committee (MEPC). The Arctic Guidelines are current being considered for amendment.<sup>91</sup> The IMO has also responded to the call for additions to regional navigation areas (NAVAREAS): following consideration by the Sub-Committee on Search and Rescue (COMSAR), it proposed the creation of new and revision of existing (?) Arctic NAVAREAS and the allocation of responsibilities to coastal States in new areas.<sup>92</sup>

Accredited delegations from member States are the principal participants in IMO structures and processes. Global and regional intergovernmental organisations (IGOs) can enter into cooperation agreements and participate in meetings. Industry groups and non-governmental organisations (NGOs) can be granted consultative status enabling them to participate in meetings.<sup>93</sup> To date, the Arctic Council has not been accredited as an observer (nor is the IMO an observer on the Arctic Council),<sup>94</sup> nor has it entered into a cooperation

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89 Off the coast of Norway from Vardo to Rost (traffic separation scheme; recommended routes joining traffic separation schemes); partially (to a limited extent in the northernmost region) in Prince William Sound (traffic separation scheme); partially in the northernmost region of the Shetland Islands (precautionary area in the approaches to Lerwick); off the southwest coast of Iceland (two-way routes; mandatory reporting). Several measures have also been adopted for the Baltic Sea.

90 IMO Guidelines for Ships in Operating in Polar Waters, 2010, available online at <http://www.imo.org/en/Publications/Documents/Attachments/Pages%20from%20E190E.pdf>.

91 *Ibid.*; The DE Sub-Committee has considered amendments to the Arctic Guidelines but this has not happened yet. Report to the Maritime Safety Committee, IMO Doc. DE 51/28, 12 March 2008, available online at <http://www.imo.org/includes/blastDataOnly.asp?dataid%3D6629/1056-MEPC-Circ399.pdf>.

92 The MSC approved the Sub-Committee on Communications and Search and Rescue (COMSAR) proposal for the creation of Arctic NAVAREAs up to 90° North. The following countries were designated coordinators for the new NAVAREAs: Canada for NAVAREAs XVII and XVIII, Norway for NAVAREAs XIX, and Russia for NAVAREAs XX and =OU. The new NAVAREAs were originally proposed in a joint IMO/IHO/WMO Correspondence Group. Report of the Maritime Safety Committee at its Eighty-Third Session, IMO Doc. MSC 83/28, 26 October 2007, available online at <http://www.imo.org>.

93 For a list of organizations with consultative or observer status at the IMO see <http://www.imo.org/home.asp?topicid=315&doc id=851>.

94 A major UN body has observer status on the Council: the United Nations Development Programme (UNDP). A United Nations Environment Program (UNEP) centre based in Norway also has observer status, see online at <http://arctic-council.org/section/observersintergovernmentalandinter-parliamentaryorganization>.

agreement with the IMO.<sup>95</sup> A possible explanation is that Arctic Council member States protect their Arctic interests at the IMO as member States of the latter, cooperating on an occasional basis when they deem it necessary. Although this may be satisfactory from a national interest standpoint, it does not allow for a systematic regional approach to Arctic issues at the IMO, although there may be prior delegation to a member State to submit a regional communication or point of view on particular issues.<sup>96</sup> In contrast, industry and NGOs with an interest in the Arctic are able to participate in IMO meetings and influence the adoption of rules and standards. Accordingly, it would seem appropriate for the IMO to attain observer status in the Arctic Council.

### 2.3.1.1 *The analysis of the new IMO Polar Code*

The IMO (International Maritime Organization) provides a framework for ships in terms of safety, security, and the environment. It is important to have consistency in ships, as people use boats to transport people and goods all around the world. With the loss of sea ice, water ways are opening and with it more ships can travel the area. To address this issue along with other unique challenges, the IMO made the Polar Code in 2014. The Polar Code is an international code for ships in the polar region. The Arctic Council recognized the IMO an observer on May 5th, 2019. As this event was recent, this sub-chapter will present a critical analysis of the Polar Code and whether it accomplishes its goals. In recent years, the IMO has worked hard on the Polar Code in terms of safety, navigation, and “equally important, the protection of the unique environment and eco-systems of the polar regions.” The IMO states that environmental protection is just as important for ships as safety and navigations, and this paper seeks to assess if this contention is true. Can the Polar Code sufficiently protect the environment and its inhabitants? For the ships travelling to the Arctic, they pose a threat to the environment and its peoples with their emissions, trash, and waste. These factors affect walruses, whales, fish and other animal life from boats. Pollution heavily harms people in the Arctic region, especially the Indigenous peoples who depend on these resources for food and culture.

As time goes on, there is more interest to travel in the Arctic for fun as well as for transportation of goods. Along with this increase of popularity, the ice in Arctic has been melting rapidly. This situation creates new passages to travel as well as makes already traveled paths easier to traverse. A study

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95 For a list of IGOs having cooperation agreements with the IMO, see <http://www.imo.org/home.asp?topicid=315&docid=846>.

96 On some issues the Arctic Council has participated indirectly at the IMO, e.g., when the Arctic Guidelines were under consideration in MSC and DE. Although the Council does not have observer status, it has submitted documents on the Guidelines directly or through a member State.

found that the Arctic will be navigable entirely between 2040-2059. The IMO decided that the region needed special regulations.

At the beginning of 2017, the IMO enforced the Polar Code. However, they were making amendments from other polices such as from MARPOL (the International Convention for the Prevention of Pollution From Ships, effective since 1973) back in 2014 and took many years before the IMO started enforcing these policies. There are several parts to the Polar Code. The first part takes up most of the document, roughly thirty of its forty-two-pages. It is mostly about safety, navigation and ship structure. It makes sense that this section is the largest part of the Polar Code, as the Polar Regions are difficult to navigate and having regulations for that purpose is important. The Polar Code goes into detail about ship structure and machinery. Ships have strict equipment, design, construction, materials, operations and manning. There is not much to note in terms of environmental protection, but it is intricate, detailed and specific enough for the safety of the ships, crew and environment.

Part II-A of the Polar code goes into pollution prevention. The MARPOL Annex 1 has 43 regulations for what the boats can carry. For example, it “prohibits the carriage in bulk as cargo, or and use as fuel, of: having a density at 15°C higher than 900 kg/m<sup>3</sup>; oils, other than crude oils, having a density at 15°C higher than 900 kg/m<sup>3</sup> or a kinematic viscosity at 50°C higher than 180 mm<sup>2</sup>/s or bitumen, tar and their emulsions” (MARPOL). Other regulations discourage practices such as the use or transportation of heavy fuel oil in the Arctic. Noxious liquids in Chapter 2 of Part II-A, Sewage in Chapter 4, and pollution from Garbage in Chapter 5 are all banned and there are operational requirements for disposing of them properly. However, it is important to note no law enforcement enforces these bans, as the Polar Code is voluntary amongst countries. Chapter 3, Prevention of Pollutions by Harmful Substances Carried by Sea in Packaged Form, is unique as it is intentionally blank. This fact acknowledges there is room for improvement. Why would they bring it up at all if there is nothing to say now? This fact shows that improvements are in the works, most likely.

PAME has archived information dating back to 2005. The Arctic Marine Shipping Assessment Report used this data for their report in 2009. This data is the information that the Polar Code uses when making the ASTD (Arctic Ship Traffic Data) system, which “collect(s) and distribute(s) accurate, reliable and up-to-date information on shipping activities in the Arctic” (PAME, Borgir) and launched in February 2019. They do much more than track the ships, too, such as record emission information, history, activity in specific areas and fuel consumption. This information is essential for the Polar Code to monitor the progress in the Arctic and decide if improvements are necessary.

Disputes in the Northern Passage are another challenge in the Arctic. Michael Byers addresses the issues in his book *Who Owns the Arctic?: Understanding Sovereignty Disputes in the North*. With more waters come ships that will travel through the area. The Northwest Passage could accommodate

super-tankers or other ships too big for the Panama Canal. The United States argues that the Northwest Passage is an international strait, while Canada argues it is internal waters.<sup>97</sup> The relationship between the US and Canada makes this issue not a big deal due to their history of cooperation, but this tension still matters for ship traffic. If this waterway becomes an international strait, then this area would see an increase in ship traffic. This increase can also cause a problem with security, which the Arctic Council cannot discuss.

At the end of the day, the Arctic is for everyone and the Polar Code treats it as such. However, these disputes have the potential to heavily impact areas of travel in the Arctic and politics do not always consider the environmental impacts these decisions have. The Polar Code is beyond these issues, but the existence of these disputes show the changes in the Arctic go beyond environmental problems.

There have been studies on how the Arctic will change and using satellite data and Morten Winthers et al. predicts emission rates using this technique. With business as usual predictions, black carbon emissions will increase at least 80% by 2050 and sulphur dioxide will increase at least 1000%. Stephen G. Warren from the University of Washington has studied the effects of black carbon in the Arctic, stating that it can lower the albedo, which further accelerates the melting of ice. Although he concludes there has been a mostly stable amount of black carbon in the Arctic, the effects are still evident. Sulphur dioxide also is a well-known air pollutant. However, nearly half of this substance came from fishing ships. This problem led to a ban on fishing in the Arctic in most cases. The second biggest emitters are passenger ships. About 20% of black carbon emissions and 25% of sulphur dioxide come from the ships. The subsequent ships are tankers, general cargo, and container ships respectively, but their emissions are similar.

What about passenger ships? Dawson et al. finds a 115% increase in cruise ships in Arctic Canada between 2005 and 2019, which pushes them to say there "is a sense of urgency involved in governing the changing Arctic".<sup>98</sup> People want to travel to the Arctic and cruise ships will have to follow the Polar Code. A book by Michael Luck details the issue, noting the rise in the last decade is without precedent. He says, "A cloud of thick black smoke from heavy oil was emitted by Kapitan Dranitsyn all the way through the ice".<sup>99</sup> Although

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97 Byers, M, *Who Owns the Arctic?: Understanding Sovereignty Disputes in the North*-Understanding Sovereignty and International Law in the North Douglas & McIntyre, 2009 at p. 14.

98 Dawson et al, *Governance of Arctic expedition cruise ships in a time of rapid environmental and economic change*, page 96, available at: <https://www.sciencedirect.com/science/article/abs/pii/S0964569113003074>.

99 Michael Luck, *Polar Tourism: Human, Environmental and Governance Dimensions*, page 36, available at: [https://www.academia.edu/55701945/Polar\\_Tourism\\_Human\\_Environmental\\_and\\_Governance\\_Dimensions\\_edited\\_by\\_Patrick\\_T\\_Maher\\_Emma\\_J\\_Stewart\\_and\\_Michael\\_L%C3%BCck](https://www.academia.edu/55701945/Polar_Tourism_Human_Environmental_and_Governance_Dimensions_edited_by_Patrick_T_Maher_Emma_J_Stewart_and_Michael_L%C3%BCck).

said to emit no CO<sub>2</sub>, this trend is not the only emissions that affect the environment. More of the book details the unsustainable practices and the regulations from MARPOL found the cruise ship industry practices to be unacceptable, although some were ethical or somewhat ethical. The discharge of garbage, sewage, food waste, and treated sewage were banned, which left only 10.8% of cruises approved by the Polar Code. Although the Polar Code never explicitly discusses cruise ships, these regulations also apply here. This trend shows a potential change in these practices with the Polar Code. Studies on the subject are not yet out to see if this has been effective on cruise ships, but the Polar Code is addressing the issue of waste dumped from cruise ships.

According to PAME, the number of ships by country is heavily skewed. Out of 1869, 774 are from Russia and 228 are from the USA, while Norway, Canada, and Denmark are 179, 71, and 59 respectively. This fact is an important distinction, since cooperation from these countries will be important for the Polar Code to be successful. In an article by Richard Wanerman, he discusses the importance of enforcing the Polar Code. This article is from 2015, before enforcement happened. He stressed the inclusion of the Arctic Council, stating the combination of the IMO's expertise in maritime shipping and the Arctic Council's expertise in Arctic affairs from economics, to law, and to the environment would be essential to advisory and enforcement. With the highest number of ships coming from the Arctic States, all of which present in the Arctic Council, its success is attainable through the Arctic Council's connections. It is in these states' best interest to follow the Arctic Council to protect the environment and its peoples while also maintaining good relations. Thus, it is likely the Arctic States will follow the Polar Code. As stated before, the Polar Code is mostly, voluntary which is why it is essential that the Arctic Council supports these policies. This gives the enforcement of the Polar Code the highest chance by the Arctic States.

The Polar Code never mentions emissions, climate change, or carbon. How could it possibly mitigate climate change without this? The Polar Code focuses of pollutants from waste and oils on the environment rather than climate induced environmental impacts. Other regulations such as MARPOL address the issues of emissions to all ships and journals have already criticized their regulations. The Overview of MARPOL ANNEX VI Regulations for Prevention of Air Pollution from Marine Diesel Engines concludes ships are a significant contributor to climate change and atmospheric pollution. But the regulations in Annex VI is still a work in progress and emphasize the importance of change in manufacturers and fuel suppliers to keep up with the strict regulations to protect the environment. The Polar Code could include such regulations but doing so is repetitive.

In conclusion, will the Polar Code be enough for the environment in the future? With a seat on the Arctic Council and access to all this research, the Polar Code has the resources to adapt to future issues on top of already being well balanced and structured. However, improvement in passenger ships may

need attention as the industry increases. Information of these kind of changes were absent from IMO or the Polar Code. But intentions for change are in the discussion along with spaces left intentionally blank in the Polar Code. If these intentionally left blank areas are left there for future development, then the Polar Code will have addressed all the issues within its goal, including environmental impacts. The Polar Code is an essential step to mitigating the maritime issues in the Arctic. The future is dependent on the cooperation of the Arctic Council and the IMO with regulations as the Arctic develops and change.

### 2.3.2 Regional level

UNCLOS provides a role for ocean governance at the regional level. Arguably, the Arctic Ocean should be treated as a semi-enclosed sea, so that its coastal States are under an obligation to “endeavour, directly or through an appropriate international organization” to coordinate marine living resource “management, conservation, exploration and exploitation”, “the implementation of their rights and duties” for the protection and preservation of the marine environment and their scientific research policies, including undertaking joint research.<sup>100</sup> UNCLOS further provides for States, as appropriate, to cooperate:

“... on a regional basis, directly or through competent international organizations, in formulating and elaborating international rules, standards and recommended practices and procedures consistent with this Convention, for the protection and preservation of the marine environment, taking into account characteristic regional features.”<sup>101</sup>

As noted earlier, with respect to the adoption of standards and rules for vessel source pollution, UNCLOS speaks of a ‘competent international organization’ in the singular, and this is generally understood<sup>102</sup> to refer to the IMO.<sup>103</sup>

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100 UNCLOS arts. 122-123. Article 122 defines ‘semi-enclosed sea’ as “a gulf, basin or sea surrounded by two or more States and connected to another sea or the ocean by a narrow outlet or consisting entirely or primarily of the territorial seas and exclusive economic zones of two or more coastal States.” Although it is called ‘ocean’, it is the smallest of the world’s oceans and is effectively covered for the most part by the EEZs of five coastal States. Its hydrology is comparable to that of the Mediterranean Sea. The purpose of Arts. 122-123 is to encourage cooperation in marine areas within such a constraining geography. Further, like the Mediterranean, the Arctic Ocean has several subregional seas, several of which can also be described as semi enclosed, include the Barents, Bering, Beaufort, Greenland, Kara, Labrador, Laptev, Norwegian and Siberian Sea.

101 UNCLOS Art. 197.

102 T.L. McDorman, A Note on the Potential Conflicting Treaty Rights and Obligations between the IMO’s Polar Code and Article 234 of the Law of the Sea Convention, in *International Law and Politics of the Arctic Ocean Essays in Honor of Donat Pharand* 141 (S. Lalonde, T. L. McDorman, eds, Brill Nijhoff, 2015).

The Arctic States have chosen to cooperate on a political and regional basis with indigenous communities and other Arctic inhabitants through the Arctic Council. The Council was established in 1996 through a political declaration by the Arctic States, rather than by a treaty like many other regional marine environmental protection regimes. This followed their earlier adoption of the Arctic Environmental Protection Strategy.<sup>104</sup> In addition to a forum for political cooperation, the Council promotes scientific exchange. Although based on consensus, its decisions are not binding for its Members.

The governmental members of the Council are States whose territory is at least partially located north of 60° latitude, namely: Canada, Denmark, Finland, Iceland, Norway, Russian Federation, Sweden and the United States.<sup>105</sup> Not all of these States necessarily have coasts on the Arctic Ocean: Finland and Sweden are Baltic coastal States and Iceland is an island State in the Norwegian Sea, i.e., sub-Arctic waters.<sup>106</sup> The only States with coasts on the Arctic Ocean proper are Canada, Denmark (Greenland only, which enjoys home rule), Norway, Russia and the United States.

This has significant implications for their power to regulate shipping in the Arctic. The Council's interest in shipping is expressed through the Protection of the Arctic Marine Environment (PAME) program, which is a mechanism for cooperation in the environmental field. Cooperation on shipping matters is political and primarily focused on developing a knowledge base for shipping issues generally, as well as cooperation on contingency planning and response.

Arctic Ocean coastal States are prepared to split ranks with other Arctic States<sup>107</sup> and act outside the framework of the Arctic Council when they

103 UNCLOS art. 211.

104 Declaration on the Establishment of the Arctic Council, Ottawa, 19 September 1996, available online at: <http://arctic-council.org/article/about>, [hereafter Ottawa Declaration]. In addition to regional cooperation, Arctic States cooperate on marine and environmental issues on a bilateral basis, see D.L. Vander Zwaag, A. Chircop et al., *Governance of Arctic Marine Shipping*, a report to the Arctic Marine Shipping Assessment (AMSA), 11 October 2008, available online at <http://arcticportal.org/uploads/vZ/6u/vZ6uVo9aTTQv45iw93oFw/AMSA-Shipping-Governance-Final-Report-Revised-November-2008.pdf>.

105 The following organizations are Permanent Participants in the Arctic Council: the Inuit Circumpolar Conference; the Saami Council with member organizations in Finland, Russia, Norway and Sweden; Association of Indigenous Minorities in the Far North, Siberia, the Far East of Russia (RAIPON); Aleut International Association, representing the Aleut on the Russian and American Aleutian, Pribilof and Commander Islands; Arctic Athabaskan Council, representing the interests of United States and Canadian Athabaskan member First Nation governments; and Gwich'in Council International (GCI), representing the Gwich'in in Canada and US.

106 Nonetheless, Finland has an interest in Arctic shipping and is one of three co-chairs of AMSA. The other co-chairs are Canada and the United States.

107 There are multilevel conflicts within the Arctic Stakeholders especially within the States that are littoral to the Arctic Ocean (Arctic 5) and the others (Arctic 8). More detailed discussion will take place in part II of the Thesis in this respect.

perceive this to be in their interest. This is not surprising as arguably their interests as coastal States outweigh those of other Arctic and non-Arctic States. Accordingly, the coastal States set out their vision for the Arctic in 2008 in Ilulissat (Greenland) – to the disappointment of other actors – through the adoption of a Declaration touching on three key points.<sup>108</sup> First, in response to proposals for a new comprehensive international legal regime for the Arctic Ocean, they stated that such a comprehensive legal instrument was unnecessary. Second, presumably as an assertion of their rights as coastal States, they espoused their readiness to undertake responsible management by using the existing framework for the international law of the sea. Third, and most significantly for shipping governance, they expressed their common intention to continue working together directly and through the IMO to strengthen existing and develop new safety measures to prevent and reduce vessel-source pollution.

Arctic States are not the only entities with a significant and legitimate interest in the region and in the prospect of new maritime trade routes. Non-Arctic States, especially some Asian and European States, may have an interest in the region's known hydrocarbon and mineral resource potential and in new trade routes that could significantly reduce transit time and freight rates. The analogy to the Antarctic is valid: non-Arctic States may have a non-territorial interest in its proper governance.<sup>109</sup> UNCLOS recognises extra-regional interests in a regional sea and, applied to the Arctic, this obliges Arctic State Parties to UNCLOS to endeavour to invite other States or international organisations to foster cooperation in the region.<sup>110</sup> The Agreement establishing the Arctic Council provides a mechanism for non-Arctic States to participate as observers, and many have.<sup>111</sup> Some non-Arctic States have openly expressed their interest in the future governance of Arctic shipping<sup>112</sup> or have invested in Arctic oceanic, atmospheric and related research.<sup>113</sup> The European Commission,

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108 Ilulissat Declaration, Arctic Ocean Conference, Ilulissat, Greenland, 27-28 May 2008, <http://www.oceanlaw.org/downloads/arcticIlulissatDeclaration.pdf>.

109 O. P. de la Barra, *Reminiscences of the 1959 Antarctic Treaty Conference*, 21 *Envtl. Pol'y & L.* 205 (1991).

110 UNCLOS art. 123(d).

111 Ottawa Declaration (*supra*, note 95) Art. 3. At present, observer States include: China, France, Germany, Poland, Spain, The Netherlands and United Kingdom. See Arctic Council, available online at <http://arctic-council.org/section/observers-nonarcticstates>.

112 For example, Germany recently convened a meeting to explore what form cooperation between Arctic and non-Arctic States could take. 'New Chances and New Responsibilities': International Conference of the German Federal Foreign Office in cooperation with the Ministries of Foreign Affairs of Denmark and Norway and the Max Planck Institute for Comparative Public Law and International Law, Berlin, 11-13 March 2009, information available online at <http://www.arctic-governance.org/index.htm>.

113 China has a 21,000-ton ice-breaker converted for polar research; The EU, Japan and Sweden have also funded Arctic research. The three-year Arctic Operational Platform (ARCOP) project was funded by the EU's DG Transport and Energy, see online at: <http://www.arcop.fi/index.htm>.

conscious that the European Union (EU) does not have Arctic coastlines, defined the EU's interests in Arctic policy on behalf of the EU Member States.<sup>114</sup> The EU's shipping and other interests in the region and its governance institutions were underscored.

Clearly, regional governance has an important role to play in Arctic shipping, but most likely as a political rather than as a standard-setting forum, because it could enable Arctic States to better coordinate their national and IMO efforts to regulate shipping. It is in the collective interest of Arctic States to have the Arctic Council assume a more visible institutional presence at the IMO, thereby alerting the maritime community that a viable regional cooperative arrangement exists which is beneficial to international shipping. The Arctic Council also has the potential to further engage with important and interested non-Arctic States or organisations, such as the EU.

### 2.3.3 National Level

The national level of governance in Arctic shipping plays a more significant role than in non-polar regions due to UNCLOS Article 234, which provides coastal States in ice-covered regions with additional powers of regulation over international shipping. Article 234 provides:

“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.”<sup>115</sup>

Negotiated as *lex specialis* to the general rules on the protection and preservation of the marine environment set out in UNCLOS Part XII and conferred as an additional power within the EEZ as set out in Part V, Article 234 was directly negotiated between relatively few States at UNCLOS III.<sup>116</sup> Article 234

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114 Communication from the Commission to the European Parliament and the Council, the European Union and the Arctic Region, COM(2008) 763 final, 20 November 2008, available online at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0763:FIN:EN:PDF>. The Communication specifies that the Commission will apply for permanent observer status in the Arctic Council.

115 UNCLOS Art. 234.

116 Mainly between Canada, the USSR (at the time) and the United States. M.H. Nordquist, A. Yankov, N.R. Grandy and S. Rosenne, United Nations Convention on the Law of the Sea 1982: A Commentary, vol. IV, Nijhoff, Dordrecht (1991), 392-398.

enables Arctic coastal States to establish higher standards for vessel-source pollution than the standards established through the IMO. Therefore, national regulation pursuant to these powers applies to international shipping in addition to any applicable IMO rules and standards.

Canada and Russia are two Arctic States that have adopted national rules and standards for international shipping in the Arctic. Canada's principal legislation in this regard, the Arctic Waters Pollution Prevention Act 1970 (AWPPA),<sup>117</sup> was not enacted without protest from some States, but in view of the eventual adoption of UNCLOS and ratified by Canada, the AWPPA complies with Article 234. Since its adoption, the AWPPA has applied to waters north of 600 and only up to 100 nm from Canada's territorial sea baselines in the Arctic Ocean. Curiously, only in 2008 did Canada take the step to amend the AWPPA to encompass its entire EEZ in the definition of 'Arctic waters'.<sup>118</sup> The AWPPA and its derivative regulations provide a regime that includes: designation of shipping-safety control zones (16 of which have been designated); polar standards for ships; zero discharges from ships; a requirement to have an ice navigator on board; and voluntary reporting to the Arctic Canada Traffic System (NORDREG) for ships above 300 tons entering Canadian Arctic waters.<sup>119</sup> The latter was made mandatory in 2008.<sup>120</sup> AWPPA regula-

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117 Arctic Waters Pollution Prevention Act, R.S.C. 1985, c. A-12 [hereafter AWPPA]. Key regulations under the AWPPA are: Arctic Shipping Pollution Prevention Regulations, C.R.C., c. 353; Arctic Waters Pollution Prevention Regulations, C.R.C., c. 354. Other statutes relevant for safety and vessel-source pollution in the Arctic include: Canada Shipping Act, 2001, S.C. 2001, c. 26; Canadian Environment Protection Act, R.S.C., 1985, c. F-14; Migratory Birds Conventions Act, 1994, S.C. 1994, c. 22; Navigable Waters Protection Act, R.S.C., 1985, c. N-22; Marine Liability Act, S.C. 2001, c. 6; Oceans Act, S.C. 1996, c. 31.

118 An Act to Amend the Arctic Waters Pollution Prevention Act, Bill C-3, 1st Session, 40<sup>th</sup> Parliament, 57 Elizabeth II, 2008, introduced in December 2008 and which received its First Reading on 28 January 2009, available online at: <http://www2.parl.gc.ca/HousePublications/Publication.aspx?Docid=3625929&file=4>.

119 Arctic Shipping Governance, *supra* 53. The objectives of NORDREG are to: "... enhance the safe and expeditious movement of maritime transportation in Arctic waters; safeguard the Arctic environment; and contribute to the administration of Canadian Arctic waters and territories." It also issues acknowledgements to ships entering Arctic waters, distributes ice information and ice routings for individual ships and coordinates ice-breaker assistance, Office of Naval Research, Naval Ice Center, Oceanographer of the Navy and the Arctic Research Commission, 'Naval Operations in an Ice-Free Arctic,' Symposium, 17-18 April 2001, Final Report (US Office for Naval Research, Arlington, VA, 2001). In Canada 'Open water' is defined as: "A large area of freely navigable water in which ice is present in concentrations of less than 1/10. No ice of land origin is present." Transport Canada, Arctic Ice Regime System (AIRSS) Standards (Transport Canada, Ottawa, 1998), at 16. A concern is vessels smaller than 300 tons, especially yachts, which are increasingly being reported in Canadian Arctic waters, L. Brigham, B. Ellis, Arctic Marine Transport Workshop, 28-30 September, 2004, Appendix F, online available at [http://www.institutnorth.org/assets/images/uploads/articles/AMTW\\_book.pdf](http://www.institutnorth.org/assets/images/uploads/articles/AMTW_book.pdf).

tions set a higher standard for ship discharges than MARPOL,<sup>121</sup> so Canada issued a declaration on acceding to MARPOL to ensure that the higher national standard for Arctic waters permissible under UNCLOS Article 234 would continue to apply.<sup>122</sup>

In the wake of Arctic policy communications from the EU and the United States, Russia is expected to issue an Arctic policy statement soon. It has already legislated safety and pollution-prevention requirements for shipping using the Northern Sea Route.<sup>123</sup> This legislation draws on statutes and regulations adopted since 1990 and sets out standards for polar classes, ship inspection, emergency and repair supplies, ice-navigation qualifications of the master, pilotage requirements (compulsory in some straits), ice-breaking, civil liability for pollution damage, a compulsory notification system including

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120 Prime Minister Harper unveiled the plan in Tuktoyaktuk. A. Dowd, Canada to toughen requirements for ships in Arctic, Reuters, Tuktoyaktuk, 27 August (2008), available online at [http://www.immigrationwatchcanada.org/index.php?module=pagemaster&PAGE-user\\_op=view-page&PAGEid=3613&MMN-position=92:90](http://www.immigrationwatchcanada.org/index.php?module=pagemaster&PAGE-user_op=view-page&PAGEid=3613&MMN-position=92:90).

121 For the full text of MARPOL, see online at [http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-\(MARPOL\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx).

122 The declaration was as follows:

(a) The Government of Canada considers that it has the right in accordance with international law to adopt and enforce special non-discrimination laws and regulations for the prevention, reduction and control of marine pollution from vessels in ice-covered waters where particularly severe climatic conditions and the presence of ice covering such waters 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.

(b) Consequently, Canada considers that its accession to the Protocol of 1978, as amended, relating to the International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL 73/78) is without prejudice to such Canadian laws and regulations as are now or may in the future be established in respect of arctic waters within or adjacent to Canada. IMO, Status of Multilateral Conventions and Instruments in respect of which the International Maritime Organization or its Secretary-General Performs Depositary Functions (IMO, London, 2005), 96.

123 In particular the following: Instruction of the Government of the Russian Federation, on the authorization for cargo ships and tankers flying a foreign flag during 2007-2008 to call at Arctic ports and points, located on the Territory of the Russian Federation, 29 December 2006, No. 1855-p, available online at [http://www.morflot.ru/html/sevmorput/Document/RaspPravit\\_1855\\_r.doc](http://www.morflot.ru/html/sevmorput/Document/RaspPravit_1855_r.doc); Regulations for ice-breaker and pilot guiding of vessels through the Northern Sea Route, Guide to Navigation (1996), 84-89, available online at <http://www.morflot.ru/html/sevmorput/Document/RULES%200F%20NAVIGATION.doc>; Regulations for navigation on the seaways of the Northern Sea Route, 14 September 1990, Notice to Mariners No. 29 of 18 June 1991, in N. Koroleva, V. Markov and A. Ushakov, Legal Regime of Navigation in the Russian Arctic, Association of International Maritime Law, Soyuzmornii-proekt, Moscow, (1995), at 133-139. See also A.G. Gorshkovsky, Rules to be followed on the Northern Sea Route, Arctic Operational Platform Project Workshop proceedings, Deliverable No. D.6.1, 67 (Mar. 25, 2003), available online at: <http://www.arcop.fi/reports/workshop-report.pdf>; Gorshovskiy also mentions Requirements Relating to the Design, Equipment, and Supply of Ships, *ibid.*

advance permission to use the route, and fees for services. Ship transits are monitored by the authorities. Like Canada, Russia is a party to MARPOL (except Annex VI) and its standards for vessel-source pollution are also higher than the basic MARPOL norm. The higher charges imposed on foreign ships as 'fees for services' are a topic of controversy. Russia has the world's largest fleet of icebreakers; several are nuclear-powered and able to provide year-round services on the route.

A State's exercise of its rights under Article 234 UNCLOS powers has certain constraints. Severe climatic conditions and ice cover must exist for most of the year, creating obstructions or hazards to navigation.<sup>124</sup> Although there is already significantly less ice in the summer, for the rest of the year the ice cover is and will remain significant. Irreversible damage could be caused to the environment by international shipping. This requirement can be interpreted qualitatively. It is not necessarily a high volume of shipping that will adversely affect the marine environment because even one serious casualty could result in substantial and irreversible pollution of sensitive Arctic ecosystems.<sup>125</sup> The regulatory authority must be exercised within the limits of the EEZ. The phrase 'within the EEZ', as defined in UNCLOS Part V, was intentionally negotiated. Pharand, a leading expert on the Arctic, considers that the terminology 'within the EEZ' should be interpreted to comprise the territorial sea.<sup>126</sup> UNCLOS is unambiguous in its intention to restrict its application to the EEZ. The laws and regulations enacted pursuant to this provision must be non-

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124 A possible interpretation of ice cover is in the Arctic Guidelines which require at least 9/10ths ice cover for their application. Arctic Guidelines, *supra*.

125 In 2006, there were still reports that resources affected by the Exxon Valdez oil spill in Prince William Sound, Alaska, in 1989, had not yet recovered. *Exxon Valdez* Oil Spill Trustee Council, Status of Injured Resources, available online at: <http://www.evostc.state.ak.us/Recovery/status.cfm>.

126 D. Pharand, *The Arctic Waters and the Northwest Passage: A Final Revisit*, 38 ODIL (2007), at 47. Professor Pharand refers to the literature on both sides of the argument. Despite the more flexible interpretation that Professor Pharand advances and the literature he invokes in support, the fact is that the text of UNCLOS Arts. 55 and 234 is sufficiently clear in intent. Art. 55 defines the EEZ as: "...an area beyond and adjacent to the territorial sea...". Art. 57 provides a methodology to measure the outer limit. Canada's declaration on accession to MARPOL was followed by reactions from the US and several European States. In particular, Belgium, Denmark, France, Germany, Greece, Italy, the Netherlands, Portugal, Spain and the United Kingdom stated that while taking note of Canada's declaration relating to Article 234, "...it should be read in conformity with Articles 57, 234 and 236 of the United Nations Convention on the Law of the Sea. In particular, the... Government recalls that Article 234 of that Convention applies within the limits of the exclusive economic zone or of a similar zone delimited in conformity with Article 57 of the Convention and that the laws and regulations contemplated in Article 234 shall have due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence."

discriminatory,<sup>127</sup> and with due regard to the freedom of navigation. The purpose of these regulations is to prevent, reduce and control pollution, which raises the question whether such regulations must necessarily be limited to pollution-related purposes, or whether they could extend to safety purposes. For example, rules and standards concerning crew and passenger safety (such as lifeboat and survival suit requirements) are not related to pollution prevention. Arguably Article 234 powers cannot be used for such purposes. Instead, mandatory rules adopted under SOLAS and the voluntary Arctic Guidelines would apply. In practice, situations will occur in a polar context where it will be difficult to distinguish between pollution and safety regulation. Extensive/comprehensive safety regulation is essential to prevent incidents that could have a detrimental impact on the marine environment. Domestic regulations may contain specific requirements such as appropriate hull classes for different ice conditions, ensuring no fuel or oil cargo tank is located against the hull, and installing an ice navigator. These regulations relate to both pollution prevention and safety.

The requirement that Article 234 regulations be based on the best scientific evidence available was negotiated to ensure that coastal State requirements imposing higher standards than those adopted through the IMO are scientifically justified. This is a reasonable imposition on Arctic coastal States, considering that Article 234 does not require these States to request and receive IMO approval for their regulations. Elsewhere in UNCLOS, there is a requirement to proceed through the IMO.<sup>128</sup> In practice, and as shipping in the Arctic increases, purely unilateral approaches to standard-setting for shipping in the region are not advisable or even sufficient to protect the marine environment. High seas areas remain where shipping is guided by the IMO, not coastal State standards, as is conceivable for the trans-polar route. Furthermore, international ships navigating through the territorial seas of Arctic coastal States cannot be subjected to Article 234 standards that are inconsistent with IMO standards, because the regime of innocent passage will still apply. This is the same for right of transit passage through straits used for international navigation. Cooperation between flag States is essential to ensure proper control of ships because most seafarers will continue to be trained in maritime academies not necessarily located in Arctic States. Accordingly, a better approach to the use of Article 234 is to use the powers conferred as part of a broad cooperative approach to the setting of polar shipping rules and standards. Certain safety issues, for which the Arctic States would want to adopt the highest standards possible, are not necessarily covered by the domestic regulation-licence of Article 234. These higher safety standards can only be obtained through the

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127 A potential concern is Russian regulatory requirements for ice-breaker service, but with fees which discriminate between Russian and international shipping, Arctic Shipping Governance, op. cit, *supra*, at 67.

128 UNCLOS art. 211(6).

IMO. Arctic coastal States (in consultation with the other Arctic and interested States, possibly using the Arctic Council as a vehicle) should take the lead in the IMO to establish appropriate safety and environmental rules and standards, and then use their Article 234 powers to effectively enforce them. It is reasonable to interpret Article 234 as providing a leadership mandate for these States.

## 2.4 APPLYING INTERNATIONAL RULES AND STANDARDS TO ARCTIC SHIPPING

### 2.4.1 Maritime safety

The IMO has developed an extensive system of mandatory and voluntary rules and standards for ship construction, equipment, operations (including handling and carriage of cargo and passengers) and crewing, which apply to shipping in the Arctic. An important question is the extent to which, if at all, these rules and standards apply Arctic navigation on a practical level. The global maritime safety regime developed incrementally and primarily with reference to fundamentally different navigational environments. Two examples illustrate this point. Firstly, where a ship is surrounded by ice and requires evacuation, its crew may have to abandon the ship on ice rather than in lifeboats. Crew members may not have the appropriate safety equipment for this purpose and may not have received training to survive on ice for a sufficiently long period before being rescued. Secondly, the collision avoidance rules for steering and sailing are premised on the ability of a ship to move freely in open water.<sup>129</sup> A ship breaking ice, or following the path of an icebreaker or navigating in an area with icebergs and growlers, does not navigate in open water. It may seek open water for easier and safer navigation but course changes to avoid close-quarters situations may be significantly constrained.

The Arctic Guidelines recognise that SOLAS and related safety instruments do not fully address the safety needs of Arctic shipping.<sup>130</sup> These Guidelines have a narrower scope than the full gamut of international safety rules and standards: they only provide for a system of polar classes with related construction requirements and recommendations concerning ship and crewing operations on board. They are currently being considered for amendment. Usefully, the International Association of Classification Societies' (IACS) Unified Requirements in large measure reflect the Guidelines; a major weakness of

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129 Convention on the International Regulations for Preventing Collisions at Sea (adopted 20 October 1972, entered into force 15 July 1977, 1050 UNTS 16), as amended, Institute of Maritime Law, *The Ratification of Maritime Conventions* (Lloyd's Press, London, 1991-2003), Vol. I.1. 10.

130 O. Jensen, Arctic shipping guidelines: towards a legal regime for navigation safety and environmental protection?, *Polar Record* 44 (229): 107-114 (2008).

these Guidelines is that their construction and operational stipulations are not binding.<sup>131</sup>

Other safety concerns exist. For example, mandatory training standards for Arctic seafaring (including survival skills) are urgently needed. The IMO, the International Labour Organization (ILO) and the World Health Organization (WHO) do not have polar-specific binding instruments for training crews. The Arctic Guidelines briefly address this need with some highly concise provisions concerning training ice navigators (e.g., no prior ice-navigation experience avoids ice build-up).<sup>132</sup> This issue should be regulated under the 1978 International Convention on Standards of Training, Certification and Watch keeping for Seafarers (STCW).<sup>133</sup> An IMO sub-committee is working on amendments to the STCW and consideration of the training needs of Arctic seafarers is called for.

In addition to seafaring matters, the Arctic Guidelines fall short of providing more specific requirements for certain classes of vessels operating in the Arctic. Cruise ships and liquefied natural gas carriers are cases in point. The potential problem posed by cruise ships in polar waters was well illustrated by the casualty of the *MV Explorer* in the Southern Ocean.<sup>134</sup> That ship, an ice strengthened vessel, had inadequate life-saving equipment on board, lifeboats were open-top (the Arctic Guidelines recommend closed lifeboats, but at the time of writing these do not apply to Antarctic waters) and some crew members evacuated the ship on life rafts. Fortunately, there were ships in the vicinity able to respond to the distress call within a few hours.<sup>135</sup>

Moreover, Arctic waters are not included in any of the zones, areas and seasonal periods in Annex II of the 1966 International Convention on Load Lines, in which draught limitations are imposed and on a seasonal basis in the interests of safety.<sup>136</sup> Because of their particular characteristics, many other marine regions have zones and seasonal periods with related requirements. It remains to be seen whether it is safe to transport any cargo in the

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131 For instance, Ø. Jensen, *The IMO Guidelines for Ships Operating in Arctic Ice-Covered Waters: From Voluntary to Mandatory Tool for Navigation Safety and Environmental protection?*, 2/2007 FNI Report, Fridtjof Nansen Institut, Oslo (2007). With little legal incentive to implement the Arctic Guidelines, Jensen states that no State has yet legislated them.

132 Ø. Jensen, *Arctic shipping guidelines: towards a legal regime for navigation safety and environmental protection?*, 44 (229) *Polar Record* 107 (2008).

133 *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers* (adopted 7 July 1978, entered into force 28 April 1984), 1361 UNTS 2.

134 N. Marchenko, *Floating Ice Induced Ship Casualties*, 22nd IAHR International Symposium on Ice, Singapore, August 11-15, 2014, online available at [http://www.unis.no/35\\_STAFF/staff\\_webpages/technology/nataly\\_marchenko/NM\\_2014\\_IAHR.pdf](http://www.unis.no/35_STAFF/staff_webpages/technology/nataly_marchenko/NM_2014_IAHR.pdf).

135 A. Chircop, *The Growth of international shipping in the Arctic: Is regulatory review timely?*, 24 *The International Journal Of Maritime and Coastal Law* 355 (2009), at 374.

136 *International Convention on Load Lines* (adopted 5 April 1966, entered into force 21 July 1968), ATS 1968 no. 23.

Arctic or whether there should be particular requirements for the carriage of certain cargoes.<sup>137</sup>

In sum, this overview of maritime safety issues suggests that a systematic review of international maritime safety instruments with reference to increased international shipping in the Arctic as a result of new routes is necessary. This review should identify gaps and global safety rules and standards that might need to be enhanced to respond to the unique demands of navigation in this region. Many issues have already been anticipated in the national regulations of the Arctic States but it is appropriate to consider whether international shipping is sufficiently served by domestic rules and standards, regardless of their scope and quality, or whether international rules and standards are required, especially considering that shipping in the Arctic will traverse different national maritime zones and high sea areas.

#### 2.4.2 Marine environmental protection

The particular sensitivity of the Arctic marine environment makes the region a prime candidate for an elevated level of protection under MARPOL. At present, the basic general MARPOL rules and standards on ship discharges apply in most parts of the Arctic, except in the EEZs of coastal States that are not parties to a particular annex (e.g., Canada and the US are not parties to MARPOL Annex IV), or have legislated higher discharge standards as a result of UNCLOS Article 234. No MARPOL "special areas" with discharge restrictions are designated in the region; consequently, MARPOL permits certain discharges of various wastes, in very small quantities and at a certain distance from the nearest land. MARPOL Annex 1 restricts oily water discharges to 1/15k (for old tankers, based on cargo-carrying capacity) and 1/30k (for new tankers, based on the total cargo carried), with a maximum discharge rate of 30 litres per nm at a distance of 50 nm from the nearest land. Garbage is important in this environment, but although MARPOL prohibits the discharge of plastics, it permits discharge of packing materials (25 nm from the nearest land) and other materials, including paper, glass, rags and metal (12 nm from the nearest land). MARPOL permits sewage discharge, if comminuted or disinfected, at four knots at a distance of 12 nm from the nearest land (Annex IV) but stricter controls are needed. The use of heavy-grade oils (HGOs) as fuel might also need to be banned. The critical question is whether the basic MARPOL rules are sufficient in this environment.

In comparison to MARPOL, Canada and Russia have a zero-discharge rule for oil. Canada does not permit the discharge of garbage, but permits sewage

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137 Arctic Shipping Governance, *op. cit.*, *supra*.

discharge without regard to distance from land. This renders its standard for sewage discharge lower than MARPOL.<sup>138</sup>

The Arctic is particularly susceptible to harm from vessel discharges so waste use on board must be maximized.<sup>139</sup> A strong case for special area designation under MARPOL Annexes I (oil), II (noxious substances), V (garbage) and an emission control area under Annex VI can be made, as with other sensitive cold regions that have some seasonal ice cover, such as Antarctic Waters and the Baltic. The challenge for special areas in the Arctic is that there are relatively few ports in the region for the reception facilities that must accompany special area designation. Such facilities at present are not only variable, but also unlikely to meet existing MARPOL requirements. Even if there were facilities, the ultimate disposal of received wastes is open to question. Moreover, port services and practices in this regard must be harmonised.<sup>140</sup> In considering the possibility of designating special areas or emission control areas, Arctic coastal States would need to review their adhesion to relevant MARPOL annexes. As of 2015, Canada and the US are not parties to Annex IV, Canada is not a party to Annex V, and Canada and the Russian Federation are not parties to Annex VI.

One possibility is to designate a large PSSA (Particular Sensitive Sea Area) over much of the Arctic Ocean. An alternative would be to establish a series of PSSAs in critical areas, and use MARPOL special area designations and higher discharge standards as appropriate APMs. Other measures are also conceivable, such as mandatory routeing and reporting schemes, so that Arctic coastal States can focus logistical support on designated navigation routes. PSSA designation is premised on demonstrating that the threat from international shipping to the marine environment is such that additional protection is needed, and that the proposed measures are appropriate to counter the threat and within the IMO's mandate to provide. A low volume of shipping with the potential for greater impact could justify PSSA designation, as long as the threat is demonstrated. As in the case of the Baltic Sea and Western European Waters,<sup>141</sup> Arctic Ocean coastal States could collectively submit a joint proposal for the region to the IMO or, alternatively, individual or groups of Arctic States can submit separate proposals for different areas of the Arctic Ocean. The politics of PSSA designation should not be underestimated. As the Baltic PSSA demon-

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139 W. Ostreng, *The Natural and Societal Challenges of the Northern Sea Route: A Reference Work*, Kluwer, Dordrecht (1999).

140 Det Norske Veritas, *Port Reception Facilities in the PAME Region*, Technical Report No. 2006-1517 Rev. No. 01 (Norwegian Maritime Directorate, Hovik, 2006).

141 More analysis on that can be found online at <http://channelislands.noaa.gov/sac/pdfs/imo-area-based-protection.pdf>.

strated,<sup>142</sup> lack of consensus behind a regional PSSA could result in non-participation by dissenting neighbours and exclusion of their waters (in that case, Russia).

Environmental concerns also relate to the current legal framework for salvage and pollution response in the Arctic. The International Convention on Salvage (Salvage Convention) provides a useful regime for this purpose, but the difficulty in the Arctic is to identify a safe place where the salvaged vessel may be taken by the salvor.<sup>143</sup> At present States have little experience in Arctic salvage, with the possible exception of Russia, which employs a large fleet of ice-breakers, including modern nuclear vessels, conducting salvage provision among many other tasks. Coastal State regulation in the Arctic could pose a problem for salvors as additional impositions might further constrain an already difficult operation. On the one hand, "[t]he salvor should ensure that the salvage plan and actions represent the best environmental option for the Company and the coastal State(s) concerned."<sup>144</sup> On the other hand, the Arctic Ocean coastal States may use regulatory authority under Article 234 UNCLOS to impose other requirements. The salvor is expected to take the salvaged vessel to a safe place, which can be challenging in areas with substantial ice. In addition, places of refuge for ships in need of assistance are normally designated in locations where certain infrastructure and a likelihood of timely assistance to the ship and response to the threat of a casualty exist, following the guidance offered by the 2003 IMO Guidelines on Places of Refuge for Ships in Need of Assistance.<sup>145</sup> The remoteness of navigation routes in the Arctic and the harsh environment may necessitate the development of "good practices" that are adjusted to the specific circumstances in this region. Regional cooperation can play an important role, possibly within the framework of the 1990 Convention on Oil Pollution Preparedness and Response

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142 O. Lindén, A. Chircop, M. Pourzanjani, J.U. Schröder, S. Raaymakers, PSSA in the Baltic Sea: present situation and future possibilities Monograph/Research Brief, online available at [http://www.balticmaster.org/media/files/general\\_files\\_706.pdf](http://www.balticmaster.org/media/files/general_files_706.pdf).

143 International Convention on Salvage (adopted on 28 April 1989, entered into force 14 July 1996), UKTS 1996 No. 93.

144 Guidelines on the Control of Ships in an Emergency, IMO Doc. MSC.I/Circ.1251, 19 October 2007, available online at <http://www.imo.org/includes/blastDataOnly.asp/dataid%3D20243/1251.pdf>.

145 Guidelines on Places of Refuge for Ships in Need of Assistance, IMO Doc. A.949(23), 5 December 2003. available online at: <http://www.imo.org/includes/blastDataOnly.asp/dataid%3D9042/949.pdf>.

(OPRC),<sup>146</sup> which requires stockpiling of equipment, holding exercises and detailed planning.<sup>147</sup>

The marine environmental concerns considered in this section suggest that Arctic Ocean States would do well to cooperatively approach the IMO to designate MARPOL special areas and PSSAs in the Arctic. Incipient regional and substantial bilateral cooperation on contingency planning and response already exists. However, the Arctic States should also consider cooperating on salvage and places of refuge in the region.

## 2.5 PRELIMINARY CONCLUSIONS

Arctic States and the maritime community interested in shipping in the region face several challenges. The first is a regulatory challenge: there is significant regulatory inconsistency and insufficiency on safety and pollution. Ideally, international shipping in the Arctic should occur within a harmonised framework of predictable and uniform international and national rules and standards appropriate for safe and environmentally responsible navigation in the Arctic. To achieve this, a consistent approach is needed to what should be mandatory (in comparison to the currently voluntary Arctic Guidelines) international and national rules for polar class ship construction, vessel operations and reporting requirements. Acting through the IMO, Arctic States are in a position to make a substantial leap forward in protecting the marine environment through the establishment of MARPOL special areas and PSSAs in the region. However, Arctic coastal States that stand to gain most from these environmental protection tools must send a clear message of common commitment to the rest of the maritime world by becoming parties to all relevant maritime conventions and their annexes. Adopting a new regional port State control regime to promote compliance and enforce common shipping standards would greatly assist efforts to meet this regulatory challenge.

The Arctic coastal States will be able to influence the economics of Arctic shipping if they take on the infrastructure challenge. Appropriate infrastructure consists of ports and related facilities and services, navigation aids, timely meteorological and ice forecasts, standing services (e.g., salvage, places of refuge, pollution response, search and rescue) for ships and crews needing assistance and to prevent and avoid pollution damage. These are costly and

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146 Adopted 30 November 1990, entered into force 13 May 1995) 30 ILM 733; Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (adopted 15 March 2000, entered into force 14 June 2007), IMO Doc. HNSOPRC/CONF/I 1/Rev 1, 15 March 2000, available online at: <http://www.imo.org>.

147 Arctic States cooperate in information exchange through the Arctic Council's Emergency Prevention, Preparedness and Response (EPPR) Working Group, available online at <http://eppr.arctic-council.org/>. Bilateral cooperation between Canada and the US and between Canada and Denmark also exists. Arctic Shipping Governance, *supra*.

it is important that cost-recovery through fees levied on shipping must be for services actually provided and on a non-discriminatory basis. A sensible approach for Arctic coastal States would be to consider cooperating on a regional basis in the provision of services to shipping. Rather than tackling each need on an issue-by-issue basis, it makes economic sense to take an integrated approach and share proportionate responsibilities within or in the vicinity of their respective jurisdictions. International shipping can then expect consistent rules and standards and provision of services throughout the route(s), and freight and insurance rates will benefit.

Third is the seafarer challenge. A significant shortage of seafarers already exists, and seafaring knowledge and skills for safe work in this environment must be reviewed. A better understanding of qualifications, training requirements and health issues is required. Appropriate global standards for training and certification are needed and maritime academies (most of which are located in non-Arctic States) must be capable and equipped to train crews for the demands of seafaring in this region. No one level of governance is equipped to address all these challenges at its level alone. The global, regional and national levels of governance in the Arctic must plan for international shipping in the region in a concerted and systematic manner. This could be in the form of a combination of IMO rules and standards, coordinated national rules and implementation (ideally through the IMO) pursuant to UNCLOS Article 234. The use of Article 234 regulatory authority should be coordinated to achieve consistent and higher standards for international shipping through Arctic waters. Shipping is an international activity involving many flag States, ship owners, carriers, shippers and cargo owners in different countries, global financiers and suppliers, and crews of diverse nationalities. It is in the interest of Arctic States, as well as the international community, that standards for Arctic shipping do not remain purely national or regional, or perhaps even simply industry and class practices, but are indeed an integral part of the global regulatory regime. In this regard, regulators should recognise that the development of technologies to support high safety and environmental standards are frequently industry-driven, if not also -funded. Industry can play an important role in defining and implementing those standards. Experience shows that certain existing shipping standards have evolved from industry practice (e.g., the International Maritime Dangerous Goods Code).<sup>148</sup>

The scope of these tasks necessitates large-scale and long-term anticipatory and cooperative planning. Given the significance of likely new maritime trade routes in the future and the lasting impact on international shipping, Arctic States and the IMO, with the participation of industry and NGOs, should undertake a comprehensive assessment of the international maritime rules, regula-

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148 International Maritime Organization, *International Maritime Dangerous Goods Code* (London, IMO, 2008). Background information on the IMDG Code is available online at <http://www.imo.org/TCD/mainframe.asp?topic-id=158>.

tions and standards to determine their short- and long-term practical application in the Arctic environment. A legislative programme may be necessary. The express intention of the Arctic coastal States to cooperate, including through the IMO, is vital for the future of international shipping through the Arctic. Although only a consultative political body, the Arctic Council has an important role to play in building the knowledge base in the region, advancing regional positions in the IMO and facilitating the conclusion of bilateral and multilateral arrangements. In particular, the Arctic Council should have a more visible presence in IMO meetings and processes.