

CENTRE FOR INTERNATIONAL LAW

A Guide to Arctic Issues for Arctic Council Observers

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Preface

In May 2013, Singapore was accepted as an Observer to the Arctic Council. This new opportunity for Singapore is the result of the Singapore government's wide range of interests in the consequences of the annual reduction in the geographic scope of ice cover in the Arctic Ocean, including the rise of sea levels and an increase in Arctic shipping.

In conjunction with the Ministry of Foreign Affairs, the Attorney General's Chambers and the Maritime and Port Authority of Singapore, and with the assistance of the Singapore Maritime Institute, the Centre for International Law of the National University of Singapore (CIL) was asked to administer a fellowship in Arctic Affairs to assist the various Singaporean entities in meeting the challenges posed by Singapore's admission as an Observer to the Arctic Council.

This guide has been prepared to assist Singaporeans in meeting those challenges. Chapter 1 introduces the reader to the Arctic region and its differences from the other polar area, Antarctica. Chapter 2 describes the unique geography of the Arctic and introduces the legal regime applicable to the Arctic Ocean. Chapter 3 examines the unique climate of the Arctic and its challenges to safe and environmentally friendly navigation of the Arctic Ocean, including the nature of ice at sea and Arctic climatology.

Chapter 4 introduces the reader to the trends in Arctic shipping, and the sea routes in and through the Arctic Ocean. Chapter 5 describes the inadequacies of infrastructure in the Arctic, particularly nautical charting, tracking of and communicating with ships in the Arctic Ocean and Arctic ports.

The next three chapters deal with various legal issues. Chapter 6 identifies the various sources of international law that are generally applicable to the Arctic, both treaties and soft law, and catalogues to which of the applicable treaties Singapore is party. Chapter 7 describes several multilateral international agreements of specific application to the Arctic. Chapter 8 describes the maritime claims and boundary situations in the Arctic Ocean of the five littoral States: Canada, Denmark on behalf of Greenland, Norway, the Russian Federation and the United States.

Chapters 9 and 10 deal extensively with the role of the International Maritime Organization in the Arctic, the Polar Code and the potential new measures it might adopt that would affect Arctic shipping.

Chapter 11 analyses for consistency with international law the unilateral regulations by Canada and Russia of shipping in the Northwest Passage and the Northern Sea Route, respectively, in the Arctic.

Chapter 12 describes the Arctic Council, the role of Observer States, the new Arctic Economic Council, and the Conference of Parliamentarians of the Arctic Region.

Chapter 13 describes the legal regime of the LOS Convention for the conduct of marine scientific research in the Arctic Ocean and the Arctic Council's efforts to promote this research.

The final chapter discusses the expected role of Singapore as a new Observer State, and suggests the development of an Arctic policy and a national ocean policy as a means of enhancing Singapore's capacity to meet its obligations as an Observer.

This Guide may be found in the CIL website under the Arctic Research Programme, at <https://cil.nus.edu.sg/research-projects/cil-research-projects/arctic-research-programme/>.

Many of the documents listed in the sources cited in this Guide may be found at the CIL website under the Arctic Research Programme, CIL Research Materials, at <https://cil.nus.edu.sg/research-projects/cil-research-projects/arctic-research-programme/cil-research-materials/>.

The hyperlinks are correct as of 13 May 2016.

Table of Abbreviations/Acronyms

ACAP	Arctic Contaminants Action Program, Arctic Council Working Group
AEC	Arctic Economic Council
AIS	Automatic Identification Systems (of Ships)
AMAP	Arctic Monitoring and Assessment Program, Arctic Council Working Group
AMSA	Arctic Marine Shipping Assessment
APM	Associated Protective Measure (for PSSA)
Arctic 5	Arctic Ocean Circumpolar States (Canada, Denmark (Greenland), Norway, Russia, United States) (Arctic Five)
Arctic 8	Member States of the Arctic Council (Canada, Denmark (Greenland), Finland, Iceland, Norway, Russia, Sweden, United States) (Arctic Eight)
ARHC	Arctic Regional Hydrographic Commission
AT	Australian Treaties
ATBA	Area to be Avoided (an IMO routeing measure)
CAFF	Conservation of Arctic Flora and Fauna, Arctic Council Working Group
CLCS	Commission on the Limits of the Continental Shelf
CPAR	Conference of Parliamentarians of the Arctic Region
Cumulative	
Digest	Cumulative Digest of United States Practice in International Law 1981-1988
DGPS	Differential Global Positioning System (of satellites)
Digest	Digest of United States Practice in International Law
DOALOS	UN Division for Ocean Affairs and Law of the Sea
EA	Environmental Assessment
EC	European Commission
ECDIS	Electronic Chart Display and Information Systems
ECS	Extended Continental Shelf (beyond 200 nm of baselines)
EEZ	Exclusive Economic Zone
ENC	Electronic Navigational Charts
EPPR	Emergency Preparedness, Prevention and Response, Arctic Council Working Group
EU	European Union
GMDSS	Global Marine Distress and Safety System
HEO	High Earth Orbit
HTW	IMO Sub-Committee on Human Element, Training and Watchkeeping
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
ICAO	International Civil Aviation Organization
ICS	International Chamber of Shipping
IHO	International Hydrographic Organization

IMO	International Maritime Organization
LNG	Liquefied Natural Gas
LOS	UN Convention on the Law of the Sea (Law of the Sea Convention)
LRIT	Long Range Identification and Tracking (of Ships)
LRTAP	Convention on Long-Range Transboundary Air Pollution
MARPOL	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 thereto
MEPC	IMO Marine Environment Protection Committee
MSC	IMO Maritime Safety Committee
MSI	Maritime Safety Information
MSR	Marine scientific research
NCCS	National Climate Change Secretariat (NCCS) of Singapore
NCSR	IMO Sub-Committee on Navigation, Communications and Search and Rescue
NEAFC	North-East Atlantic Fisheries Commission
nm	nautical mile(s)
NOAA	US National Oceanic and Atmospheric Administration
NORDREG	Northern Canada Vessel Traffic Services Zone (including reporting system)
NSR	Northern Sea Route (Russia)
NWP	Northwest Passage (Canada)
OPRC	International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990
PAME	Protection of the Arctic Marine Environment, Arctic Council Working Group
PSSA	Particularly Sensitive Sea Area
Polar Code	International Code for Ships Operating in Polar Waters
RFMO	Regional Fisheries Management Organization
SAO	Senior Arctic Officials of the Arctic Council
SAR	Search and Rescue
SCTF	Enhancing Scientific Cooperation in the Arctic Task Force
SDC	IMO Sub-Committee on Ship Design and Construction
SDWG	Sustainable Development Arctic Council Working Group
SOLAS	International Convention for the Safety of Life at Sea, 1974, as amended
SSE	IMO Sub-Committee on Ship Systems and Equipment
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended
TFAMC	Task Force on Arctic Marine Cooperation
TFTIA	Task Force on Telecommunications Infrastructure in the Arctic
UNTS	United Nations Treaty Series
USCG	United States Coast Guard
VHF	Very High Frequency
VTs	Vessel Traffic Services
WGS 84	World Geodetic System 1984
WMO	World Meteorological Organization

WWNWS World Wide Navigational Warning Service

ZOC zone of confidence

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Chapter 1 Introduction

In a map of the world, the usual view is a Mercator projection where the Arctic is both peripheral and truncated. Such a projection makes it almost impossible to envision the Arctic Basin as the focal point of an internationally important region.

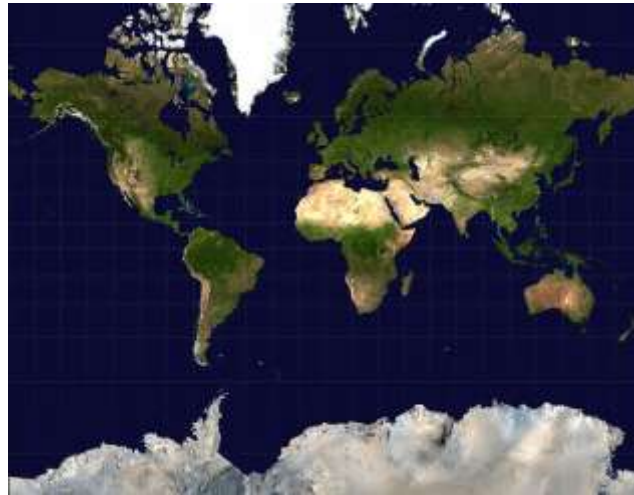


Figure 1. World Map (Mercator projection)

Source: <https://commons.wikimedia.org/wiki/File:Mercator-projection.jpg>

In contrast, a polar projection not only highlights the central position of the Arctic, but also makes it clear that the United States, Canada, Greenland and Russia (among others) are close neighbours in geopolitical terms:¹

¹ Oran R Young, 'Becoming an Arctic Nation: The United States in the Age of the Arctic', in Myron H Nordquist and John Norton Moore (eds), *Eleventh Annual Seminar: The Polar Regions* (Center for Oceans Law and Policy, 1987) vol 2 at 12.



Figure 2. World Map (Arctic polar projection)

Source: Arctic Studies Center, Smithsonian National Museum of Natural History, online: http://www.mnh.si.edu/arctic/html/resources_map.html. Reproduced with permission.

The polar areas, the Arctic and Antarctica, are entirely different beyond just being at the opposite (North and South) poles of the Earth. Their geographic characteristics are opposite and their juridical regimes governing activities there are different. This chapter summarises those differences and describes the actions taken for the Arctic.²

The major differences in juridical regimes are these: Antarctica is governed by the Antarctic Treaty and related treaties and instruments (Antarctic Treaty System), while the Arctic Ocean is governed by the LOS Convention and its implementing instruments.

In contrast to Antarctica (a continent surrounded by the Southern Ocean with no indigenous population), the Arctic is a relatively small ocean surrounded by five coastal States (Canada, Denmark (Greenland), Norway, Russia and the United States) with a number of indigenous peoples. The amount of ice covering the Arctic Ocean has been declining over the

² See Davor Vidas (ed), *Protecting the Polar Marine Environment: Law and Policy for Pollution Prevention* (Cambridge University Press, 2000).

recent past with a resulting interest in trans-Arctic shipping because of the much shorter distances between the Pacific and Atlantic Oceans by way of the Arctic Ocean than through the Panama or Suez Canals, or around Cape Horn.

However, navigation in the Arctic is much more challenging and difficult than sailing in more moderate or tropical waters. Indeed, it is presently possible only during the northern summer months. In addition, the melting ice cap is causing a rise in sea levels and is affecting the Earth's climate. Because of these changing circumstances, national and international attention has been increasingly focused on the Arctic.

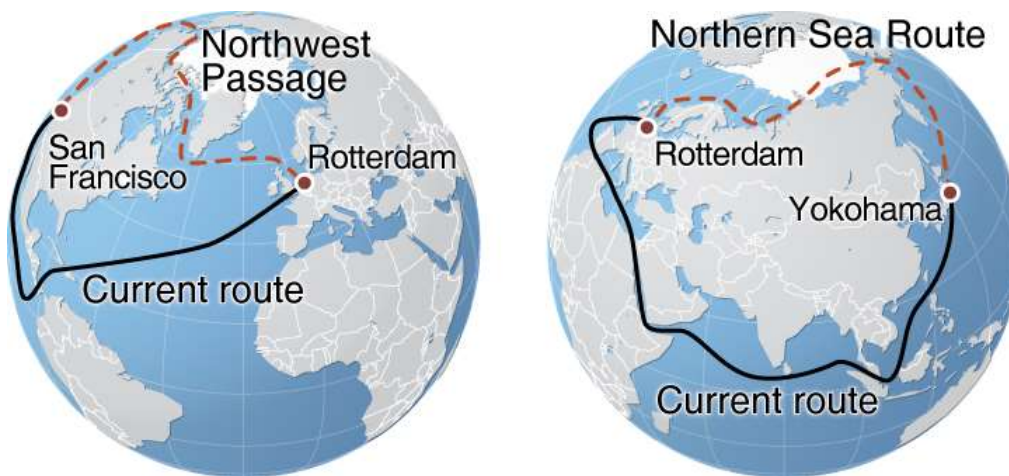


Figure 3. Possible New Routes through Arctic Ocean:

Shorter distance of around 3,900 to 4,500 nm in both the Northwest Passage and the Northern Sea Route

Sources: http://www.grida.no/graphicslib/detail/northern-sea-route-and-the-northwest-passage-compared-with-currently-used-shipping-routes_1336.

Author: Hugo Ahlenius, UNEP/GRID-Arendal; http://www.discoveringthearctic.org.uk/images/1img_nwne_globes.jpg

This guide has been prepared to assist in understanding these developments and the actions being taken to deal with them at the governmental, intergovernmental and public sector levels. It is specially designed to assist Singapore in meeting its role as an observer to the Arctic Council and its many working groups.

Chapter 2 Polar Geography

To enable an informed understanding of the information that follows on maritime operations in the Arctic, this chapter begins with a description of the unique geography of the Arctic. The chapter concludes with a brief description of the law of the sea regime applicable to the Arctic Ocean.



Figure 4: Map of Arctic Ocean

Source: <http://nsidc.org/arcticseaicenews/map-of-the-arctic-ocean/>

There are many definitions of the Arctic. Geographically, the Arctic is defined as all land, submerged lands and water north of the Arctic Circle (66°33'39" N). On the other hand, the Arctic Council defines its membership as the named eight States with land territory north of the Arctic Circle (see Chapter 12). A third example is contained in the lengthy definition of the geographic scope of the Arctic area for the IMO's Polar Code (see Chapter 9). Other definitions include where the permafrost begins.³ Finally, national definitions of the Arctic region differ.

³ See the Circum-Arctic Permafrost Map, published by the Frozen Ground State Center, National Snow and Ice Data Center, online: <http://nsidc.org/data/ggd318.html>.

Land territory north of the Arctic Circle includes northern Alaska, northern mainland Canada abutting the Bering Sea (the Northwest Territories), the Canadian Arctic islands (which Canada calls the Canadian ‘arctic archipelago’⁴), Greenland (Denmark), Svalbard/Spitzbergen and Jan Mayen (Norway), northern Norway, northern Sweden, northern Finland, and the Russian territories of Franz Josef Land, Novaya Zemlya, North Land, Anjou Islands, Wrangel Island⁵ and northern Siberia.

Defining the Arctic Ocean is much like defining the Arctic; neither has a definitive and obvious extent.⁶ As with the Arctic, many see no need for subscribing to one particular definition of the Arctic Ocean for all purposes as each definition serves its own purpose.

Submerged lands in the Arctic Ocean consist of the seabed and subsoil beneath the territorial sea,⁷ continental shelf, continental margin and the deep seabed. The continental shelf is the natural prolongation of the landmass,⁸ while the deep seabed is the sea floor beyond the outer limits of the continental shelf and is known as the ‘Area’.⁹ The geographic scope of the Area of the Arctic seabed will be determined when the outer limits of all extended shelves (ECS) beneath the Arctic Ocean are delineated (see Chapter 8).¹⁰

As discussed in Chapter 6, the law of the sea, as reflected in the 1982 LOS Convention, allows coastal States to claim territorial seas up to 12 nautical miles (nm) measured from the baseline, exclusive economic zones (EEZ) up to 200 nm, continental shelf out to 200 nm – and beyond when the continental margin meets the geological criteria of Article 76 of the LOS Convention. The figure below illustrates these zones.

⁴ While this area is an archipelago in the geographic sense, it does not meet the definition of an archipelagic State in Part IV of the LOS Convention because Canada is not an island nation and therefore Canada is not entitled to draw archipelagic straight baselines enclosing these features.

⁵ On the status of Wrangel and other Arctic Islands, see ‘Status of Wrangel and other Arctic islands,’ 2009 Digest at 463, online: <http://www.state.gov/s/l/2009/index.htm> and www.state.gov/p/eur/rls/fs/128740.htm.

⁶ See Wikipedia, ‘Arctic Ocean’, online: http://en.wikipedia.org/wiki/Arctic_Ocean.

⁷ United Nations Convention on the Law of the Sea, adopted 10 December 1982, 1833 UNTS 397 (entered into force 16 November 1994) (LOS Convention), Art 2(2).

⁸ *Ibid*, Art 76(1)-(3).

⁹ *Ibid*, Art 1(1)(1).

¹⁰ *Ibid*, Art 76(7)-(9).

Legal Boundaries of the Oceans and Airspace

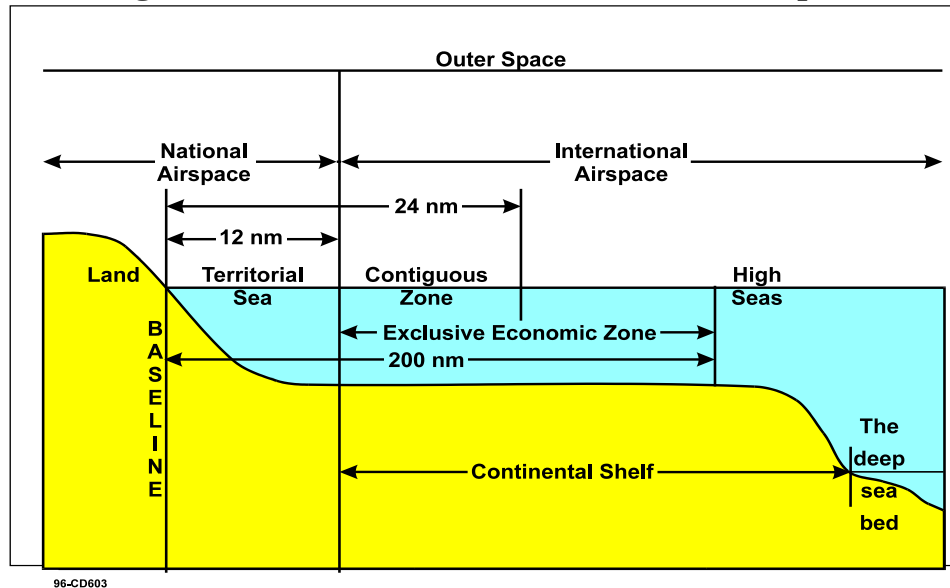


Figure 5. Source: US government

The LOS Convention also provides, *inter alia*, passage rights for foreign flag vessels through the territorial sea,¹¹ the EEZ¹² and straits used for international navigation,¹³ as well as for high seas freedoms,¹⁴ protection of the marine environment,¹⁵ and the regime for marine scientific research.¹⁶ As discussed further in Chapter 6, the LOS Convention and other international treaties apply in the Arctic Ocean as in all other ocean areas. Calls for a new international agreement to govern the Arctic seem to be unaware of the existing legal structure governing the Arctic.¹⁷

¹¹ *Ibid*, Arts 17-32. See further *infra* Chapter 6.

¹² *Ibid*, Part V, Arts 55-75.

¹³ *Ibid*, Part III, Arts 34-45.

¹⁴ *Ibid*, Art 87.

¹⁵ *Ibid*, Part XII, Arts 192-237, including a special provision for ice-covered areas (Art 234). Part XII does not apply to vessels entitled to sovereign immunity (Art 236). However, each State is required to require such vessels act in a manner consistent, so far as is reasonable and practicable, with the Convention.

¹⁶ *Ibid*, Part XIII, Arts 238-265.

¹⁷ A recent call for a new international agreement was by retired US admiral James Stavridis, former NATO commander and now dean of the Fletcher School of Law and Diplomacy at Tufts University. James Stavridis, 'Lessons From the White Continent,' *Foreign Policy* (23 February 2015) online: <https://foreignpolicy.com/author/james-stavridis/>. His rationale is rebutted by Heather Exner-Pirot in 'The Arctic—An uncommon heritage of humankind,' *Alaska Dispatch News* (25 February 2015), copy on file with author.

Chapter 3 Arctic Climate

This chapter describes the unique climate of the Arctic and its challenges to safe and environmentally friendly navigation of the Arctic Ocean.¹⁸

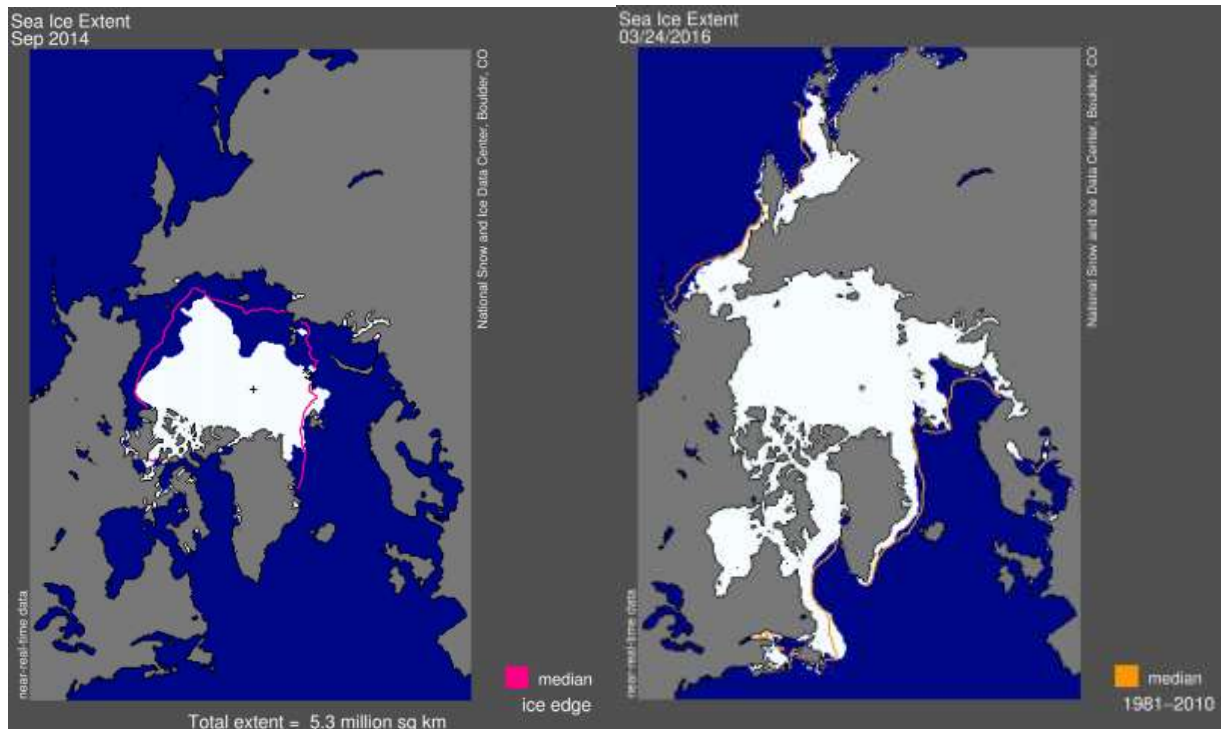


Figure 6. Arctic Sea Ice Extent: Minimum and Maximum

Source: <http://nsidc.org/arcticseaicenews/>

As noted in Chapter 2, an important geographical limit and a defining line of the Arctic is the Arctic Circle (66°33'39" N). At this latitude, places on the surface of the earth receive continuous light for 24 hours per day, once a year. As one moves poleward, the number of days of continuous light increases until reaching the North Pole, where continuous light is experienced for six months between the Vernal (March 21) and Autumnal equinoxes (September 21). Conversely, continuous dark is experienced at the pole for the other six months and decreasingly in time as one moves south. Significant for marine operations is that much of the central Arctic

¹⁸ The text that follows is adapted from Protection of the Arctic Marine Environment Arctic Council Working Group (PAME), 'Arctic Marine Shipping Assessment (AMSA) 2009 Report' (April 2009) at 19-20, 22, 24-25, online: <http://www.pame.is/> (AMSA 2009 Report). See also Det Norske Veritas (DNV), 'Report on Specially Designated Marine Areas in the Arctic High Seas', Report No/DNV Reg No: 2013-1442/17JMT1D-26 (11 March 2014) Part I, online: <http://www.pame.is/index.php/projects/arctic-marine-shipping/specially-designated-marine-areas-in-the-arctic> (DNV Report) (finding it difficult to find support for a MARPOL Special Area for the high seas of the Arctic Ocean). For details of the extent of Arctic sea ice since 1981, see the US National Snow and Ice Data Center website, online: <http://nsidc.org/arcticseaicenews/>. See also the Global Ice Center, online: <http://weathernews.com/GIC/>, a Japanese service providing high North Sea ice information.

Ocean is shrouded in winter darkness with very low temperatures for half the year. This seasonal or diurnal cycle in the polar environment has broad implications for maritime use throughout the Arctic Ocean and its coastal seas.

The Nature of Ice at Sea

Several forms of floating ice may be encountered at sea. The most extensive is that which results from the freezing of the sea surface, namely sea ice; but mariners must also be concerned with ‘ice of land origin’ - icebergs, ice islands, bergy bits and growlers. Both icebergs and sea ice can be dangerous to shipping and always have an effect on trans-Arctic navigation.¹⁹

There are various types of floating ice:

- *Young ice*: newly formed sea ice less than 30 centimetres thick. It forms extensively in the autumn as ocean surface temperatures fall below freezing and on leads that open in mid-winter due to shifts in the pack ice. It is not a significant safety hazard for most Arctic-class vessels although, when placed under pressure by winds or currents, it can impede progress.
- *First-year ice*: can easily attain a thickness of 1 metre but rarely grows beyond 2 metres by the end of the winter. It is relatively soft due to inclusions of brine cells and air pockets and will not generally hole an ice-strengthened ship operated with due caution. Under pressure from winds or currents, first-year ice can impede progress to the point that even powerful vessels can become beset for hours or even days.
- *Old ice*: if first-year ice survives the summer melt season, it is then classified as old ice (subdivided into second-year and multi-year ice). It is typically 1 to 5 metres thick and is extremely hard. During the summer melt process, the brine cells and air pockets that characterise first-year ice drain out from the bottom of the ice, leaving a clear, solid ice mass that is harder than concrete. Even ice-strengthened vessels are at risk of being holed by old ice. When under pressure, old ice can stop the most powerful icebreakers.
- *Icebergs*: are large masses of floating ice originating from glaciers. They are very hard and can cause considerable damage to a ship in a collision. Ice islands are vast tabular icebergs originating from floating ice shelves. Smaller pieces of icebergs are called bergy bits and growlers, and are especially dangerous to ships because they are extremely difficult to detect.

Arctic Climatology

One defining threshold of the Arctic environment that is often used is set by the 10°C July isotherm. This isotherm marks the southern Arctic boundary where the monthly mean temperature in July is below 10°C. This limit also closely corresponds with the northern limit of

¹⁹ See further US National Snow and Ice Data Center, *Quick Facts on Arctic Sea Ice*, online: <http://nsidc.org/cryosphere/quickfacts/seaice.html>.

the tree line. Because of the mix of landmasses, water and ice in the northern latitudes, the isotherm pushes north above the Arctic Circle in all of Eurasia, but is south of the Arctic Circle in much of central and eastern Canada, southern Greenland and the Aleutian Islands.

In January, mean temperatures everywhere within the Arctic Circle are below 0°C, varying from about -5°C along the north coast of Norway to greater than -35°C in central Greenland, the northern part of the Canadian Archipelago and in northern Siberia. The average January temperature at the North Pole is estimated at between -30°C and -35°C; however, this is difficult to confirm given that no permanent recording station exists at the pole. Over virtually all of the Arctic Ocean, mean winter air temperatures are not as cold as they are in fringing continental landmasses in Siberia, Alaska and Canada.

Precipitation, generally, is light within the Arctic, at less than 250 millimetres per annum. Only along exposed coastal regions in southern Baffin Island, western Greenland and northern Scandinavia are amounts greater than this regularly experienced. The main component of the precipitation in the central and high Arctic is snow, but this too is light, at less than 25 centimetres per annum. Although light, snow tends to be blown in all regions and accumulates in drifts and around structures; in marine environments, drifting snow accumulates along ice edges and other features on the sea ice, creating considerable additional barriers to normal navigation. In summer, almost all the snow disappears nearly everywhere, except in glacier areas.

One of the factors explaining the climatic patterns and annual weather events in the Arctic is the distribution of high and low-pressure systems through the year. In winter, two semi-permanent low pressure areas set up in the region: one over Iceland and the North Atlantic extending into the Barents Sea, and the other over the Gulf of Alaska in the North Pacific. In contrast, high pressure areas are established over Siberia and the Yukon in Canada. The pressure differences bring about frequent and intense cyclonic storms moving generally from west to east. In summer, the lows weaken, the Siberian high disappears and the Canadian high shifts north over the Canadian Archipelago. As a result, pressure gradients are less and cyclonic activity declines, providing a fairly benign Arctic marine environment for voyages and regional operations. By October, the winter configuration begins to take effect and storminess increases with declining temperatures. Again, the seasonality of the polar environment, in this case the overall annual weather patterns over the Arctic Ocean, is a critical, strategic aspect for planning current and future marine transport systems throughout the Arctic basin.

Chapter 4 Trends in Arctic Shipping²⁰

This chapter describes the trends in Arctic shipping over the past few years.

There are basically three routes for ships to transit between the Bering Strait and the Atlantic Ocean: the Northeast Passage, including the Northern Sea Route (NSR), the Northwest Passage (NWP) and through the high seas of the Arctic Ocean over the North Pole ('over the top').²¹ The United States believes the NSR and NWP are straits used for international navigation as that term is used in Part III of the LOS Convention, with all the accompanying rights and duties of user States and straits States.²² Recent trends in the use of each route are reviewed in that order. We turn first to the NSR.

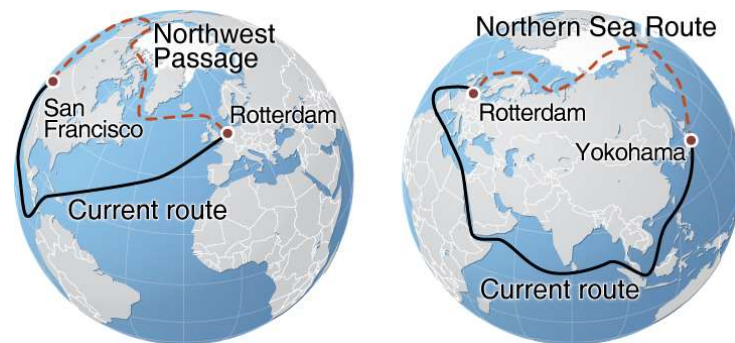


Figure 7. Northwest Passage and Northern Sea Route vs Current Routes
Source: http://www.discoveringthearctic.org.uk/images/1img_nwne_globes.jpg

Northern Sea Route (NSR)²³

The website of the Northern Sea Route Information Office describes the Northern Sea Route as follows:

²⁰ This section updates the material in J Ashley Roach and Robert W Smith, *Excessive Maritime Claims*, 3rd ed (Martinus Nijhoff Publishers, 2012) at 477-80.

²¹ The shorter distance using the NWP or NSR is around 3,900 to 4,500 nm, online: http://www.grida.no/graphicslib/detail/northern-sea-route-and-the-northwest-passage-compared-with-currently-used-shipping-routes_1336.

²² Roach and Smith, *supra* note 20 at 312-28. On Canada's claim that the NWP is Canadian internal waters, see Roach and Smith, *supra* note 20 at 318-28, nn 118-19. On Russia's claim that the NSR is internal waters, see Roach and Smith, *supra* note 20 at 312-18.

²³ The NSR is described in greater detail in the AMSA 2009 Report, *supra* note 18 at 23, 33-34, 42-44. See Roach and Smith, *supra* note 20 at 312-18, 478, 495-96, for an earlier discussion of issues associated with the NSR.

The water area of the Northern Sea Route shall be considered as the water area adjacent to the Northern coast of the Russian Federation, comprising the internal sea waters, the territorial sea, the adjacent zone and the exclusive economic zone of the Russian Federation and confined in the East with the Line of Maritime Demarcation with the United States of America and Cape Dezhnev parallel in Bering Strait, with the meridian of Cape Mys Zhelania to the Novaya Zemlya Archipelago in the West, with the eastern coastline of the Novaya Zemlya Archipelago and the western borders of Matochkin Strait, Kara Strait and Yugorski Shar.

** * **

The seaway of Northern Sea Route (NSR) is running through Kara, Laptev, East Siberian, and Chukchi seas. The NSR can be entered from west through the Straits Yugorskiy Shar and Karskiye Vorota, or by passing North of Ostrova Novaya Zemlya around Mys Zhelaniya, and from East through the Bering Strait.

The NSR extends for about 3000 miles. The factual length of the route in each particular case depends on ice conditions and on the choice of particular variants of passage of different stretches of the route.

The main factor influencing navigation through the NSR is presence of ice. Annual and seasonal variability of ice conditions is typical for all areas of the NSR. Navigation season for transit passages starts approximately at the beginning of July and lasts through to the second half of November.²⁴

The Arctic Council's 2013 final report of the Arctic Ocean Review Project described in some detail Russia's recent efforts to develop the NSR:

Russia is interested in further developing its Northern Sea Route (NSR), a route which has experienced renewed activity, to carry a greater volume of natural resources to global markets. Linking the Russian Arctic during a summer navigation season of three to four months (roughly July to October) to markets in China and Southeast Asia has been the focus of recent experimental voyages. In late August 2011, a super tanker, the Vladimir Tikhonov, crossed the NSR with icebreaker support to deliver 120,000 tons of gas concentrate from Murmansk to Bangkok, Thailand. A bulk carrier under Liberian flag with 66,000 tons of iron ore, Sanco Odyssey, sailed from Murmansk to Beilun, China, on the NSR during 3-10 September 2011.²⁵ These two voyages represent the largest tanker and bulk carrier to sail the NSR. This not only indicates an increase in the size of ships that can sail on more northerly routes along the Russian Arctic, but a significant change in the NSR shipping season.

During summer 2012, 46 ships sailed the NSR carrying more than one million tons of cargo, a 53 per cent increase in cargo volume over 2011.²⁶ More traffic on trans-Arctic voyages will also

²⁴ Northern Sea Route Information Office, 'NSR - General Area Description', online: http://www.arctic-luo.com/nsr_generalareadescription.

²⁵ Thomas Nilsen, 'Record long Arctic navigation season', *Barents Observer* (18 November 2011) online: <http://barentsobserver.com/en/business/record-long-arctic-navigation-season> [reference in original].

²⁶ Trude Pettersen, '46 vessels through Northern Sea Route', *Barents Observer* (23 November 2012) online:

mean increased traffic in the Bering Strait Region and along the northern Norwegian coast. Thus far, shippers along the NSR focus on the transport of natural resources from west to east, in a summer navigation season of three to four months. However, in November 2012, the River Ob sailed the NSR to deliver liquefied natural gas (LNG) from Norway to Japan. Although escorted by icebreaker, the vessel encountered young sea ice of only 30 centimeters.²⁷

While Russia and several Asian nations pay significant attention to the NSR for all cargoes, regular container ship operations during such a short navigation season have not yet proven viable. The higher risks for delayed cargoes, the uncertainty of marine insurance for this remote region, and the variability of the regional sea ice cover all present unique challenges to international container shippers along the NSR.

Arctic shipping insurance considerations were reviewed in a 2014 report by a marine broking and risk management company.²⁸ Also in 2014, the UK P&I Club issued a fact sheet on P&I insurance for ships transiting through the NSR.²⁹

The Russian Northern Sea Route Information Office reported the final statistics for transit navigation on the NSR in 2013 and 2014 as follows.³⁰ First for 2013:

<http://barentsobserver.com/en/arctic/2012/11/46-vessels-through-northern-sea-route-23-11> [reference in original].

²⁷ Thomas Nilsen, 'LNG Arctic odyssey in times of climate change', *Barents Observer* (6 December 2012) online: <http://barentsobserver.com/en/energy/2012/12/lng-arctic-odyssey-times-climate-change-06-12> [reference in original].

²⁸ Marsh, 'Arctic Shipping: Navigating the Risks and Opportunities' (London, August 2014) online: <http://usa.marsh.com/NewsInsights/MarshRiskManagementResearch/ID/41590/Arctic-Shipping-Navigating-the-Risks-and-Opportunities.aspx> (requires registration to access online: [usa.marsh.com/Portals/9/DocumentsSecure/Arctic Shipping Lanes MRMR_August_2014.US.pdf](http://usa.marsh.com/Portals/9/DocumentsSecure/Arctic%20Shipping%20Lanes%20MRMR_August_2014.US.pdf)).

²⁹ UK P&I Club, 'Arctic Shipping: P&I Insurance FAQs' (9 September 2014) online: http://www.ukpandi.com/fileadmin/uploads/uk-pi/Documents/Polar_ice_navigation/Arctic_Shipping_The_Northern_Sea_Route_FAQS.pdf.

³⁰ Northern Sea Route Information Office, 'Final Statistics for Transit Navigation on the NSR in 2013' (22 November 2013) online: <http://www.arctic-luo.com/node/209>; 'List of NSR transit voyages in 2014 navigational season' (19 December 2014) online: <http://www.arctic-luo.com/node/225>. More detailed statistical information for 2011, 2012, 2013 and 2014 transits online: http://www.arctic-luo.com/nsr_transits.

Cargo Type		Volume, tons	Displacement, tons	Cargo Volume Eastbound, tons	Cargo Volume Westbound, tons
Liquid	31	911,867		588,659	323,208
Bulk	4	276,939		203,439	73,500
LNG	1	66,868		66,868	
General	13	100,223		36,846	63,377
Ballast	15		469,703		
Repositioning	7		38,027		
Total:	71	1,355,897	507,730	895,812	460,085

Amount of calls in 2013: Eastbound – 41; Westbound – 30

Total vessels under foreign flag: 25 from 11 states: Russia – 46, Liberia – 5, Marshall Islands – 2, Greece – 2, Cyprus – 2, Norway – 2, Finland – 2, Malta – 1, Hong Kong – 1, Bermuda – 1, Antigua and Barbuda – 1³¹

Table 1. Northern Sea Route Transit Navigation 2013
Source: Northern Sea Route Information Office

In August 2014, Russia told the IMO slightly different figures: ‘In 2010, 10 ships made transit voyages via the Northern Sea Route (NSR) from Europe to the Asia-Pacific region, in 2011 there were 34 ships, 36 ships in 2012 and 37 ships in 2013.’³² Another analysis of the 2013 data noted that only 41 of the 71 transits reported were full transits of the NSR, of which only 30 carried cargo, mostly oil products.³³

For 2014, the Northern Sea Route Information Office listed 31 vessels that crossed both the Western and Eastern NSR boundaries, involving mostly Russian flag vessels (25), two under Swedish flag, and one each under Bahamas, Curaçao and Panama flags. The NSR Information Office listed 22 vessels, all under Russian flag, which crossed the Western NSR boundary bound for Russian ports.³⁴ The total amount of cargo transported in transit dropped 77 percent to

³¹ Data from 2013 detailed transit statistics, *supra* note 30.

³² International Maritime Organization (IMO), *Comments on the Report of the Polar Code Correspondence Group* (Submitted by the Russian Federation), MEPC 67/9/4 (15 August 2014) at para 5.

³³ Malte Humpert, ‘Arctic Shipping: An Analysis of the 2013 Northern Sea Route Season,’ *The Arctic Institute Center for Circumpolar Security Studies* (October 2014) online: <http://www.thearcticinstitute.org/2014/10/NSR-Shipping-Report.html>.

³⁴ http://www.arctic-liaison.com/docs/nsr/transits/Transits_2014.pdf.

274,000 tonnes.³⁵ The decline in transits has been attributed to Western sanctions on Russia following the annexation of the Crimea.³⁶

For 2015, the Northern Sea Route Information Office listed only eighteen vessels transiting the NSR under seven different flags: Russia (10), China (2), St. Kitts & Nevis (2), Bahamas (1), Netherlands (1), Liberia (1), Sweden (1). Cargo carried totaled 39,586 metric tonnes and 137 passengers. Only four of the vessels required icebreaker assistance. Average transit time was 10.6 days.³⁷

In late October 2015, China's largest shipping company, Cosco, announced that it will begin regularly scheduled container shipping through the NSR, although it has not provided a start date for its Arctic shipping.³⁸ However, a January 2016 comprehensive study sponsored by the Arctic Institute found that the NSR will not be fully commercially viable until 2035 at the earliest.³⁹

For 2016, the Northern Sea Route Information Office listed eighteen transits by thirteen vessels under seven flags: Russia (7), Liberia (3), Hong Kong (2), Portugal (2), St Kitts & Nevis (2), Bahamas (1) and Germany (1). Cargo carried totaled 215,513 metric tonnes and 246 passengers. Average transit time was 14.3 days.⁴⁰

*Northwest Passage (NWP)*⁴¹

³⁵ Trude Pettersen, 'Northern Sea Route traffic plummeted,' *Barents Observer* (16 December 2014) online: <http://barentsobserver.com/en/arctic/2014/12/northern-sea-route-traffic-plummeted-16-12>.

³⁶ Alistair Doyle and Alistair Scrutton, 'Sanctions sap allure of Russia's shipping route,' *Reuters* (22 January 2015) online: <http://www.reuters.com/article/2015/01/22/us-sanctions-russia-arctic-shipping-idUSKBN0KV17520150122>.

³⁷ Northern Sea Route Information Office, 'Transits in 2015,' online: http://www.arctic-lio.com/nsr_transits.

³⁸ David Thurton, 'Arctic shipping route through Russia planned by Chinese company' *CBC News* (30 October 2015) online: <http://www.cbc.ca/news/canada/north/arctic-shipping-route-through-russia-planned-by-chinese-company-1.3296334>.

³⁹ Ørds Hansen, Grønsedt, Lindstrøm Graversen and Hendriksen, 'Arctic Shipping – Commercial Opportunities and Challenges,' *CBS Maritime* (January 2016) online: <http://www.thearcticinstitute.org/2016/02/CBS-Maritime-Arctic-Shipping-Study.html>. See also Veronica Cruz, 'Arctic shipping route not till 2035 at the earliest says Arctic Institute,' *Market Business News* (9 February 2016) online: <http://marketbusinessnews.com/arctic-shipping-route-not-till-2035-at-the-earliest-says-arctic-institute>.

⁴⁰ Northern Sea Route Information Office, 'Vessels transited NSR in Y2016,' online: <http://www.arctic-lio.com/node/263>.

⁴¹ For a description of the Northwest Passage, see AMSA 2009 Report, *supra* note 18 at 20-21, 32, 37-41. For a discussion of issues pertaining to use of the Northwest Passage, see Roach and Smith, *supra* note 20 at 312-28, 478-79.



Figure 8. Northwest Passage Routes
Source: <http://www.athropolis.com/map9.htm#map2>

The 2009 Arctic Marine Shipping Assessment (AMSA) Report described conditions in the Canadian Arctic and NWP in part as follows:

Sea Ice Conditions

Sea ice observations for the past three decades from the Canadian Ice Service show negative trends in coverage for the eastern and western regions of the Canadian maritime Arctic. The observations also show a very high, year-to-year variability of sea ice coverage in all regions, an important factor of uncertainty when considering marine insurance, investment, ship construction standards and other aspects of Arctic marine transport. Due to the unique geographic characteristics of the Canadian Arctic Archipelago (with many channels oriented north-south), the region is also expected to be one of the last areas of the Arctic Ocean to have a significant summer ice cover. It is plausible that if sea ice melt in the central Arctic Ocean continues, as many climate models indicate, there is a potential for more mobile multi-year sea ice to be swept southward through many of the northern passages of the archipelago. For the whole of the Arctic Ocean, including the Canadian maritime Arctic and Northwest Passage, global climate models indicate that sea ice will be present throughout the winter and for approximately nine months during each year. The Canadian maritime Arctic will have a generally more favorable sea ice situation in a short, summer period, but will be ice-covered for a majority of the year, a significant factor for Arctic transport regulation and protection of the marine environment.⁴²

Official Canadian data on recent transits of the NWP does not appear to be available on the web. One blog reports 185 complete transits of the NWP since 1853 through the end of 2012, with 21 transits in calendar 2012.⁴³ A 2013 Arctic Council report stated:

⁴² AMSA 2009 Report, *supra* note 18 at 112-13.

⁴³ R K Headland, 'Transits of the Northwest Passage to the End of the 2012 Navigation Season', (*Northwest Passage 2013*, 1 May 2013) online: <http://northwestpassage2013.blogspot.com/2013/05/transits-of-northwest->

In summer 2010, two cruise ships sailed the length of the Northwest Passage (NWP), as did one each in 2011 and 2012. During summer 2012, The World, a 196.3 meter condominium ship, became the largest tourist ship to transit the NWP. The NWP has also experienced a notable increase in adventurers and small yacht voyages in 2010 . . . , 2011 . . . , and 2012. These small vessel voyages along the NWP present a new set of challenges for the maritime authorities in the remote Canadian Arctic. To put these numbers in perspective, as of the 2012 navigation season, there have been only 183 full voyages of the NWP since Roald Amundsen's voyages aboard Gjøa from 1903-1906.⁴⁴ However, development of a trans-Arctic route through the NWP does not appear likely in the near future.⁴⁵

A September 2015 report stated that '[d]espite climate change, sea ice in the Northwest Passage (NWP) remains too thick and treacherous for it to be a regular commercial Arctic shipping route for many decades, according to new research out of York University [Toronto].'⁴⁶ This seemed to be confirmed in the report of the mid-October 2015 transit of two Finnish icebreakers from Alaska through Dolphin and Union Strait in the east to Greenland.⁴⁷

Over the Top

Year round ice covering the high seas areas of the Arctic Ocean, including the North Pole, suggests that to date there has been few transits 'over the top'. One recent study found that,

[passage-to-end-of.html](#).

⁴⁴ *Ibid*. A list of 126 full transits (i.e., crossing both the Bering and Davis straits) of the Northwest Passage between 1903 and 2006 appears in J M McFarlane, 'Full Transits of the Canadian Northwest Passage,' *Nauticapedia* (2012) online: http://www.nauticapedia.ca/Articles/NWP_Fulltransits.php.

⁴⁵ PAME, 'The Arctic Ocean Review Project, Final Report (Phase II 2011-2013)' (Kiruna, 15 May 2013) at 26, online:

http://www.pame.is/images/02_Document_Library/Reports_to_Ministers/08_AC_Meeting/AOR_final_report_15_May_2013.pdf.

In anticipation of use by PRC ships of the NWP, the Chinese Ministry of Transport has published (in Chinese) a 365 page Northwest Passage shipping guide. Nathan Vanderklippe, "China reveals plans to ship cargo across Canada's Northwest Passage," *Globe and Mail* (20 April 2016) online:

<http://www.theglobeandmail.com/news/world/china-reveals-plans-to-ship-cargo-across-canadas-northwest-passage/article29691054/>.

For a comparison of transits of the NWP and NSR, see Frédéric Lasserre and Olga Alexeeva, 'Analysis of Maritime Transit Trends in the Arctic Passages,' in *International Law and Politics of the Arctic Ocean: Essays in Honor of Donat Pharand*, Suzanne Lalonde and Ted L McDorman (eds), (Brill/Nijhoff Publishers, 2015) at 180-93.

⁴⁶ York University Press Release 29-SEP-2015, 'Arctic sea ice still too thick for regular shipping route through Northwest Passage: York research,' online: http://www.eurekalert.org/pub_releases/2015-09/yu-asi092915.php, citing Christian Haas and Stephen E.L. Howell, 'Ice thickness in the Northwest Passage,' *Geophysical Research Letter* 10.1002/2015GL065704, online: onlinelibrary.wiley.com/doi/10.1002/2015GL065704/full.

⁴⁷ 'Finnish icebreakers arrive in Greenland after late-season NW Passage transit', *Nunatsiaq News* (2 November 2015) online:

<http://www.nunatsiaqonline.ca/stories/article/65674finnish-icebreakers-arrive-in-greenland-after-late-season-nw-passage-t/>.

based on AIS data, present ship traffic is ‘very low by any standard’ and predicted future ship traffic is expected to increase but the amount of increase is very uncertain.⁴⁸

Bering Strait

The Bering Strait, located just to the south of the Arctic Circle at the northern edges of the Bering Sea, is described by one atlas as ‘a somewhat narrow sea passage between the easternmost point of the Asian continent and the westernmost point of the North American continent. This strait separates the United States and Russia by 58 miles (85 km), with a water depth that measures 100–165 feet, (30–50 meters).’⁴⁹ Wikipedia describes the Bering Strait as ‘a strait 82 kilometres (51 miles; 44 nm) wide at its narrowest point, between Cape Dezhnev, Chukchi Peninsula, Russia, the easternmost point (169°43' W) of the Asian continent and Cape Prince of Wales, Alaska, United States, the westernmost point (168°05' W) of the North American continent.’⁵⁰ NOAA Marine Chart Division adds that the ‘Russian island on Big Diomede and the American island of Little Diomede lie just three nautical miles apart. These islands divide the two major passages through the strait, which lie to the east and west of the islands with depths of about 20 to 30 fathoms.’⁵¹



Figure 9. Bering Strait

Sources: http://en.wikipedia.org/wiki/Bering_Strait_crossing;
<http://www.charts.noaa.gov/OnLineViewer/16190.shtml>

The 2009 AMSA Report described conditions in the Bering Strait Region in part as follows:

Sea Ice

⁴⁸ DNV Report, *supra* note 18 at 45 para 3.5.

⁴⁹ World Atlas, ‘Bering Strait’, online: <http://www.worldatlas.com/aatlas/infopage/bering.htm>.

⁵⁰ Wikipedia, ‘Bering Strait’, online: http://en.wikipedia.org/wiki/Bering_Strait.

⁵¹ NOAA Office of Coast Survey Marine Chart Division, ‘U.S. Arctic Nautical Charting Plan,’ draft 5 June 2015, 20-21 (describing and illustrating new chart 16190 Bering Strait North, 1:100,000 (May 2013)) online: http://www.nauticalcharts.noaa.gov/mcd/docs/Arctic_Nautical_Charting_Plan.pdf.

Seasonally dynamic sea ice conditions are found in this natural bottleneck. Typically, sea ice develops along the coasts in October and November. During May-July the ice edge retreats northward through the region. First-year sea ice can develop to more than 1.2 meters thick during the winter. Except for shorefast ice, sea ice movement in the Bering Strait region is dynamic and forced by winds and currents. Ice has been observed to move through the region at speeds as high as 27 nautical miles per day. The seasonal ice field does not contain icebergs from land-based glaciers; however, multi-year ice from the Arctic ice pack has been observed to flow southward through the strait and into the Bering Sea. The future sea ice extent in the vicinity of the Bering Strait is projected to change only slightly in spring (April and May); however, a significant reduction (later freeze-up) is projected for the future in November and December.

* * * *

Infrastructure, Navigation and Communication

There are currently no established vessel routing measures in the Bering Strait region. A Traffic Separation Scheme (TSS) may need to be established in the region as vessel traffic increases. There is currently no active Vessel Traffic Service (VTS) or other traffic management system in place in the waters of the Bering Strait. Shipboard Automated Identification System (AIS) capability is currently limited. Presently the Marine Exchange of Alaska has established and is expanding AIS reception capability throughout portions of the Bering Sea.

There are no shore-based very high frequency (VHF) FM communication services available in the Bering Strait region. The U.S. Coast Guard does maintain VHF-FM sites in the Bering Sea, and maintains a HF radio guard for emergency and distress calling, but HF coverage of the Arctic region is poor. There are only three U.S. Coast Guard maintained navigational aids at the Bering Strait along the north side of the Seward Peninsula into Kotzebue Sound. There are no navigational aids north of Kotzebue Sound.

There is 100 percent coverage of the Bering Strait region from the Global Positioning System-Standard Positioning Service (GPS-SPS). However, the GPS constellation is not configured for optimal positioning in high latitudes, resulting in a potential degradation of position accuracy. There is currently no Differential GPS (DGPS) coverage of the area.

In the Bering Strait region, limited capabilities exist to respond to an incident, whether it is for lifesaving or oil recovery. Weather and oceanographic observations necessary to support search and rescue and oil recovery operations are also minimal. Even if a U.S. Coast Guard operating team were seasonally deployed to an Arctic coastal community, weather and distance to an incident site would remain huge challenges. Under present circumstances, vessels in distress must depend on other vessels or local communities in the area for assistance or wait until aid arrives. Few viable salvage vessels are available north of the Aleutian Islands.⁵²

According to the United States Coast Guard's (USCG) May 2014 Draft Environmental Assessment of Arctic Operations and Training Exercises (Draft EA), the total number of vessels

⁵² AMSA 2009 Report, *supra* note 18 at 107, 112.

in the Arctic rose from some 120 in 2008 to 250 in 2012, and the number of transits of the Bering Strait rose from 220 in 2008 to 480 in 2012. The growth rate was particularly high for tank vessels; tugs and other cargo vessels were second.⁵³

The Draft EA provides additional detail:

Vessel traffic through the Bering Strait has risen steadily over recent years, according to Coast Guard estimates, and Russian efforts to promote a Northern Sea Route for shipping may lead to continued increases in vessel traffic adjacent to the western portion of the EA action area. An analysis done by Shell Oil as part of a Revised Outer Continental Shelf Lease Exploration Plan for the Chukchi Sea⁵⁴ indicated that barge traffic passing through the Chukchi Sea during the months of July through October has increased from roughly 2000 miles of vessel traffic in 2006 to roughly 11,500 miles of vessel traffic in 2010. In 2012, over one million tons of cargo transited an Arctic route that reduces thousands of miles off of traditional voyages between the Atlantic and Pacific Oceans.⁵⁵ Vessel traffic within the EA action area can currently be characterized as traffic to support oil and gas industries, barges or cargo vessels used to supply coastal villages, smaller vessels used for hunting and local transportation during the open water period, military vessel traffic, and recreational vessels such as cruise ships and a limited number of ocean-going sailboats. Barges and small cargo vessels are used to transport machinery, fuel, building materials and other commodities to coastal villages and industrial sites during the open water period. The Coast Guard anticipates a continued increase in vessel traffic in the Arctic. Changes in the distribution of sea ice, longer open-water periods, and increasing interest in studying and viewing Arctic wildlife and habitats may support an increase in research and recreational vessel traffic in the proposed action area regardless of oil and gas activity.⁵⁶

In 2010, the 17th USCG District in Alaska commenced a ‘Port Access Route Study’ in portions of US waters in the Bering Sea north to the Chukchi Sea. The study area was expanded in December 2014 and proposed within it a voluntary two-way route, as follows:

- (1) A four nautical mile wide, two-way route extending from Unimak Pass in the Aleutian Islands that proceeds Northward through the Bering Sea and Bering Strait before terminating in the Chukchi Sea.*
- (2) A four nautical mile wide, two-way route extending from a location North of the Western side of St. Lawrence Island and near the U.S.-Russian Federation maritime border, then proceeding Northeast to a junction with the first two way route located to the West of King Island.*

⁵³ USCG, ‘Draft Programmatic EA: Arctic Operations and Training Exercises Alaska’ (May 2014) online: www.uscg.mil/d17/docs/DRAFT%20PROGRAMMATIC%20ENVIRONMENTAL%20ASSESSMENT.pdf (USCG Draft EA).

⁵⁴ ‘Revised Outer Continental Shelf Lease Exploration Plan, Chukchi Sea, Alaska, Burger Prospect: Posey Area Block 6714, 6762, 6764, 6812, 6912, 6915 Revision 2’, (November 2013) at 423, online: http://www.boem.gov/uploadedFiles/BOEM/About_BOEM/BOEM_Regions/Alaska_Region/Leasing_and_Plans/Plans/2013-11-06%20Shell%20Chukchi%20Sea%20EP%20Revision%202.pdf [reference in the original].

⁵⁵ USCG, ‘USCG Arctic Strategy’ (Washington DC, May 2013) online: http://www.uscg.mil/seniorleadership/DOCS/CG_Arctic_Strategy.pdf [reference in the original].

⁵⁶ USCG Draft EA, *supra* note 53 at 4-16.

(3) A total of four precautionary areas, each circular and 8 nautical miles wide in diameter. Three of these precautionary areas will be located at the starting/ending points of the two-way routes, and the fourth will be located at the junction of the recommended two-way routes.

The public comment period ended 18 August 2015.⁵⁷ In November 2015 testimony before Congressional committees, the U.S. Coast Guard stated that ‘[a] thorough Bering Strait PARS, with input from other Arctic Nations, will provide valuable recommendations for the International Maritime Organization (IMO).’⁵⁸

NCSR 2 approved the establishment of five recommendatory ATBAs in the region of the Aleutian Islands, proposed by the United States, and invited MSC 95 to adopt them.⁵⁹ MSC 95 did adopt these five ATBAs to be implemented on 1 January 2016.⁶⁰

Eastern Arctic Straits

According to the Northern Sea Route Information Office, the NSR can be entered from the Kara Sea through the straits Yugorskiy Shar or Karskiye Vorota, or from the Barents Sea by passing North of Ostrova Novaya Zemlya around Mys Zhelaniya.⁶¹ Other entrances to the Arctic Ocean are through the Fram Strait between eastern Greenland and Spitsbergen, or from the Barents Sea between Svalbard and Franz Josef Land.

⁵⁷ *Port Access Route Study: In the Chukchi Sea, Bering Strait and Bering Sea*, 79 Fed Reg 72157 (2014) online: <http://www.gpo.gov/fdsys/pkg/FR-2014-12-05/pdf/2014-28672.pdf>; *id.*, 80 Fed Reg 40074, July 23, 2015. For a detailed examination of the environmental risks in the Bering Strait, see H P Huntington et al., ‘Vessels, risks, and rules: Planning for safe shipping in Bering Strait,’ (2015) 51 *Marine Policy* 119-127, online: <http://www.sciencedirect.com/science/article/pii/S0308597X14002012>.

⁵⁸ Testimony of Vice Admiral Charles D. Michel, Vice Commandant, US Coast Guard on ‘Arctic Operations’ before the House Foreign Affairs Committee—Western Hemisphere & Europe, Eurasia, and Emerging Threats Subcommittees,’ (17 November 2015) p 5, online: docs.house.gov/meetings/FA/FA14/20151117/104201/HHRG-114-FA14-Wstate-MichelC-20151117.pdf. See further Dan Joling, ‘As warming leads to more Bering Strait vessel traffic, Coast Guard studies shipping lanes,’ *Associated Press* (17 November 2015) online: <http://www.usnews.com/news/business/articles/2015/11/17/coast-guard-studies-shipping-lanes-for-bering-sea-routes>.

⁵⁹ IMO, Establishment of five areas to be avoided in the region of the Aleutian Islands, NCSR 2/3/5 (December 5, 2014 (USA)); IMO, *NCSR 2 Report to the Maritime Safety Committee*, NCSR 2/23 (March 26, 2015) at 5 para. 3.13.3 and Annex 1 at 2-3.

⁶⁰ MSC 95/22, *infra* note 238, at 50, paras. 11.2-11.3 for dissemination by means of SN.1/Circ.331. For consideration of other measures see Berkman et. al, ‘Governing the Bering Strait Region: Current Status: Emerging Issues and Future Options,’ (2016) 47 *Ocean Development & International Law* 186-217, and Hartsig et. al, ‘Arctic Bottleneck: Protecting the Bering Strait Region from Increased Vessel Traffic,’ (2014) 18 *Ocean and Coastal Law Journal* 35-53.

⁶¹ Northern Sea Route Information Office, *supra* note 30.

Chapter 5 Arctic Infrastructure

This chapter identifies and discusses efforts to correct the deficiencies in Arctic infrastructure that adversely affect the development of maritime activities in the Arctic Ocean. The discussion begins with nautical charting, followed by tracking of ships in the Arctic and a discussion of the difficulties in communicating with those ships. The chapter concludes with a look at Arctic ports and port waste reception facilities. For Arctic Search and Rescue (SAR), see Chapter 7.

*Nautical Charting of the Arctic Ocean*⁶²

The final AMSA recommendation in 2009 stated that ‘the Arctic states should significantly improve, where appropriate, the level of and access to data and information in support of safe navigation and voyage planning in Arctic waters.’ The Assessment notes that this ‘would entail increased efforts for: hydrographic surveys to bring Arctic navigation charts up to a level acceptable to support current and future safe navigation; and systems to support real-time acquisition, analysis and transfer of meteorological, oceanographic, sea ice and iceberg information.’⁶³

Less than ten per cent of Arctic waters is charted to modern standards. The preparation of nautical charts is normally the responsibility of national hydrographic offices per SOLAS regulation V/9, hydrographic services.

To facilitate the exchange of knowledge and information among, and the provision of quality assured data to, the national hydrographic offices, on 6 October 2010, the five Arctic coastal States represented by their respective hydrographic offices established the Arctic Regional Hydrographic Commission (ARHC).⁶⁴ Since the establishment of the International Hydrographic Organization (IHO) in 1921, fifteen Regional Hydrographic Commissions have been established worldwide. The Arctic Ocean remained without such a Commission until 2010.⁶⁵

⁶² This section updates the material in Roach and Smith, *supra* note 20 at 485-86. For a brief overview of charting of Arctic waters, see Evert Flier, ‘Charting of the Arctic Ocean’ (28 February 2014) online:

<http://www.imo.org/MediaCentre/HotTopics/polar/Documents/Arctic2014/13.%20Mr.%20E.%20Flier.pdf>.

⁶³ AMSA 2009 Report, *supra* note 18, at 7. The state of Arctic charting is discussed in AMSA 2009 Report, *supra* note 18, at 156-159, 161.

⁶⁴ Statute of the Arctic Regional Hydrographic Commission (ARHC) (6 October 2010) online:

http://www.iho.int/mtg_docs/rhc/statutes/ArHC_Statutes.pdf.

⁶⁵ Statement of the Arctic Regional Hydrographic Commission (6 October 2010) online:

https://www.iho.int/mtg_docs/rhc/ArHC/ArHC1/ARHC1-07D_ARHC_Statement_Oct_6_2010.pdf. Information of all the Regional Hydrographic Commissions (as of 26 November 2012) online:

http://www.iho.int/srv1/index.php?option=com_content&view=article&id=420:regional-hydrographic-commissions&catid=64:4ircc&Itemid=379.

The 2014 USCG Draft EA painted a stark picture of nautical charting in the Arctic: ‘Large areas of white space on U.S. Arctic nautical charts highlight a disturbing fact: less than 1 per cent of Arctic waters have been surveyed with modern technology to determine depths and depict hazards to navigation⁶⁶.’⁶⁷

In 2013, the IHO provided a more comprehensive overview to the IMO Sub-Committee on Ship Design and Equipment (DE 57) on the status of nautical charts for the Arctic:

Status of nautical charting in polar waters

2 Systematic and complete hydrographic surveys have not been carried out in many polar areas due to their extensive, remote and inhospitable nature. The presence of ice throughout much of the year limits the ability to conduct hydrographic surveys. Increasingly large unsurveyed areas may be becoming available for navigation due to the melting of glaciers and sea ice. . . .

3 The geographical positions of features are often unreliable, and even those correctly placed relative to adjacent features may contain considerable errors if separated by large distances. Some modern charts are based on satellite imagery; however the lack of proper ground control means they are unlikely to have the same accuracy as those covering lower latitudes. Soundings, topographic detail and all other navigational information are generally incomplete. The limited depth information available may be derived from passage soundings or from old and incomplete surveys and may be of poor quality. The seabed in many areas is very irregular, which means that interpolation between charted depths is generally unreliable.

4 Inadequately surveyed areas can be identified on paper charts (and Raster Navigational Charts) using chart source or zone of confidence (ZOC) diagrams.

5 The use of Electronic Chart Display and Information Systems (ECDIS) in polar waters requires the availability of Electronic Navigational Charts (ENCs). These must use the WGS 84 positioning datum and therefore require the accurate positioning of topography, including the coastline, and hydrography based on this datum. At present, few ENCs are available for polar waters in Navigation Purpose bands 3 to 6 (coastal, approach, harbour, and berthing). Although the IHO has been leading an effort to prioritize, encourage and monitor the conduct of hydrographic surveys in the polar regions through its Hydrographic Commission on Antarctica (HCA) and through the Arctic Regional Hydrographic Commission (ARHC), it will take many years for the situation to improve as national priorities generally focus on charting deficiencies at lower latitudes (see MSC/Circ.1179).

Impact on navigation

⁶⁶ Statement compiled from Committee on the Marine Transportation System, ‘US Arctic Marine Transportation System: Overview and Priorities for Action 2013’ (Washington DC, July 2013) at 53 [reference in the original], online: <http://www.cmts.gov/downloads/CMTS%20U%20S%20Arctic%20MTS%20Report%20%2007-30-13.pdf>.

⁶⁷ USCG Draft EA, *supra* note 53, at 3-28.

*6 Except in limited areas, the chart coverage of polar waters is inadequate for coastal navigation. Therefore, mariners should keep to the charted areas, except in case of absolute necessity. Even in charted areas extra vigilance should be exercised as unsurveyed and uncharted shoals may exist unless the chart is based on modern surveys that include a full search of the sea floor.*⁶⁸

Consequently, the Polar Code included the following texts on charting of polar waters. Paragraph 3 of the Preamble provides:

*The Code acknowledges that the polar waters impose additional navigational demands beyond those normally encountered. In many areas, the chart coverage may not currently be adequate for coastal navigation. It is recognized even existing charts may be subject to unsurveyed and uncharted shoals.*⁶⁹

In addition, the Introduction to the Polar Code identifies poor charting as one of the sources of hazards to navigation in polar waters due to the ‘remoteness and possible lack of accurate and complete hydrographic data and information. . . .’⁷⁰

National Charting Efforts

United States

The US National Oceanic and Atmospheric Administration (NOAA) is responsible for the charting of United States waters. In its Arctic Action Plan 2014, NOAA set out its plans for charting Arctic waters:

NOAA plans to survey annually at least 500 square nautical miles (1,700 square kilometers) of the navigationally significant 240,000 square nautical miles (823,000 square kilometers) in the U.S. Arctic and map 390 linear miles (630 kilometers) of shoreline each year for nautical chart updates and navigation safety. . . .

Partners with survey-capable vessels such as the U.S. Coast Guard, U.S. Navy, the academic fleet, and private industry may be able to collect survey data en route between Dutch Harbor and the Arctic Ocean for analysis and charting by NOAA. These efforts will aim to accelerate and enhance the acquisition and processing of U.S. Arctic bathymetric data. The highest priority focus of this effort will be 40,000 square nautical miles (137,000 square kilometers) in need of surveys to delineate a safety corridor from the Aleutian Islands to the Beaufort Sea, which would otherwise take 50-80 years to accomplish at the current level of effort. Employing this integrated mapping concept will result in more accurate data and charts along the most-utilized Arctic

⁶⁸ IMO, *Comment on the report of the Correspondence Group*, DE 57/11/24 (25 Jan 2013) at para 2-6 (IHO).

⁶⁹ IMO, *Report of the MEPC on its 68th Session*, MEPC 68/21/Add.1 (5 June 2015), Annex 10 at 5 (Resolution MEPC.264(68) – International Code for Ships Operating in Polar Waters (Polar Code)).

⁷⁰ *Ibid*, para 3.1.6, Annex 10 at 7.

*open water routes, allowing NOAA to focus its resources on the more challenging coastal areas for harbors of refuge, port access, and coastal community resilience.*⁷¹

On 5 June 2015, the NOAA Office of Coast Survey Marine Chart Division issued for public comment by 1 October 2015 the draft U.S. Arctic Nautical Charting Plan: A Plan to Support Sustainable Marine Transportation in Alaska and the Arctic. On 10 August 2016 the third edition of the U.S. Arctic Nautical Charting Plan was issued.⁷²

In 2015, NOAA began to collect data of nearly 12,000 nm of the proposed 4 nm wide shipping route from Unimak Island, the largest of the Aleutian Islands, through the Bering Strait to the Chukchi Sea.⁷³

Canada

On 30 July 2015, the Canadian government announced plans to acquire and install four state-of-the-art multibeam sonar systems aboard Canadian Coast Guard icebreakers to increase significantly the amount of hydrographic surveying of the ocean floor and set the foundation for the Arctic Survey and Charting Program.⁷⁴

The IHO/OHI Publication C-55, Status of Hydrographic Surveying and Charting Worldwide, as of September 2015, has no entries for Greenland and Russian Federation nautical charts of the Arctic Ocean.⁷⁵

Tracking of Ships in the Arctic

AIS and LRIT

SOLAS already requires all ships over 300 gross tonnes on international voyages and passenger ships irrespective of size to be equipped with Automatic Identification Systems

⁷¹ NOAA, 'NOAA's Arctic Action Plan: Supporting the National Strategy for the Arctic Region' (April 2014) at 17-18, online: www.arctic.noaa.gov/NOAAArcticactionplan2014.pdf. Earlier, the Office of Coast Survey, Marine Chart Division, NOAA, published a plan to support sustainable marine transportation in Alaska and the Arctic, 'Arctic Nautical Charting Plan' (15 February 2013) online: http://www.nauticalcharts.noaa.gov/mcd/docs/Arctic_Nautical_Charting_Plan.pdf.

⁷² Office of Coast Survey, Marine Chart Division, NOAA, 'U.S. Arctic Nautical Charting Plan: Supporting Sustainable Marine Transportation in Arctic Alaska' (10 August 2016) online: https://www.nauticalcharts.noaa.gov/mcd/docs/Arctic_Nautical_Charting_Plan.pdf.

⁷³ NOAA, 'NOAA deploys survey ships for Arctic charting projects' (8 June 2015) online: <http://www.noaanews.noaa.gov/stories2015/20150608-noaa-deploys-survey-ships-for-arctic-charting-projects.html>; NOAA, 'NOAA plans increased 2015 Arctic nautical charting operations' (17 March 2015) online: <http://www.noaanews.noaa.gov/stories2015/20150317-noaa-plans-increased-2015-arctic-nautical-charting-operations.html>.

⁷⁴ Fisheries and Oceans Canada, 'Procuring Hydrographic Equipment and Increasing Survey Capacity for Key Arctic Routes' (30 July 2015) online: <http://news.gc.ca/web/article-en.do?mthd=tp&ctr.page=1&nid=1009419>.

⁷⁵ http://www.iho.int/iho_pubs/CB/C-55/charts1.html.

(AIS).⁷⁶ The IMO system for Long Range Identification and Tracking (LRIT) of ships is operational.⁷⁷ These systems, along with others in development, would enable coastal States to identify and track commercial ships heading for or are sailing in the Arctic Ocean, if the appropriate shore-based receivers (or buoys) were in place.⁷⁸

Arctic Maritime Safety Information Services

SOLAS regulation IV/12.2 states that ‘[e]very ship, while at sea, shall maintain a radio watch for broadcasts of maritime safety information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating.’

The Maritime Safety Information (MSI) Service of the Global Marine Distress and Safety System (GMDSS) is the internationally and nationally coordinated network of broadcasts containing information that is necessary for safe navigation. It is received on ships by equipment that automatically monitors the appropriate transmissions, displays information which is relevant to the ship and provides a print capability. SAR information, which are never MSI, should be provided by the various authorities responsible for coordinating maritime SAR operations, in accordance with the standards and procedures established by the IMO.

In 2010, the IMO, the IHO and the World Meteorological Organization (WMO) announced the establishment of five new Arctic NAVAREAs/METAREAs (navigation area/meteorological area) as part of the expansion of the IMO/IHO World Wide Navigational Warning Service (WWNWS) into Arctic waters. The Arctic NAVAREA Co-ordinators and METAREA Issuing Services are:

- NAVAREA/METAREA XVII - Canada
- NAVAREA/METAREA XVIII - Canada
- NAVAREA/METAREA XIX - Norway
- NAVAREA/METAREA XX- Russian Federation
- NAVAREA/METAREA XXI - Russian Federation.

⁷⁶ SOLAS Convention, *infra* note 106, Regulation V/19.2.4. For USCG implementation of AIS, online: <http://navcen.uscg.gov/?pageName=AISmain>. For the USCG’s nationwide AIS, online: <http://www.uscg.mil/nais>; see also USCG, News Release, ‘Coast Guard Announces Successful Launch of Nationwide Automatic Identification System Satellite’ (20 June 2008) online: <http://coastguardnews.com/coast-guard-announces-successful-launch-of-nationwide-ais-satellite/2008/06/23/>.

⁷⁷ SOLAS Convention, *infra* note 106, Regulation V/19-1, entered into force 1 Jan. 2008, online: http://www.bsh.de/en/Maritime_shipping/Commercial_shipping/LRIT/Anlage_3.pdf (text of MSC resolution MSC.202(81), 19 May 2006).

⁷⁸ For additional information on Long-range Identification and Tracking (LRIT) of ships, online: www.imo.org/OurWork/Safety/Navigation/Pages/LRIT.aspx and online: www.imo.org/blast/mainframe.asp?topic_id=905.

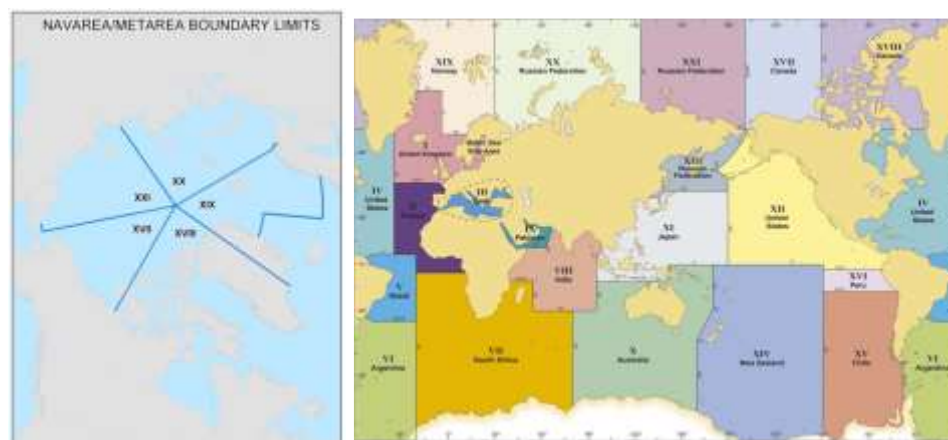


Figure 10. NAVAREA/METAREA Boundary Limits

Sources: US Department of State (OES/OPA); Revised Joint IMO/IHO/WMO Maritime Safety Information Manual, IMO MSC.1/Circ. 1310 Annex page 9, 8 June 2009; 4th revision, MSC.1/Circ. 1310/Rev.1 Annex

SafetyNET is an international automatic direct printing satellite-based service for the promulgation of MSI, navigational and meteorological warnings, meteorological forecasts, SAR information and other urgent safety-related messages to ships and fulfils an integral role in the GMDSS. In May 2010, the IMO published the third revision of the International SafetyNET Manual, as prepared by the IHO, WMO and International Maritime Satellite Organization (IMSO), effective 1 January 2012,⁷⁹ and published the revised Joint IHO/IMO/WMO Manual on MSI on 8 June 2010.⁸⁰ The fourth revised edition of the MSI Manual was adopted by MSC 94 in November 2014 as MSC.1/Circ.1310 (Rev.1) effective 1 January 2016.⁸¹

In 2011, the IMO expanded the WWNWS into Arctic waters through the establishment of a common MSI broadcast system for the Arctic.⁸²

Communication with Ships in the Arctic

Communication with ships in the Arctic Ocean is particularly difficult above 76°N because of the limited line of sight to the SatCom satellites in low earth orbit. Iridium is expected to meet some of these challenges when the next generation constellation is fully operational (expected in 2017).⁸³ Moreover, inadequate antenna performance, atmospheric disturbances and

⁷⁹ IMO, *Revised International SafetyNET Manual*, 3rd rev, MSC.1/Circ.1364 (24 May 2010) online:

http://www.imo.org/blast/blastDataHelper.asp?data_id=29089 and online: www.navcen.uscg.gov/pdf/gmdss/Safety_NET_Manual.pdf.

⁸⁰ IMO, *Revised Joint IMO/IHO/WMO Manual on Maritime Safety Information*, MSC.1/Circ.1310 (8 June 2009) effective 1 January 2011, online: http://www.imo.org/blast/blastData.asp?doc_id=11542&filename=1310.pdf and online: http://www.jcomm.info/index.php?option=com_oe&task=viewDocumentRecord&docID=6062.

⁸¹ IMO, *Report of the Maritime Safety Committee on its 94th Session*, MSC 94/21 (26 November 2014) at para 9.28.

⁸² See IMO, Press Briefing No 11, 'Expansion of World-Wide Navigational Warning System into Arctic waters marked by IMO, WMO and IHO chiefs' (8 March 2011) online: <http://www.imo.org/MediaCentre/PressBriefings/Pages/11-arctic.aspx#.VK39nWSUcT8>.

⁸³ Iridium's application to the IMO for the provision of mobile satellite communications in GMDSS was reviewed

weather conditions further hinder communications with ships in the Arctic Ocean. While high earth orbit (HEO) satellites are in development, HEO coverage of the Arctic is not expected before 2020.⁸⁴

The additional guidance to Chapter 10 (Communication) of Part I-B of the Polar Code provides more detail:

11.1 Limitations of communication systems in high latitude

11.1.1 Current maritime digital communication systems were not designed to cover Polar waters.

11.1.2 VHF is still largely used for communication at sea, but only over short distances (line of sight) and normally only for voice communication. HF and MF are also used for emergency situations. Digital VHF, mobile phone systems and other types of wireless technology offer enough digital capacity for many maritime applications, but only to ships within sight of shore-based stations, and are, therefore, not generally available in polar waters. AIS could also be used for low data-rate communication, but there are very few base stations, and the satellite-based AIS system is designed for data reception only.

11.1.3 The theoretical limit of coverage for GEO systems is 81.3° north or south, but instability and signal dropouts can occur at latitudes as low as 70° north or south under certain conditions. Many factors influence the quality of service offered by GEO systems, and they have different effects depending on the system design.

11.1.4 Non-GMDSS systems may be available and may be effective for communication in polar waters.⁸⁵

Submarine Telecommunications Cables in the Arctic

Although there have been plans announced to lay submarine fiber optic telecommunications cables in the Arctic Ocean, one published report indicates the land cable sites is underway in the relevant Northwest Alaska communities, in preparation for the laying of

by NCSR 1 and was considered by MSC 94 (November 2014), before being considered by a group of technical experts for comprehensive technical and operational evaluation, expected by mid-2016. MSC 94/21, *supra* note 81 at paras 9.18-9.24; *Sea Technology*, August 2014 at 64. MSC 96 endorsed the view of the Sub-Committee that Iridium could be incorporated into the GMDSS subject to compliance with outstanding issues, as set out in annex 1 to document NCSR 3/WP.5, with the understanding that the Sub-Committee, based on the evaluation reports from IMSO, would advise the Committee in future on recognition, when the issues identified have been complied with. MSC 96/25, *infra* note 239, 61 at para 14.7. This may be considered at NCSR 4 (March 2017).

⁸⁴ Fritz Bekkadal, 'Arctic Communication Challenges' (2014) 48 *Marine Technology Society Journal* 8.

⁸⁵ See MEPC 68/21/Add.1, *supra* note 69, Annex 10 at 36.

a 10,000 mile intercontinental submarine fiber optic system to begin in late 2016.⁸⁶ More recently on 24 January 2017 the Arctic Economic Council Telecommunication Infrastructure Working Group issued its first report, 'Arctic Broadband: Recommendations for an Interconnected Arctic Winter 2016).'⁸⁷

The legal regime for the laying and maintenance of submarine power and telecommunications cables is contained in article 79 of the Law of the Sea Convention.

Ports in the Arctic

The 2009 AMSA Report described the situation of ports in the Arctic in part as follows:

In temperate maritime areas, deepwater ports and the services they provide are typically relatively close to global maritime shipping and often taken for granted. The situation in the Arctic is quite different. Deepwater ports, places of refuge, marine salvage, adequate port reception facilities for ship-generated waste and towing services are rarely available. The availability of port infrastructure and support directly influences the level of risk associated with transiting a particular waterway and corresponds to the levels of marine insurance rates.

Ports and Intermodal Transport Links

There are few deepwater ports in U.S. or Russian waters near the Bering Strait. The closest U.S. harbor with deep water is Dutch Harbor in the southern Bering Sea. On the Russian Federation side, the nearest deepwater port is Provideniya. Other Russian ports near the Bering Strait that are closed to foreign ships are Egvekinot, Anadyr and Beringovskiy.

This situation differs with the region between the Atlantic and Arctic oceans, where there are many Norwegian, Icelandic and Russian deepwater ports. There are a number of deepwater ports along the west coast of Greenland. In the Arctic, there are essentially no deepwater ports along the North Slope of Alaska or throughout the Canadian Archipelago, except for that of Tuktoyaktuk, which, while having a relatively deepwater port, suffers from a shallow approach channel and a high degree of in-fill silting, situated as it is in the delta of the Mackenzie River. Mention should also be made of the limited port facilities at Resolute Bay, in the middle of the archipelago, which acts as a center of transportation, communications and administration for

⁸⁶ Alison Weisburger, 'Planned Undersea Fiber-Optic Cable Projects in Arctic as Allegory for Changing Region' (4 May 2012) online: <http://www.thearcticinstitute.org/2012/05/planned-undersea-fiber-optic-cable.html>; DJ Summers, "Quintillion starts laying Phase 1 of Arctic fiber at Nome," *Alaska Journal of Commerce*, 11 May 2016, <http://www.alaskajournal.com/2016-05-11/quintillion-starts-laying-phase-1-arctic-fiber-nome#.VzmCnL71KZE>; Jeremy Hsu, "An Internet Cable Will Soon Cross the Arctic Circle," *Scientific American* (1 June 2016), <http://www.scientificamerican.com/article/an-internet-cable-will-soon-cross-the-arctic-circle/>. See further Douglas R. Burnett et al. (eds), *Submarine Cables: The Handbook of Law and Policy* (Nijhoff 2014).

⁸⁷ AEC Telecommunications Infrastructure Working Group, 'Arctic Broadband: Recommendations for an Interconnected Arctic, Winter 2016,' online: <http://arcticeconomiccouncil.com/wp-content/uploads/2017/01/AEC-Arctic-Broadband.pdf>.

the high Arctic but which can only handle ships of 5m draft alongside a sunken barge used as a dock. Ships of deeper draft must anchor in an open roadstead.

In Hudson Bay, the Port of Churchill is Canada's only northern deepwater seaport with well sheltered, along-side berthing facilities. It provides access, via rail, to the interior of Canada and North America in general. The growing Port of Churchill offers four berths for the loading and unloading of grain, general cargo and tanker vessels. The Port can efficiently load Panamax size vessels. The link between Murmansk and Churchill has become known as the "Arctic Bridge" since it requires sea and rail systems to complete the transport of goods to North American destinations. The use of the Port of Churchill eliminates time-consuming navigation, additional handling and high-cost transportation through the Great Lakes and St. Lawrence Seaway. The current shipping season runs from mid-July to the beginning of November. The use of icebreakers could significantly lengthen the shipping season. Another significant port in the Eastern Canadian Arctic is Iqaluit, which requires that ships anchor and use barges to land their cargo and features some of the highest tides on the planet as well as one of the largest tidal ranges in existence. . . .

In contrast, the northern coast of the Russian Federation has several deepwater ports that have been supported by the Northern Sea Route Authority and fleet of icebreakers for several decades. Murmansk is well known for being the largest deepwater port north of the Arctic Circle that is ice-free throughout the year. Murmansk also provides intermodal access to northern European and Asian industrial centers. In recent years, Russian Arctic ports in the Barents Sea, including Murmansk, have expanded significantly as offshore oil and ore production have increased in the region. Since 2004, more than €4.4 billion have been invested in improving Murmansk's deepwater port facilities to include new oil, coal and container terminals as well as expanded rail lines. Murmansk port capacities are projected to increase to an annual 28.5 million tonnes by 2010 and 52 million tonnes by 2020. Other Russian Arctic ports along the Northern Sea Route include Pevek, Tiksi, Igarka, Dudinka, Dikson, Vitino, Arkhangelsk and Novy. These ports are well-established and supported by the Russian icebreaker fleet, although many require long river transits to access.

Unique to the region is the Port of Varandey on the Pechora Sea coast. As oil production expands in the Russian Arctic, LUKOIL, in cooperation with ConocoPhillips, has developed Varandey into a deepwater oil export terminal. The Varandey facility consists of an onshore tank farm with a total rated capacity of 325,000 cubic meters (2,000,000 barrels); and an innovative fixed ice-resistant oil terminal 14 miles offshore, with a height of more than 160 feet. The terminal includes living quarters and a mooring cargo handling system with a jib and a helicopter platform; two underwater pipelines, connecting the onshore tank battery and the offshore oil terminal; and an oil metering station, auxiliary tanks, pumping station and power supply facilities. Sovkomflot has one new 70,000 DWT ice strengthened oil tanker in operation and two being built in South Korean shipyards, to shuttle oil to Murmansk, as well as other locations in Europe and North America.⁸⁸

⁸⁸ AMSA 2009 Report, *supra* note 18 at 175, 178-179.

The US Army Corps of Engineers in 2012 began a three-year study on deepwater ports from southwest Alaska to the Canadian border.⁸⁹ On 27 February 2015 the corps released the study for public comment.⁹⁰ It suggests as a first step expanding the Port of Nome. While Nome is south of the Bering Strait it is much closer to Arctic waters than the nearest Coast Guard base at Kodiak.⁹¹ On 26 October 2015, following the announcement by Shell to stop its drilling efforts in the Chukchi Sea, the Corps announced a 12-month pause in the study to ‘revalidate potential project economic benefits and justification.’⁹² 22 other potential sites in Alaska have been identified.⁹³

Port Waste Reception Facilities

MARPOL requires the Government of each Party to provide facilities for the reception of ship-generated residues and garbage that cannot be discharged into the sea. The reception facilities must be adequate to meet the needs of ships using the port, without causing undue delay to ships. The requirements for port waste reception facilities thus creates an incentive for ships to comply with MARPOL and to minimise discharges to sea, but is an important consideration in the Arctic that has limited port infrastructure.⁹⁴

The 2013 Status Report on the AMSA report recommendations advised that major ports in the Russian Arctic — including Murmansk, Archangelsk, Kandalksha, and Dudinka — are now capable of receiving ship-generated waste and have all developed Port Waste Management Plans. Murmansk can receive MARPOL Annex I, IV and V wastes, while the other three ports can receive bilge water and MARPOL Annex IV and V wastes.⁹⁵

The IMO Comprehensive Manual on Port Reception Facilities provides guidance on the provision of port reception facilities for ship-generated wastes and residues. The 1999 edition has

⁸⁹ ACOE, ‘Alaska Deep-Draft Arctic Port System Study’ (March 2013) online:

<http://www.poa.usace.army.mil/Portals/34/docs/AKports/1ADDAPSReportweb.pdf>.

⁹⁰ Carey Restino, ‘Authorities release Nome port draft’ *The Arctic Sounder* (27 February 2015) online:

http://www.thearcticsounder.com/article/1509authorities_release_nome_port_draft_report. For details, see online: <http://www.poa.usace.army.mil/Library/ReportsandStudies/AlaskaRegionalPortsStudy.aspx>.

⁹¹ Dan Joling, ‘Alaska deep-water port proposed for vessels in Arctic waters’ (19 February 2015) online:

<http://www.militarytimes.com/story/military/coast-guard/2015/02/19/alaska-deep-water-port-proposed-for-vessels-in-arctic-waters/23698947/>.

⁹² ACOE, ‘Corps announces 12-month pause in Alaska Deep-Draft Arctic Port System study,’ Release no. 15-018 (26 October 2015) online:

<http://www.poa.usace.army.mil/Portals/34/docs/civilworks/arcticdeepdraft/NewsReleaseRePauseofarcticdeepdraftportstudyOct262015.pdf>. See further ‘US Army Corps of Engineers suspended project for deep-water port in Arctic’ *Maritime News* (28 October 2015) online: <http://www.newsmaritime.com/2015/us-army-corps-of-engineers-suspended-project-for-deep-water-port-in-arctic/>.

⁹³ ‘In Alaskan port debate, bigger is worse’ *The Arctic Journal* (15 November 2015) online:

<http://arcticjournal.com/business/430/alaskan-port-debate-bigger-worse>.

⁹⁴ International Convention for the Prevention of Pollution from Ships, adopted 2 November 1973, 1340 UNTS 61 (entered into force 2 October 1983) (MARPOL). The relevant MARPOL regulations on port reception facilities are: Annex I Regulation 38; Annex II Regulation 18; Annex IV Regulation 12; Annex V Regulation 7; and Annex VI Regulation 17.

⁹⁵ PAME, ‘Status on Implementation of the AMSA 2009 Report Recommendations’ (May 2013) at 16, online:

http://www.pame.is/images/02_Document_Library/Reports_to_Ministers/08_AC_Meeting/AMSA_Progress_Report_May_2013.pdf.

been revised and updated at the request of MEPC 61 and was approved at MEPC 69 in April 2016. The IMO publishes lists of “facilities in ports for the reception of oily waste from ships” and of “facilities in ports for the reception of noxious liquid substances (NLS) residues from ships carrying chemicals in bulk”.⁹⁶

The text of the draft Polar Code, Part II-A, Chapter 1, considered at MEPC 66 contained a provision (section 1.4) in brackets requiring adequate reception facilities for oil and oily mixtures from ships. Russia opposed this requirement as being superfluous as the present and projected ship transits are few in number and do not make port calls at Arctic ports.⁹⁷ The Intersessional Polar Code Working Group that met just prior to MEPC 67 agreed to delete section 1.4 and to consider amending MARPOL Annex I regulation 38 to address the adequacy of port reception facilities for the reception of oil and oily mixtures that may not be discharged into Arctic waters.⁹⁸ After discussion, MEPC 67 agreed to endorse the decisions made by the Intersessional Polar Code Working Group and MEPC 68 approved amendments to paragraphs 2.5 and 3.5 of regulation 38 of MARPOL Annex I by adding references to “paragraph 1.1.1 of part II-A of the Polar Code”,⁹⁹ which reads as follows: “In Arctic waters any discharge into the sea of oil or oily mixtures from any ship shall be prohibited.”

⁹⁶ IMO, *Note by the Secretariat on the Inadequacy of Reception Facilities*, MEPC 67/11 (11 July 2014); IMO, *Report of the MEPC on its 67th Session*, MEPC 67/20 (31 October 2014) at para 11.1; MEPC 68/21/Add.1, *supra* note 69, at 53 para 11.5.4; IMO, *Updated version of the draft Manual on “Port reception facilities – How to do it”*, MEPC 69/11 Annex (Secretariat) (12 January 2016); IMO, *Report of the MEPC on its 69th Session*, MEPC 69/21 (13 May 2016) at 49 para. 11.3. The lists of facilities are referred to in the MEPC.3 and MEPC.4 circulars and are available on the IMO website. For further information on port reception facilities, see IMO, ‘Reception facilities’ online: <http://www.imo.org/en/OurWork/Environment/PortReceptionFacilities/Pages/Default.aspx>.

⁹⁷ MEPC 67/9/4, *supra* note 32.

⁹⁸ IMO, *Report of the Intersessional Working Group*, MEPC 67/WP.8 (9 October 2014) at 4 para 16.

⁹⁹ MEPC 67/20, *supra* note 96, paras 9.8-9.10; MEPC resolution MEPC 265(68) adopted on 15 May 2015, MEPC 68/21/Add.1, *supra* note 69, Annex 11 at 4 (Resolution MEPC.265(68) – Amendments to MARPOL Annexes I, II, IV and V).

Chapter 6 International Law Applicable to the Arctic

This chapter identifies the various international law treaties and other international instruments that have application in the Arctic, and Singapore's interest in them.

Treaties

The extensive legal framework already applicable to the Arctic Ocean includes:

- the law of the sea, as reflected in the LOS Convention, which allows the coastal States to claim territorial seas, EEZs,¹⁰⁰ continental shelf out to 200 nm, and shelf beyond 200 nm where it meets the Article 76 criteria,¹⁰¹ as well as passage rights for foreign flag vessels,¹⁰² high seas freedoms,¹⁰³ protection of the marine environment,¹⁰⁴ and the regime for marine scientific research;¹⁰⁵
- various IMO agreements on safety of navigation and prevention of marine pollution clearly apply to the Arctic Ocean (e.g., SOLAS,¹⁰⁶ MARPOL and its annexes on vessel source pollution),¹⁰⁷ the London Convention/Protocol¹⁰⁸ on ocean dumping, and from 1 January 2017 the Polar Code; and
- various air-related agreements that indirectly protect the Arctic, such as the 1979 Convention on Long-Range Transboundary Air Pollution,¹⁰⁹ the 1987 Montreal Protocol

¹⁰⁰ LOS Convention, *supra* note 7, Art 57.

¹⁰¹ *Ibid*, Art 76.

¹⁰² *Ibid*, Arts 17-26 (Territorial Sea), Part III (Straits Used for International Navigation). For a discussion of the straits regime in the Arctic straits, see Donald R Rothwell, 'The United States and Arctic Straits: The Northwest Passage and the Bering Strait,' in *International Law and Politics of the Arctic Ocean: Essays in Honor of Donat Pharand*, *supra* note 45, at 160-79.

¹⁰³ *Ibid*, Arts 58, 87.

¹⁰⁴ *Ibid*, Part XII.

¹⁰⁵ *Ibid*, Arts 245-57.

¹⁰⁶ International Convention for the Safety of Life at Sea, adopted 1 November 1974, 1184 UNTS 277 (entered into force 25 May 1980) (SOLAS Convention).

¹⁰⁷ MARPOL, *supra* note 94.

¹⁰⁸ Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, adopted 13 November 1972, 1046 UNTS 138 (entered into force 30 August 1975) (London Dumping Convention); Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, adopted 7 November 1996, (1997) 36 ILM 7 (entered into force 24 March 2006) (London Dumping Protocol). The 1972 LC has 87 parties representing 60.52 per cent of the world's merchant tonnage, including Australia, the UK and USA. The 1996 protocol has 47 parties representing 38.53 per cent of the world's merchant tonnage, including Australia and the UK.

¹⁰⁹ Convention on Long-Range Transboundary Air Pollution, adopted 13 November 1979, 1302 UNTS 217 (entered into force 16 March 1983). LRTAP has 51 parties including the UK and USA.

on the Ozone Layer,¹¹⁰ the 1992 Framework Convention on Climate Change,¹¹¹ the 1998 Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade¹¹² and the 2001 Convention on Persistent Organic Pollutants.¹¹³

Search and Rescue (SAR)

The LOS Convention requires every coastal State to ‘promote the establishment, operation and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea and, where circumstances so require, by way of mutual regional arrangements cooperate with neighboring States for this purpose.’¹¹⁴

The Arctic nations are all party to the IMO’s International Convention on Maritime SAR (1979).¹¹⁵ They all are also party to the SOLAS Convention, which requires each party to provide SAR services for the rescue of persons in distress at sea around its coasts.¹¹⁶ The Arctic nations are also party to the Convention on International Civil Aviation (ICAO), Annex 12 of which addresses SAR.¹¹⁷

Both SAR Conventions require parties to establish SAR Regions (SRRs) and call on parties to cooperate in the establishment and provision of SAR services.¹¹⁸

¹¹⁰ Montreal Protocol on Substances that Deplete the Ozone Layer, with annexes, adopted 16 September 1987, 1522 UNTS 3 (entered into force 1 January 1989).

¹¹¹ United Nations Framework Convention on Climate Change, with annexes, adopted 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994).

¹¹² Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, with annexes, adopted 10 September 1998, 2244 UNTS 337 (entered into force 24 February 2004).

¹¹³ Convention on Persistent Organic Pollutants, with annexes, adopted 22 May 2001, 2256 UNTS 119 (entered into force 17 May 2004).

¹¹⁴ LOS Convention, *supra* note 7, Art 98(2).

¹¹⁵ International Convention on Maritime Search and Rescue, with annex, adopted 27 April 1979, 1405 UNTS 195 (entered into force 22 June 1985) (IMO SAR Convention).

¹¹⁶ SOLAS Convention, *supra* note 106, Regulation V/7.

¹¹⁷ Convention on International Civil Aviation, adopted 7 December 1944, 15 UNTS 295 (entered into force 4 April 1947) (ICAO Convention). Annex 12, Search and Rescue, online: <http://www.naca.nl/icao/icao-annex-12.pdf>.

¹¹⁸ IMO SAR Convention, *supra* note 115, Annex para 2.1.1; ICAO Convention, *supra* note 117, Annex 12, paras 2.2.1, 3.1.1.

In the Alaska region, the USCG has been operating SAR aircraft from forward operating bases in Nome and Barrow¹¹⁹ and conducting patrols in the Arctic Ocean.¹²⁰

With increased melting of sea ice in the Arctic and more attention being paid to the Arctic, human activity has started to increase in the region. This has already led to increases in ship-borne tourism and will lead to more shipping of many types. The AMSA recommended that the Arctic States decide to support developing and implementing a comprehensive, multi-national Arctic SAR instrument, including aeronautical and maritime SAR, among the Arctic 8 States and, if appropriate, with other interested parties in recognition of the remoteness and limited resources in the region.¹²¹ That agreement was signed in 2011 and entered into force in 2013. For details, see below at Chapter 7.

Soft Law

There is so-called ‘soft law’ specifically applicable to activities in the Arctic Ocean, including IMO guidelines and Arctic Council guidelines.

Applicable IMO guidelines include:

- the IMO Guidelines for Ships Operating in Arctic Ice-Covered Waters (2002),¹²²
- IMO Enhanced Contingency Planning Guidance for Passenger Ships Operating in Areas Remote from SAR Facilities (2006),¹²³ and
- the IMO Guidelines on Voyage Planning for Passenger Ships Operating in Remote Areas (2007).¹²⁴

¹¹⁹ USCG 17th District, News Release, ‘Coast Guard Schedules Forward Operating Location in Barrow, Alaska’ (19 August 2014) online: <http://www.uscgnews.com/go/doc/4007/2227766/>. See earlier reports, such as ‘U.S. waking up to Arctic competition: Coast Guard chief’, *Canwest News Service* (8 August 2008) online: <http://www.canada.com/topics/news/story.html?id=9e1b3f2b-513a-4335-9be4-f3907adae7d7>; USCG, News Release, ‘Coast Guard Conducts First SAREX in the Arctic Ocean’ (27 August 2008) online: <https://www.highbeam.com/doc/1P3-1543016021.html>; Alan Bailey, ‘Barrow welcomes Coast Guard presence’, *Petroleum News* (17 Aug. 2008) online: <http://www.petroleumnews.com/pntruncate/636762683.shtml>; ‘Coast Guard continues Arctic Domain Awareness flights’, *Coast Guard News* (16 October 2008) online: <http://coastguardnews.com/coast-guard-continues-arctic-domain-awareness-flights/2008/10/16/>.

¹²⁰ USCG, Press Release, ‘Coast Guard Continues Operation Salliq Above Arctic Circle’ (8 August 2008), copy on file with author; USCG, Press Release, ‘US to Commence Homeland Security Patrols in the Arctic’ (21 August 2008), copy on file with author. See A McCullough, ‘Assessing the Polar Problem’ *Navy Times* (25 August 2008).

¹²¹ AMSA 2009 Report, *supra* note 18 at 6.

¹²² IMO, *Guidelines for Ships Operating in Arctic Ice-Covered Waters*, MSC/Circ.1056/MEPC/Circ.399 (23 December 2002). See Chapter 9 regarding the Polar Code.

¹²³ IMO, *Enhanced Contingency Planning Guidance for Passenger Ships Operating in Areas Remote from SAR Facilities*, MSC.1/Circ.1184 (31 May 2006).

¹²⁴ IMO, *Guidelines on Voyage Planning for Passenger Ships Operating in Remote Areas*, Assembly Resolution A.999(25) (29 November 2007).

The Arctic Council Guidelines on Arctic offshore oil and gas activities (2009)¹²⁵ recommend voluntary standards, technical and environmental best practices, and regulatory controls for Arctic offshore oil and gas operators.¹²⁶ The Guidelines were designed to be consistent with United States offshore regulations; US Department of the Interior Bureau of Ocean Energy Management, Regulation and Enforcement (BOEM) posts the Guidelines on its webpage, and apparently applies them and recommends their use to new operators in the Arctic. Greenland apparently requires that they be read by potential permit holders; Russia has said they suggest that leaseholders read them.

In 2014, additional guidelines were issued on systems safety management and safety culture.¹²⁷

Treaties to which Singapore is Party

As of **September 2016**, Singapore is a party to many, but not all, of the treaties mentioned above which are of particular relevance to the Arctic.

Singapore is a party to the LOS Convention and the Part XI Agreement, but not the UN Fish Stocks Agreement.

With regard to IMO Conventions, Singapore is a party to

- 1948 IMO Convention and amendments,
- SOLAS 74 and its 1978 and 1988 Protocols,
- 1966 Load Lines Convention and its 1988 Protocol,
- 1969 Tonnage Convention,
- 1972 COLREGS Convention, the 1978 STCW Convention,
- 1978 SAR Convention, the 1978 IMSO Convention (but not the 2006 and 2008 Amendments),
- INMARSAT OA Agreement of 1976 and its 1994 and 1998 Amendments,

¹²⁵ PAME, 'Arctic Offshore Oil and Gas Guidelines' (29 April 2009) online: [http://www.pame.is/images/03_Projects/Offshore Oil and Gas/Offshore Oil and Gas/Arctic-Guidelines-2009-13th-Mar2009.pdf](http://www.pame.is/images/03_Projects/Offshore_Oil_and_Gas/Offshore_Oil_and_Gas/Arctic-Guidelines-2009-13th-Mar2009.pdf).

¹²⁶ See PAME, 'Arctic Offshore Oil and Gas Management, Regulation and Enforcement' online: <http://pame.is/index.php/projects/offshore-oil-and-gas/mre>.

¹²⁷ PAME, 'Arctic Offshore Oil and Gas Guidelines: Systems Safety Management and Safety Culture - Avoiding Major Disasters in Offshore Oil and Gas Operations' (21 February 2014) online: <https://oaarchive.arctic-council.org/handle/11374/418>. On 24 February 2015, BSEE issued draft new rules for exploratory drilling offshore Alaska, 80 Fed. Reg. 9915-9971, online: <https://www.federalregister.gov/articles/2015/02/24/2015-03609/oil-and-gas-and-sulphur-operations-on-the-outer-continental-shelf-requirements-for-exploratory>. The comment period was extended to 27 May 2015, 80 Fed. Reg. 21670 (20 April 2015). On 15 July 2016 DSEE published its final rule, effective 15 September 2016, Requirements for Exploratory Drilling on the Arctic Outer Continental Shelf, in the Federal Register, 81 Fed. Reg. 46478-566, online: https://www.bsee.gov/sites/bsee_prod.opengov.ibmcloud.com/files/federal-register-notice//2016-15699.pdf.

- 1965 Facilitation Convention,
- MARPOL 73/78 and its six Annexes,
- 1976 and 1992 Civil Liability Convention Protocols,
- FUND Convention Protocol of 1992 (but not the 2003 FUND Protocol),
- 1976 Convention on Limitation of Liability for Maritime Claims (but not its 1996 Protocol),
- 1988 SUA Convention and its 1988 Protocol (but not the 2005 SUA Convention and its Protocol¹²⁸),
- 1990 International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) and the 2000 Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS),
- 2001 International Convention on Civil Liability for Bunker Oil Pollution Damage, and
- 2001 International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS).

Singapore is not a party to the following IMO Conventions:

- 1972 Convention on Safe Containers and its 1993 amendments (the latter are not in force),¹²⁹
- STCW-F Convention of 1995,¹³⁰
- Special Trade Passenger Ships Agreement of 1971 and 1973 Protocol,¹³¹
- 1972 London Dumping Convention and its 1996 Protocol,
- 1969 Intervention Convention and its 1973 Protocol,¹³²

¹²⁸ Protocol of 2005 to the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf, entered into force 28 July 2010, LEG/CONF.15/22, online: <http://www.state.gov/t/isn/trty/81728.htm>. The 2005 protocol has 35 parties representing 38.36 per cent of the world's merchant shipping. The United States is a party. All data from the IMO as of February 2017.

¹²⁹ International Convention for Safe Containers, 1972, entered into force 6 December 1977, online: <http://www.admiraltylawguide.com/conven/containers1972.html>. This convention has 83 parties representing 64.17 per cent of the world's merchant shipping. Australia, the UK and the United States are party.

¹³⁰ International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995, entered into force 29 September 2012, online: <https://cil.nus.edu.sg/1995/1995-international-convention-on-standards-of-training-certification-and-watchkeeping-for-fishing-vessel-personnel/>. The STCW-F has 20 parties representing 5.07 per cent of the world's merchant shipping.

¹³¹ Special Trade Passenger Ships Agreement, 1971, entered into force 2 January 1974, and Protocol on Space Requirements for Special Trade Passenger Ships, 1973, entered into force 2 June 1977, online: UK Treaties Series No. 7 (1980), online: <http://treaties.fco.gov.uk/docs/pdf/1980/TS0007.pdf>. The 1971 agreement has 18 parties representing 23.36 per cent of the world's merchant shipping. The 1973 Protocol has 17 parties representing 22.98 per cent of the world's merchant shipping. The UK is party to the 1971 Agreement and the 1973 Protocol.

¹³² International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969, entered into force 6 May 1975, 970 UNTS 211; Protocol relating to Intervention on the High Seas in Cases of Pollution by Substances other than Oil, 1973, entered into force 30 March 1983, 1313 UNTS 3. The Intervention Convention has 89 parties representing 75.09 per cent of the world's merchant shipping. The 1973 Protocol has 57 parties representing 53.50 per cent of the world's merchant tonnage. Australia, the UK and the United States are

- 1971 Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material,¹³³
- 1974 Athens Convention relating to the Carriage of Passengers and their Luggage by Sea and its 1976, 1990 and 2002 Protocols (the 1990 Protocol is not in force),¹³⁴
- 1988 Salvage Convention,
- Nairobi Wreck Removal Convention of 2007,¹³⁵ and
- 2004 Ballast Water Convention.¹³⁶

Singapore has not ratified the following IMO Conventions that are not in force:

- 1996 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS) and its 2010 Protocol. The 2010 Protocol, which has no ratifications, is intended to replace the 1996 Convention.
- Safety of Fishing Vessels Protocol of 1993, which has 17 ratifications.
- Cape Town Agreement on the Safety of Fishing Vessels of 2012, which has seven ratifications.
- Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships 2009, which has five Contracting States.

Singapore is a party to the following air-related agreements that indirectly protect the Arctic:

- 1987 Montreal Protocol on the Ozone Layer,
- 1992 Framework Convention on Climate Change,
- 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and
- 2001 Stockholm Convention on Persistent Organic Pollutants.

party to both the 1969 convention and its 1983 protocol.

¹³³ Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, 1971, entered into force 15 July 1975, 974 UNTS 255.

¹³⁴ Athens Convention relating to the Carriage of Passengers and their Luggage by Sea, 1974, entered into force 28 April 1987, online: <http://www.admiraltylawguide.com/conven/passengers1974.html>. The 1976 protocol entered into force 30 April 1989. The 2002 protocol entered into force 23 April 2014. The 1974 convention has 25 parties representing 32.05 per cent of the world's merchant shipping. The 1976 protocol has 17 parties representing 31.80 per cent of the world's merchant shipping. The 2002 protocol has 27 parties representing 44.54 per cent of the world's merchant shipping. The UK is party to the 2002 protocol.

¹³⁵ Nairobi International Convention on the Removal of Wrecks, 2007, entered into force 14 April 2015, LEG/CONF.16/19, UK Misc. No 5 (2011), online: <https://cil.nus.edu.sg/2007/2007-nairobi-international-convention-on-the-removal-of-wrecks/>. The wreck removal convention has 34 parties representing 64.66 per cent of the world's merchant shipping. The UK is party.

¹³⁶ International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004, entered into force 8 September 2017, IMO BWM/CONF/36, online: <https://cil.nus.edu.sg/>. The ballast water convention has 54 parties representing 53.30 per cent of the world's merchant shipping and enters into force on 8 September 2017.

However, Singapore is not a party to the following air-related agreement that indirectly protects the Arctic: 1979 Convention on Long-Range Transboundary Air Pollution.¹³⁷ LRTAP deals with air pollution whose physical origin is situated wholly or in part within the area under the national jurisdiction of one State and which has adverse effects in the area under the jurisdiction of another State at such a distance that it is not generally possible to distinguish the contribution of individual emission sources or groups of sources. Its focus is on Europe.

¹³⁷ Convention on Long-Range Transboundary Air Pollution *supra* note 109.

Chapter 7 Arctic Multilateral Agreements

This chapter identifies and describes several multilateral international agreements of specific application to the Arctic.

Arctic Eight International Agreements

Search and Rescue

The Arctic Eight Arctic Council Member States (Canada, Denmark, Finland, Iceland, Norway, Russian Federation, Sweden and United States) adopted a Ministerial Declaration in April 2009 in Tromsø, Norway, which established a Task Force with the mandate of developing a SAR agreement for the Arctic. The Task Force met five times: in Washington (December 2009), in Moscow (February 2010), in Oslo (June 2010), in Helsinki (October 2010), and in Reykjavik (December 2010). The Agreement on Cooperation on Aeronautical and Maritime SAR in the Arctic (Arctic SAR agreement) was signed at the Council's Ministerial meeting in Nuuk, Greenland, 12 May 2011.¹³⁸ The agreement entered into force in 2013. The Agreement is the first legally binding instrument negotiated under the auspices of the Arctic Council. It also represents the first legally binding agreement on any topic ever negotiated among all eight Arctic States.¹³⁹

- The agreement applies both to maritime and aeronautical SAR services and is designed to enhance cooperation and coordination in the provision of SAR services in the Arctic.
- The agreement sets out the boundaries of the national SAR Regions, and identifies the Competent Authorities, SAR Agencies and Rescue Coordination Centers of each Party.
- The agreement provides guidance on the conduct of SAR operations and cooperation between the SAR agencies.

At the insistence of the Russian Federation, the agreement is legally binding once it enters into force, as Russia desired to submit the agreement to the Duma. The United States concluded the agreement as an executive agreement, in implementation of the IMO SAR and ICAO Chicago Conventions.

¹³⁸ Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, signed 12 May 2011, TIAS 13-119, (2011) 50 ILM 1119 (entered into force 19 January 2013) online: <http://www.arctic-council.org/index.php/en/document-archive/category/20-main-documents-from-nuuk?download=73:arctic-search-and-rescue-agreement-english> and www.state.gov/documents/organization/205770.pdf. For background on the negotiations of this agreement, see Roach and Smith, *supra* note 20 at 481-83.

¹³⁹ See <http://www.state.gov/r/pa/prs/ps/2011/05/163285.htm>.

The agreement is based on the 1979 IMO SAR Convention,¹⁴⁰ Annex 12 to ICAO (Chicago) Convention,¹⁴¹ and Article 98(2) of the LOS Convention.¹⁴²

Like all maritime SAR agreements, it **should be** forwarded to the IMO for publication in a SAR circular.¹⁴³

It has been reported that in 2014 Russia opened the first three of ten Arctic SAR centers and took delivery of the first of six icebreaking SAR ships.¹⁴⁴

¹⁴⁰ IMO SAR Convention, *supra* note **115**.

¹⁴¹ ICAO Convention, *supra* note **117**.

¹⁴² LOS Convention, *supra* note 7, Art 98 provides:

Duty to render assistance

1. Every State shall require the master of a ship flying its flag, in so far as he can do so without serious danger to the ship, the crew or the passengers:
 - (a) to render assistance to any person found at sea in danger of being lost;
 - (b) to proceed with all possible speed to the rescue of persons in distress, if informed of their need of assistance, in so far as such action may reasonably be expected of him;
 - (c) after a collision, to render assistance to the other ship, its crew and its passengers and, where possible, to inform the other ship of the name of his own ship, its port of registry and the nearest port at which it will call.
2. Every coastal State shall promote the establishment, operation and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea and, where circumstances so require, by way of mutual regional arrangements cooperate with neighboring States for this purpose.

¹⁴³ IMO SAR Convention, *supra* note **115**, Annex para 2.1.4.

¹⁴⁴ 'Polar Shipping: A 2014 Recap,' *International Shipping News* (12 January 2015) online: <http://www.hellenicshippingnews.com/polar-shipping-a-2014-recap/>.

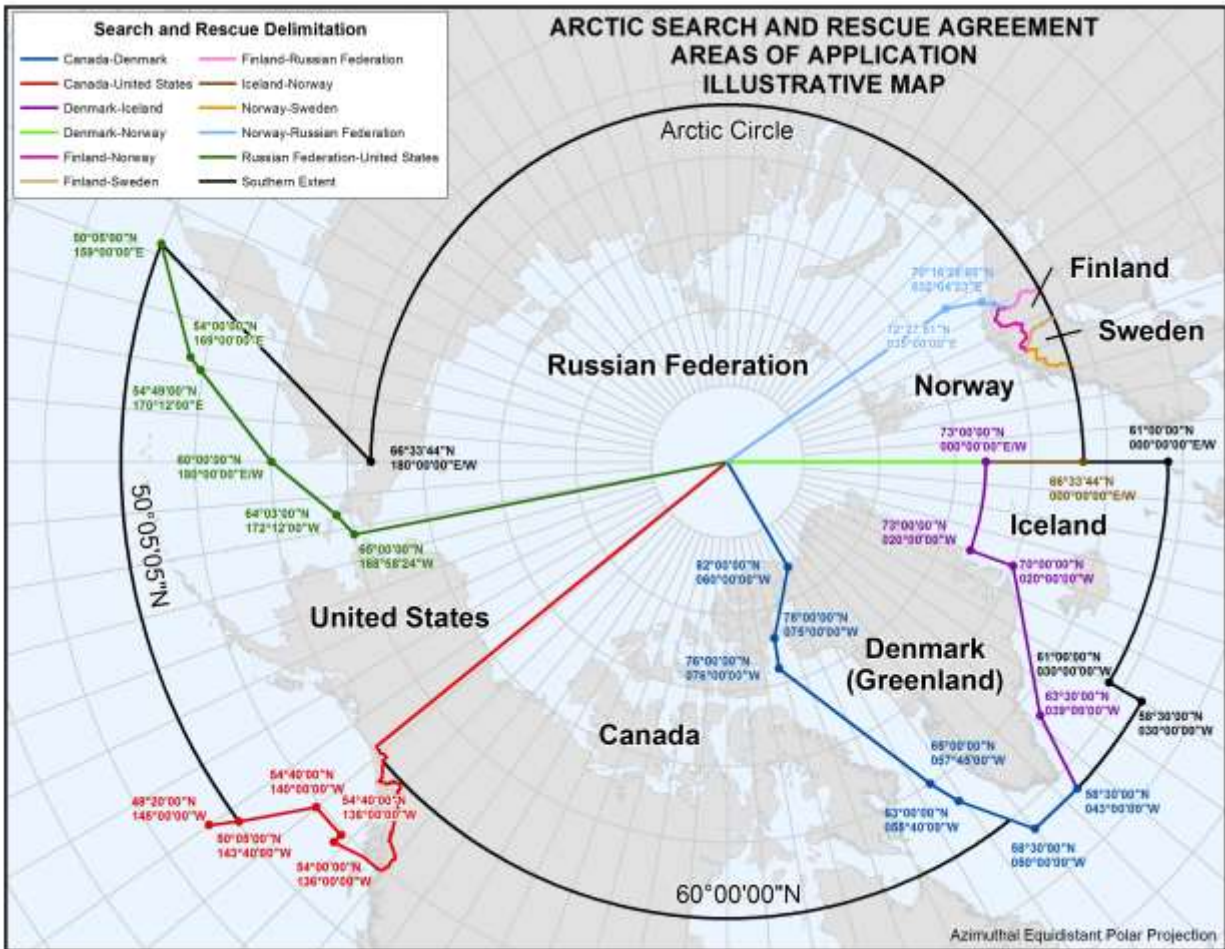


Figure 11. Arctic Search and Rescue Agreement Areas of Application
Source: U.S. Department of State (OES/OPA)

Arctic Oil Pollution Agreement

In 2013, the Arctic 8 signed the Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic.¹⁴⁵ The agreement is based on the LOS Convention and 1990 OPRC Convention.¹⁴⁶ The objective of the agreement is to strengthen cooperation, coordination and mutual assistance among the Parties on oil pollution preparedness and response in the Arctic in order to protect the marine environment from pollution by oil. The appendices

¹⁴⁵ Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, with appendices, signed 15 May 2013 (entered into force 25 March 2016, 30 days after Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the US all consented to be bound), TIAS 16-325 online: <https://www.state.gov/documents/organization/264791.pdf>. The text is also online: <https://oarchive.arctic-council.org/handle/11374/529>. See also *infra* Chapter 12 regarding the Arctic Council's Task Force on Arctic Marine Oil Pollution Prevention.

¹⁴⁶ International Convention on Oil Pollution Preparedness, Response and Cooperation, adopted 30 November 1990, 1891 UNTS 77 (entered into force 13 May 1995) (OPRC Convention) online: <http://treaties.un.org/doc/Publication/UNTS/Volume%201891/volume-1891-I-32194-English.pdf>; and <http://www.admiraltylawguide.com/conven/oilpolresponse1990.html>. All the Arctic 8 States are party to the 1990 OPRC.

include a listing of the competent national authorities, national points of contact, and the authorities empowered to request/decide on assistance, as well as detailed operational guidelines. The agreement does not address pollution from hazardous materials, which is covered by the 2000 OPRC-HNS Protocol.¹⁴⁷

Article 17 of the agreement provides for assistance by non-parties, such as Arctic Council Observers: ‘Any Party may, where appropriate, seek cooperation with States not party to this Agreement that may be able to contribute to activities envisaged in this Agreement, consistent with international law.’

Separately, the IMO Sub-Committee on Pollution Prevention and Response (PPR) adopted a Draft Guide to Oil Spill Response in Snow and Ice Conditions and forwarded it to MEPC 70 (October 2016) for approval.¹⁴⁸ The Committee approved the *Guide on oil spill response in ice and snow conditions* and requested the Secretariat to carry out final editing and publish the Guide through the IMO Publishing Service.¹⁴⁹

Arctic Five Agreements

Polar Bears

Decades before the establishment of the Arctic Council, in 1973 Canada, Denmark, Norway, the USSR (now Russia) and the United States (the ‘Arctic 5’) agreed on measures to protect the polar bear.¹⁵⁰ In 2000 the United States and Russia further agreed on measures for the conservation of the Alaska-Chukotka polar bear population, the conservation of its habitat, and the regulation of its use for sustainable purposes by native people.¹⁵¹

Ilulissat Declaration 2008

The five circumpolar nations meeting in Ilulissat, Greenland, 27-29 May 2008, gathered at the political level and adopted a declaration that read in part:¹⁵²

¹⁴⁷ Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, adopted 15 March 2000, [2007] AT 41 (entered into force 14 June 2007) (OPRC-HNS Protocol).

¹⁴⁸ IMO, *Report to the Marine Environment Committee*, PPR 3/22, paras 15.4-15.5, 22.2.11 (14 March 2016), and PPR 3/22/Add.1 Annex 6 (4 March 2016).

¹⁴⁹ IMO, *Report of the MEPC on its 70th Session*, MEPC 70/18 (11 November 2016) (MEPC 70/18), para. 7.8.

¹⁵⁰ Agreement on the Conservation of Polar Bears, signed 15 November 1973, (1974) 13 ILM 13, 27 UST 3918, TIAS 8409 (entered into force 26 May 1976; for the United States, 1 November 1976) online: <https://treaties.un.org/pages/showDetails.aspx?objid=0800000280363c19>.

¹⁵¹ Agreement between the Government of the United States of America and the Government of the Russian Federation on the Conservation and Management of the Alaska-Chukotka Polar Bear Population, signed 16 October 2000, TIAS 07-923 (entered into force 23 September 2007) online: <http://www.state.gov/documents/organization/215549.pdf>.

¹⁵² Text of the Ilulissat Declaration is available at (2009) 48 ILM 362 and online: http://www.oceanlaw.org/downloads/arctic/Ilulissat_Declaration.pdf.

By virtue of their sovereignty, sovereign rights and jurisdiction in large areas of the Arctic Ocean the five coastal states are in a unique position to address these possibilities and challenges. In this regard, we recall that an extensive international legal framework applies to the Arctic Ocean as discussed between our representatives at the meeting in Oslo on 15 and 16 October 2007 at the level of senior officials.¹⁵³ Notably, the law of the sea provides for important rights and obligations concerning the delineation of the outer limits of the continental shelf, the protection of the marine environment, including ice-covered areas, freedom of navigation, marine scientific research, and other uses of the sea. We remain committed to this legal framework and to the orderly settlement of any possible overlapping claims.

This framework provides a solid foundation for responsible management by the five coastal States and other users of this Ocean through national implementation and application of relevant provisions. We therefore see no need to develop a new comprehensive international legal regime to govern the Arctic Ocean. We will keep abreast of the developments in the Arctic Ocean and continue to implement appropriate measures.

Arctic Fisheries

Officials from the Arctic 5 States have been meeting since 2007 to develop measures to prevent unregulated fishing in the Central Arctic Ocean.

The officials met in Nuuk, Greenland, 24-26 February 2014, to continue discussions toward the development of interim measures to prevent unregulated fishing in the central Arctic Ocean and to continue discussion of related scientific matters. On 26 February 2014, the Arctic 5 States agreed to ban temporarily fishing in the high seas of the Arctic Ocean until a regulatory system is established.¹⁵⁴ The Chairman's statement provided the following details of their meeting:

Scientific Matters

¹⁵³ The Norwegian Foreign Ministry issued the following press release describing this meeting:

At the invitation of the Norwegian Government, representatives of the five coastal States of the Arctic Ocean - Canada, Denmark, Norway, the Russian Federation and the United States of America - met at the level of senior officials on 15 and 16 October 2007 in Oslo, Norway, to hold informal discussions.

The participants noted recent scientific data indicating that the Arctic Ocean stands at the threshold of significant changes, in particular the impact of melting ice on vulnerable ecosystems, livelihoods of local inhabitants, and potential exploitation of natural resources.

In this regard, they recalled the applicability of an extensive international legal framework to the Arctic Ocean, including notably the law of the sea. They discussed in particular application and national implementation of the law of the sea in relation to protection of the marine environment, freedom of navigation, marine scientific research and the establishment of the outer limits of their respective continental shelves. They discussed cooperative efforts on these and other topics. They also emphasized the commitment of their States to continue cooperation among themselves and with other interested States, including on scientific research.

Ministry of Foreign Affairs Norway, Press Release 128/07, 'The Arctic Ocean – Meeting in Oslo' (17 October 2007) online: <http://www.regjeringen.no/en/dep/ud/press/News/2007/The-Arctic-Ocean-meeting-in-Oslo-.html?id=486239>.

¹⁵⁴ 'Chairman's Statement - Meeting on Arctic Fisheries', *Oceans North International* (Nuuk, Greenland, February 2014) online: <http://www.oceansnorth.org/resources/chairmans-statement-meeting-arctic-fisheries-nuuk-greenland-february-2014>.

At the meeting in Nuuk, officials reviewed the outcomes of the 2nd Scientific Meeting on Arctic Fish Stocks held in Tromsø, Norway 28-31 October 2013 and decided on next steps to continue to advance scientific understanding of living marine resources and their ecosystems in the Arctic Ocean. They agreed:

- *to continue to promote scientific research, and to integrate scientific knowledge with traditional and local knowledge, with the aim of improving understanding of the living marine resources of the Arctic Ocean and the ecosystems in which they occur;*
- *to promote cooperation with relevant scientific bodies, including but not limited to the International Council for the Exploration of the Sea (ICES) and the North Pacific Marine Science Organization (PICES); and*
- *to hold a 3rd Scientific Meeting no later than the end of 2015 and to finalize in the coming weeks terms of reference for that meeting.*

Interim Measures

The meeting reaffirmed that, based on available scientific information, commercial fishing in the high seas area of the central Arctic Ocean is unlikely to occur in the near future. The meeting therefore also reaffirmed that there is no need at present to develop any additional regional fisheries management organization (RFMO) or arrangement for this area.

The meeting agreed on the desirability of developing appropriate interim measures to deter unregulated fishing in the future in the high seas area of the central Arctic Ocean.

Such interim measures will recognize that at least one existing RFMO [regional fisheries management organization] – the North-East Atlantic Fisheries Commission (NEAFC) – has the competence to adopt fisheries conservation and management measures in a portion of this high seas area, should such fisheries take place there.

The interim measures will neither undermine nor conflict with the role and mandate of any existing international mechanism relating to fisheries, including NEAFC.

Based on a proposal from the United States, which was developed further during the meeting, officials of the five States agreed that the necessary interim measures will:

- *Apply to the single high seas portion of the central Arctic Ocean that is entirely surrounded by waters under the fisheries jurisdiction of Canada, the Kingdom of Denmark in respect of Greenland, the Kingdom of Norway, the Russian Federation and the United States of America.*
- *Commit States participating in the interim measures to:*
 - *authorize their vessels to conduct commercial fishing in this high seas area only pursuant to one or more regional or subregional fisheries management organizations or arrangements that are or may be established to manage such fishing in accordance with modern international standards;*
 - *establish a joint program of scientific research with the aim of improving understanding of the ecosystems of this area;*

- coordinate their monitoring, control and surveillance activities in this area; and
- ensure that any non-commercial fishing in this area does not undermine the purpose of the interim measures, is based on scientific advice and is monitored, and that data obtained through any such fishing is shared;
- encourage other States to take measures in respect of vessels entitled to fly their flags that are consistent with the interim measures; and
- not prejudice the rights, jurisdiction and duties of States under relevant provisions of international law as reflected in the 1982 United Nations Convention on the Law of the Sea, or the 1995 UN Fish Stocks Agreement, nor alter the rights and obligations of States that arise from relevant international agreements.

The Way Forward

The meeting agreed that it is appropriate for the States whose exclusive economic zones border the high seas area in question to take the initiative on this matter. They also continued to recognize the interests of Arctic residents, particularly the Arctic indigenous peoples, in these matters and to engage with them as appropriate.

The meeting agreed to develop a Ministerial Declaration for signature or adoption by the five States based on the provisions described above. The meeting expressed the desire to finalize the Ministerial Declaration for signature or adoption in June 2014.

The meeting also reaffirmed that other States may have an interest in this topic and looked forward to a broader process involving additional States beginning before the end of 2014. The purpose would be to develop a set of interim measures, compatible with the Ministerial Declaration, that would include commitments by additional States. The final outcome could be a binding international agreement.¹⁵⁵

Shortly thereafter Russia annexed the Crimea and the June 2014 signing of the fishing ban did not occur. In May 2015, Russia announced it will sign the ban.¹⁵⁶ Thereafter, the following declaration was signed by the Arctic 5 in Oslo on 16 July 2015:

DECLARATION CONCERNING THE PREVENTION OF UNREGULATED HIGH SEAS FISHING IN THE CENTRAL ARCTIC OCEAN

Meeting in Oslo on 16 July 2015, Canada, the Kingdom of Denmark, the Kingdom of Norway, the Russian Federation and the United States of America continued discussions toward the

¹⁵⁵ Arctic 5 Chairman's Statement (20 February 2014) online: <http://www.pewtrusts.org/~media/Assets/2014/09/ArcticNationsAgreetoWorkonInternationalFisheries-Accord.pdf?la=en>.

¹⁵⁶ 'Russia to sign declaration of Arctic biological resources' *Arctic-Info* (13 May 2015) online: <http://www.arctic-info.com/news/13-05-2015/russia-to-sign-declaration-of-arctic-biological-resources>.

implementation of interim measures to prevent unregulated fishing in the high seas portion of the central Arctic Ocean. They adopted the following Declaration:

We recognize that until recently ice has generally covered the high seas portion of the central Arctic Ocean on a year-round basis, which has made fishing in those waters impossible to conduct. We acknowledge that, due to climate change resulting in changes in ice distribution and related environmental phenomena, the marine ecosystems of the Arctic Ocean are evolving and that the effects of these changes are poorly understood. We note that the Arctic Ocean ecosystems until now have been relatively unexposed to human activities.

We recognize the crucial role of healthy marine ecosystems and sustainable fisheries for food and nutrition. We are aware that fish stocks in the Arctic Ocean may occur both within areas under the fisheries jurisdiction of the coastal States and in the high seas portion of the central Arctic Ocean, including straddling fish stocks. We note further that the ice cover in the Arctic Ocean has been diminishing in recent years, including over some of the high seas portion of the central Arctic Ocean.

We recognize that, based on available scientific information, commercial fishing in the high seas portion of the central Arctic Ocean is unlikely to occur in the near future and, therefore, that there is no need at present to establish any additional regional fisheries management organization for this area. Nevertheless, recalling the obligations of States under international law to cooperate with each other in the conservation and management of living marine resources in high seas areas, including the obligation to apply the precautionary approach, we share the view that it is desirable to implement appropriate interim measures to deter unregulated fishing in the future in the high seas portion of the central Arctic Ocean.

We recognize that subsistence harvesting of living marine resources is ongoing in some Arctic Ocean coastal States, and that traditional and local knowledge exists among the users of these resources. We desire to promote scientific research, and to integrate scientific knowledge with traditional and local knowledge, with the aim of improving the understanding of the living marine resources of the Arctic Ocean and the ecosystems in which they occur. We also recognize the interests of Arctic residents, particularly the Arctic indigenous peoples, in the proper management of living marine resources in the Arctic Ocean.

We therefore intend to implement, in the single high seas portion of the central Arctic Ocean that is entirely surrounded by waters under the fisheries jurisdiction of Canada, the Kingdom of Denmark in respect of Greenland, the Kingdom of Norway, the Russian Federation and the United States of America, the following interim measures:

- We will authorize our vessels to conduct commercial fishing in this high seas area only pursuant to one or more regional or subregional fisheries management organizations or arrangements that are or may be established to manage such fishing in accordance with recognized international standards.*

- *We will establish a joint program of scientific research with the aim of improving understanding of the ecosystems of this area and promote cooperation with relevant scientific bodies, including but not limited to the International Council for the Exploration of the Sea (ICES) and the North Pacific Marine Science Organization (PICES).*
- *We will promote compliance with these interim measures and with relevant international law, including by coordinating our monitoring, control and surveillance activities in this area.*
- *We will ensure that any non-commercial fishing in this area does not undermine the purpose of the interim measures, is based on scientific advice and is monitored, and that data obtained through any such fishing is shared.*

We recall that an extensive international legal framework applies to the Arctic Ocean. These interim measures will neither undermine nor conflict with the role and mandate of any existing international mechanism relating to fisheries, including the North East Atlantic Fisheries Commission. Nor will these interim measures prejudice the rights, jurisdiction and duties of States under relevant provisions of international law as reflected in the 1982 United Nations Convention on the Law of the Sea, or the 1995 United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, or alter the rights and obligations of States that arise from relevant international agreements.

In implementing these interim measures, we will continue to engage with Arctic residents, particularly the Arctic indigenous peoples, as appropriate.

We intend to continue to work together to encourage other States to take measures in respect of vessels entitled to fly their flags that are consistent with these interim measures.

We acknowledge the interest of other States in preventing unregulated high seas fisheries in the central Arctic Ocean and look forward to working with them in a broader process to develop measures consistent with this Declaration that would include commitments by all interested States.

Oslo, 16 July 2015¹⁵⁷

Accompanying the Declaration was the following text:

Coastal States decide on measures against unregulated high seas fishing

¹⁵⁷ <https://www.regjeringen.no/globalassets/departementene/ud/vedlegg/folkerett/declaration-on-arctic-fisheries-16-july-2015.pdf>.

in the central Arctic Ocean

The five coastal States to the central Arctic Ocean, Canada, the Kingdom of Denmark, the Kingdom of Norway, the Russian Federation and the United States of America, met on Ambassadorial level in Oslo on 16 July to continue their discussions on issues concerning possible future fisheries in the central Arctic Ocean.

The coastal States signed a Declaration recognizing the crucial role of healthy marine ecosystems and sustainable fisheries for food and nutrition and the changes due to climate change. They agreed that commercial fishing in the high seas portion of the central Arctic Ocean is unlikely to occur in the near future and that there is no need at present to establish any additional regional fisheries management organization for this area. Nevertheless, they decided that they will authorize their vessels to conduct commercial fishing in this area only pursuant to one or more regional or subregional fisheries management organizations or arrangements. They also decided to establish a joint program of scientific research with the aim of improving understanding of the ecosystems of this area.

Following the signing of the Ilulissat Ministerial Declaration on 28 May 2008, officials from the coastal States met to discuss fishing in the central Arctic Ocean in Oslo 22 June 2010, in Washington D.C. 29 April – 1 May 2013 and in Nuuk 24-26 February 2014. Following these meetings specific scientific meetings were held in Anchorage 15-17 June 2011, in Tromsø 28-31 October 2014 and in Seattle 14-16 April 2015.

The coastal States acknowledge the interest of other States in preventing unregulated high seas fisheries in the central Arctic Ocean and intend to initiate a broader process to develop measures consistent with this Declaration that would include commitments by all interested States.¹⁵⁸

Less than two months later, the United States and Russia signed an agreement on cooperation for the purposes of preventing, deterring and eliminating IUU fishing in marine areas in their EEZs, as well as in high seas area that are subject to international fishing agreements to which both States are party.¹⁵⁹

Previously, in 2009 the United States had prohibited commercial fishing in the United States Arctic EEZ.¹⁶⁰

¹⁵⁸ <https://www.regjeringen.no/globalassets/departementene/ud/vedlegg/folkerett/-text-to-accompany-declaration-on-arctic-fisheries-16-july-2015.pdf>.

¹⁵⁹ Agreement between the Government of the United States of America and the Government of the Russian Federation on Cooperation for the Purposes of Preventing, Deterring and Eliminating Illegal, Unreported, and Unregulated Fishing, signed 11 September 2015, (entered into force 4 December 2015) TIAS 15-1204, online: <http://www.state.gov/documents/organization/251006.pdf>.

¹⁶⁰ See NOAA Fisheries, 'Arctic Fisheries', online: <https://alaskafisheries.noaa.gov/sustainablefisheries/arctic/>.

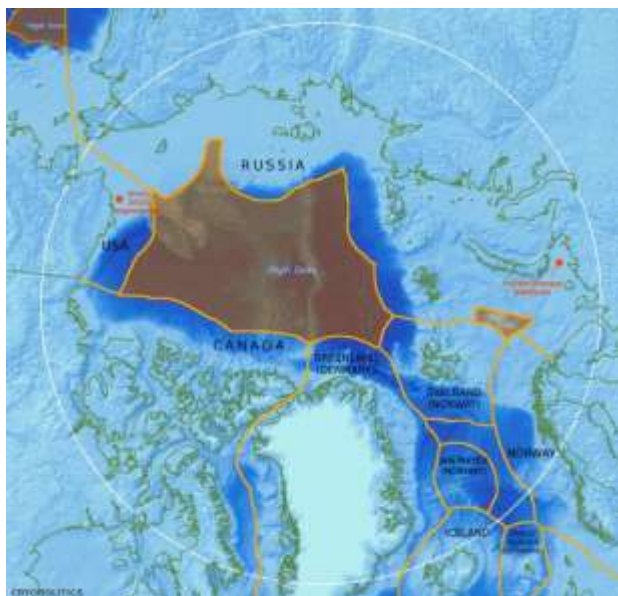


Figure 12. High Seas Areas of Arctic Ocean

Source: <http://cryopolitics.com/2015/06/23/the-donut-hole-at-the-center-of-the-arctic-ocean/>

The United States has suggested the Arctic 5 intend to negotiate a binding international agreement with potential fishing nations,¹⁶¹ along the lines of the 1994 agreement that banned fishing in the Bering Sea “Donut Hole.”¹⁶²

Delegations from Canada, the People’s Republic of China, the Kingdom of Denmark, the European Union, Iceland, Japan, the Republic of Korea, the Kingdom of Norway, the Russian Federation and the United States of America met in Washington, D.C. from 1-3 December 2015 to discuss their common interest in preventing unregulated commercial fishing in the high seas area of the central Arctic Ocean. The meeting was exploratory in nature. A number of

¹⁶¹ Yereh Rosen, ‘5 nations sign declaration to protect Arctic ‘donut hole’ from unregulated fishing,’ *Alaska Dispatch News* (16 July 2015) online: <https://www.adn.com/article/20150716/5-nations-sign-declaration-protect-arctic-donut-hole-unregulated-fishing>. Delegations from Canada, China, Denmark, the EU, Iceland, Japan, Korea, Norway, Russia and the US met in Washington 1-3 December 2015 to explore their common interest in preventing unregulated commercial fishing in the high seas areas of the central Arctic Ocean. A second meeting may occur in the United States in the spring of 2016. A follow-up scientific meeting is expected to occur in Norway in September/October 2016. See US Department of State Press Statement, ‘Meeting on High Seas Fisheries in The Central Arctic Ocean: Chairman’s Statement,’ 3 December 2015, online: <http://www.state.gov/e/oes/rls/pr/250352.htm>.

¹⁶² Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, with annex, Washington 16 June 1994, entered into force 8 December 1995, UNTS, TIAS, <http://www.afsc.noaa.gov/REFM/CBS/Docs/Convention%20on%20Conservation%20of%20Pollock%20in%20Central%20Bering%20Sea.pdf>. See also Dan Hull et al, ‘U.S. Arctic Fishing Closure a Model for International Cooperation’ *Alaska Dispatch News* (13 August 2015) online: <https://www.adn.com/article/20150813/us-arctic-fishing-closure-model-international-cooperation>. For a chart illustrating the structure and provisions of the Central Bering Sea Donut Hole, see <http://www.dfo-mpo.gc.ca/fgc-cgp/documents/meltzer/DONUTHOLEfinal.pdf>.

delegations made clear that they did not at present have a mandate to negotiate any particular instrument relating to the topic. The Chairman's report continued:¹⁶³

Scientific Matters

The meeting reviewed the outcomes of the 3rd Meeting of Scientific Experts on Fish Stocks in the Central Arctic Ocean held in Seattle, Washington, 14-16 April 2015. Delegations expressed the desire to cooperate in advancing scientific research and monitoring related to this topic and considered various approaches for doing so. The meeting considered the key questions of whether and when there might exist a stock or stocks of fish sufficient to support a sustainable commercial fishery in the high seas area of the central Arctic Ocean and the effects of any such fishery on the ecosystems.

Norway offered to host a follow-up meeting on scientific matters. Delegations reviewed possible Terms of Reference (ToR) for this meeting, with a view to finalizing these ToR in the near future. The meeting also considered several options for organizing future scientific collaboration on this topic.

Policy Matters

The Chairman noted the commitments of all participants to prevent, deter and eliminate illegal, unreported and unregulated fishing as reflected in numerous international instruments.

In light of the outcomes of the 3rd Meeting of Scientific Experts, noted above, the meeting expressed the belief that it is unlikely that there will be a stock or stocks of fish in the high seas area of the central Arctic Ocean sufficient to support a sustainable commercial fishery in that area in the near future. But the meeting also noted that the rapid changes occurring in the Arctic region make such predictions uncertain and therefore recognized the need for a precautionary approach. The meeting also expressed an interest in strengthening international scientific collaboration, given the very limited scientific information that is available today on this topic.

The meeting noted the existence of an applicable international legal framework for fisheries management, as reflected in the 1982 UN Convention on the Law of the Sea, the 1995 UN Fish Stocks Agreement and numerous other international instruments. However, the meeting also noted that, at present, there is no international mechanism to regulate commercial fishing in the high seas area of the central Arctic Ocean, except for the portion of this area that is within the Convention Area of the North-East Atlantic Fisheries Commission.

The meeting recognized the interests of Arctic residents, particularly Arctic indigenous peoples, in this topic and expressed the intention to continue to engage with them.

¹⁶³ U.S. State Department Press Statement, 'Meeting On High Seas Fisheries In The Central Arctic Ocean: Chairman's Statement' (3 December 2015) online: <http://www.state.gov/e/oes/rls/pr/250352.htm>.

The meeting considered various approaches to prevent unregulated commercial fishing in the high seas portion of the central Arctic Ocean. Not all of these approaches are mutually exclusive. Indeed, a number of these approaches could be combined in a step-by-step or evolutionary fashion. Suggested approaches include:

- *adjusting the Declaration signed by five of the participating States with input from the other participants such that a new, broader non-binding statement could be adopted;*
- *negotiating a binding international agreement of the kind proposed by the United States, discussed in more detail below; and*
- *negotiating in the foreseeable future an agreement or agreements to establish one or more additional regional fisheries management organizations or arrangements for the area.*

The United States presented a proposal for an international agreement that would, among other things, commit parties to:

- *authorize their vessels to conduct commercial fishing in this high seas area only pursuant to one or more regional or subregional fisheries management organizations or arrangements that are or may be established to manage such fishing in accordance with modern international standards;*
- *establish a joint program of scientific research with the aim of informing future fisheries management decisions and improving understanding of the ecosystems of this area; and*
- *ensure that any non-commercial fishing in this area follows scientific advice and is well-monitored.*

Although the U.S. proposal was not subject to negotiation at this meeting, some delegations provided preliminary reactions to it and suggested ways in which the proposal could be strengthened or clarified. The United States will circulate an updated proposal to all participants in advance of the next meeting on this topic.

The Way Forward

Delegations accepted the offer of Norway to host the follow-up scientific meeting, which is expected to occur in September or October 2016. The ToR for that meeting will be finalized through correspondence in advance.

The United States offered to host a follow-up meeting to continue the policy discussions and will proceed with the planning for that meeting unless another delegation steps forward soon with an offer to host it. The meeting is expected to occur in the spring of 2016. The venue and precise timing of the next meeting will be decided through correspondence.

The ten Delegations next met in Washington, D.C. from 19-21 April 2016 to continue discussions concerning the prevention of unregulated commercial fishing in the high seas area of the central Arctic Ocean. All delegations affirmed their commitment to take interim measures to

prevent unregulated commercial high seas fishing in the central Arctic Ocean as part of a “stepwise” process in advance of possibly establishing one or more additional regional fisheries management organizations or arrangements for this area. Some delegations announced that they had obtained a mandate to negotiate a legally binding instrument on this topic.

All three of the December 2015 options (above) remained under consideration during the April 2016 meeting. At that meeting, delegations expressed their willingness to develop interim measures that would prevent unregulated high seas commercial fishing from starting in the central Arctic Ocean and to establish a related joint program of scientific research. All delegations further expressed the understanding that such interim measures would incorporate the ecosystem and precautionary approaches, with inclusion of traditional and local knowledge, and be part of a “stepwise” process. In other words, the interim measures would include a commitment to keep under regular review the question of whether to establish one or more additional regional fisheries management organizations or arrangements for the central Arctic Ocean, based on the best available scientific evidence and relevant policy considerations, with the long-term objective of promoting conservation and sustainable use of living marine resources in the Arctic.

The meeting considered the elements of an updated draft for an international agreement that could form the basis of such interim measures. Many delegations offered suggestions for improving the U.S. proposal. Some of the key points that remain under discussion for future meetings include:

- the provisions of the instrument related to the “stepwise” approach;
- the relationship between the instrument and other international agreements or organizations dealing with related subjects or areas;
- the joint program of scientific research, its governance, and the manner in which science would be used in implementing the instrument; and
- decision-making.

Delegations will have the opportunity to submit to the United States written proposals relating to the development of measures concerning this topic by 16 May 2016. The Chairman will circulate an updated text based on suggestions made at the meeting in Washington, and any written proposals it receives, by 25 May 2016.

The officials next met in Iqaluit, Canada 6-8 July 2016 to consider the possible instrument and related matters

The April 2016 meeting received an update on preparations for the next in a series of scientific workshops, scheduled to take place in Tromsø, Norway on 26-28 September 2016. The terms of reference for the workshop contain two main objectives: (1) to develop a 5-year

cooperative research and monitoring plan; and (2) to create a framework for implementing that plan. This workshop is intended to broaden the range of participants, as part of a robust commitment to improve scientific understanding. As such, invitations to the scientific workshop have been sent to all delegations and to a number of international organizations.¹⁶⁴

The ten officials next met in Tórshavn, The Faroe Islands, 29 November to 1 December 2016 to continue discussions concerning the prevention of unregulated commercial fishing in the high seas of the central Arctic Ocean and related scientific matters. The Chairman's statement on the meeting stated "the [delegations] worked on the basis of a Chairman's Text circulated in October 2016 that was in the format of a legally binding instrument [and] [t]here was a general belief that these discussions have the possibility of concluding successfully in the near future." The Chair's Statement listed some of the key points that remain under discussion for the future, including "the manner in which the agreement addresses exploratory fishing; the conditions under which a decision might be made to commence negotiations on an agreement to establish one or more additional regional fisheries management organizations or arrangements for the central Arctic Ocean; and decision-making procedures." The Chair circulated an updated text immediately following the end of the meeting and requested comments by 23 January so that a new version could be circulated by 6 February 2017. The next meeting may be held in Iceland.¹⁶⁵

Arctic Coast Guard Forum

On 30 October 2015, the leaders of all Arctic eight coast guard agencies signed a Joint Statement officially establishing the Arctic Coast Guard Forum. The Forum is an operationally-focused, consensus-based organisation for the purpose of leveraging collective resources to foster safe, secure and environmentally responsible maritime activity in the Arctic. The Forum is modeled on existing forums for the North Pacific and North Atlantic. The Forum will reconvene for an Experts Meeting in Spring 2016.¹⁶⁶

The Forum will have a rotating Chair, in tandem with the rotating Chair of the Arctic Council. As presently structured there will be two working groups, a secretariat and a combined operations group. The latter group will focus on joint operations, asset sharing and exercises, starting with SAR. The Forum aims at developing common situational awareness, while tapping

¹⁶⁴ US State Department Press Statement, 'Chairman's Statement from Arctic High Seas Fisheries Meeting April 2016,' (21 April 2016) online: <http://www.state.gov/e/oes/ocns/fish/illegal/256780.htm>. A summary of the basic outcomes of the scientific workshop were summarized in the Chairman's Statement issued at the conclusion of the scientific workshop and were attached to the Tórshavn statement, which does not appear to be available online.

¹⁶⁵ U.S. State Department Press Release, 'Meeting on High Seas Fisheries in the Central Arctic Ocean' (1 December 2016) online: <http://arcticjournal.com/press-releases/2733/meeting-high-seas-fisheries-in-central-arctic-ocean>.

¹⁶⁶ US Department of Homeland Security Press Release, 'Coast Guard Leaders from Arctic Nations Sign Historic Joint Statement' (30 October 2015) online: <http://www.dhs.gov/news/2015/10/30/coast-guard-leaders-arctic-nations-sign-historic-joint-statement>.

into the work of the EPPR working group of the Arctic Council, while taking into account the varying missions and organisation of the eight coast guards.¹⁶⁷

Svalbard (Spitzbergen)

Svalbard is an archipelago located in the Arctic Ocean to the north of mainland Europe, about midway between Norway and the North Pole. The archipelago lies well north of the Arctic Circle, from 74° to 81° north latitude, and from 10° to 35° east longitude, and is within the geographic scope of the Polar Code.

Since 1920, the archipelago is the northernmost part of the Kingdom of Norway. The Svalbard Treaty of 1920 recognises Norwegian sovereignty,¹⁶⁸ and the 1925 Svalbard Act made Svalbard a full part of the Kingdom of Norway. They also established Svalbard as a free economic zone and a demilitarised zone. The Norwegian Store Norske and the Russian Arktikugol remain the only mining companies in place. Research and tourism have become important supplementary industries, with the University Centre in Svalbard (UNIS) and the Svalbard Global Seed Vault playing critical roles.

Total population is just over 2,200, with most people living in Longyearbyen on the rugged island of Spitsbergen. Spitsbergen itself covers approximately 39,044 sq km (15,075 sq miles). No roads connect the settlements; instead snowmobiles, aircraft and boats serve inter-community transport. Svalbard Airport, Longyear serves as the main gateway.

The name Spitsbergen was also formerly applied to the entire archipelago of Svalbard and occasionally still is.

Since 2003, Norway claims a 12 nm territorial sea around Svalbard measured from a series of straight baselines.¹⁶⁹

¹⁶⁷ Andreas Østhagen, 'The Coast Guard Forum: Big Tasks, Small Solutions,' *The Arctic Institute Center for Circumpolar Security Studies* (3 November 2015) online: <http://www.thearcticinstitute.org/2015/11/the-arctic-coast-guard-forum-big-tasks.html>.

¹⁶⁸ Treaty concerning the Archipelago of Spitzbergen with annex and map, Paris 9 February 1920, 2 LNTS 7 (entered into force 14 August 1925) online: <http://www.jus.uio.no/english/services/library/treaties/01/1-11/svalbard-treaty.xml>. All of the members of the Arctic Council are parties; all of the Arctic Council observers are party except Singapore; and 22 other States are party, <http://www.sysselmannen.no/en/Toppmeny/About-Svalbard/Laws-and-regulations/Svalbard-Treaty/>.

¹⁶⁹ See UN, *Law of the Sea Bulletin*, No. 54, 2004, at 94-95 (maps).

Chapter 8 Arctic Maritime Claims and Ocean Boundaries

This chapter describes maritime claims and boundaries in the Arctic Ocean, and discusses the role of the Commission on the Limits of the Continental Shelf (CLCS) in determining the outer limits of the continental shelf beyond 200 nm (also known as the Extended Continental Shelf, or ECS).

As a preliminary matter, with the exception of Hans Island whose sovereignty is disputed between Canada and Denmark (Greenland), there are no territorial or land boundary disputes in the Arctic.

The chapter begins with maritime claims within 200 nm which are summarised, followed by a discussion of resolved and unresolved maritime boundaries in the Arctic.

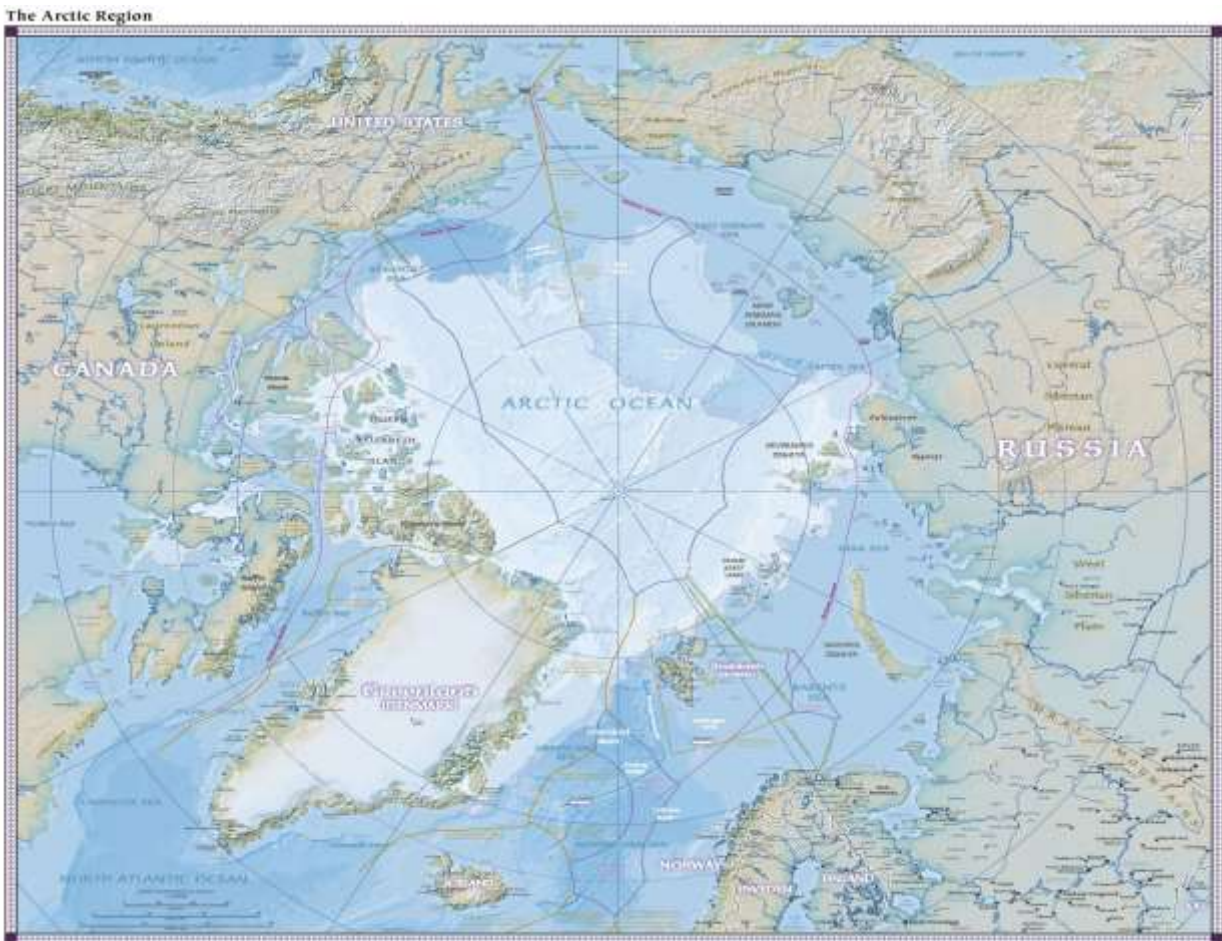


Figure 13. The Arctic Region: Boundaries and Limits
Source: U.S. Government (2008)

It will be recalled that the water column seaward of the outer limit of the EEZ is high seas,¹⁷⁰ and the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction (i.e., seaward of the outer limits of the continental shelf or extended continental shelf beyond 200 nm) is the ‘Area’,¹⁷¹ which, along with its resources, is the common heritage of mankind.¹⁷² This situation is illustrated in the following map showing the maritime claims of the five littoral States, with the ECS claims in hash marks.



Figure 14. IBRU Revised Arctic Map (Polar Projection) August 2015
Source: <https://www.dur.ac.uk/ibru/resources/arctic/>

Maritime Claims within 200 nm

Canada, the Russian Federation and the United States have all claimed 12 nm territorial seas and 200 nm EEZs in the Arctic Ocean.

Norway claims a 12 nm territorial sea and a 200 nm continental shelf for the Norwegian mainland, Svalbard and Jan Mayen; Norway claims a 200 nm EEZ around its mainland and Jan Mayen, and a 200 nm Fisheries Protection Zone around Svalbard.

¹⁷⁰ LOS Convention, *supra* note 7, Art 86.

¹⁷¹ *Ibid*, Art 1(1)(1).

¹⁷² *Ibid*, Art 136.

Denmark claims a 12 nm territorial sea, a 200 nm EEZ around Greenland, a 200 nm fisheries zone around the Faroe Islands; and a 200-metre continental shelf around Greenland.¹⁷³

All these claims are consistent with the relevant provisions of the LOS Convention, as discussed in Chapters 2 and 6.

Maritime Boundary Situations

Maritime boundaries are needed when two States have overlapping maritime zones where

- (1) they have opposing coasts; and
- (2) the coasts of the two States are adjacent to each other.

Maritime Boundary Delimitation Process

Maritime boundaries are resolved either by agreement by the Parties or by third party dispute resolution by the International Court of Justice (ICJ), International Tribunal for the Law of the Sea (ITLOS) or arbitration.

The rules for delimitation of maritime boundaries in the Arctic are the same as in all other ocean areas.

There are different rules for delimitation of the territorial sea and of the EEZ/continental shelf including shelf beyond 200 nm.

Delimitation of the territorial sea between States with opposite or adjacent coasts is governed by Article 15 of the LOS Convention, which provides:

Where the coasts of two States are opposite or adjacent to each other, neither of the two States is entitled, failing agreement between them to the contrary, to extend its territorial sea beyond the median line every point of which is equidistant from the nearest points on the baselines from which the breadth of the territorial seas of each of the two States is measured. The above provision does not apply, however, where it is necessary by reason of historic title or other special circumstances to delimit the territorial seas of the two States in a way which is at variance therewith.

Delimitation of the EEZ and continental shelf between States with opposite or adjacent coasts are governed by Articles 74(1) and 83(1) respectively, which provide in identical terms that the delimitation ‘shall be effected by agreement on the basis of international law, as referred to in Article 38 of the Statute of the International Court of Justice, in order to achieve an

¹⁷³ UN DOALOS, Table of Claims to Maritime Jurisdiction (as at 15 July 2011) online: http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/table_summary_of_claims.pdf.

equitable solution.’ In recent years, the ICJ has provided consistent guidance on how to implement this provision.¹⁷⁴

Some but not all maritime boundaries in the Arctic Ocean have been resolved. Few of the outer limits of the continental shelf beyond 200 nm in the Arctic have been delineated.

There are five maritime boundary situations in the Arctic Ocean where adjacent or opposite States have overlapping maritime claims both within and beyond 200 nm measured from baselines: US-Russia, US-Canada, Canada-Denmark, Denmark-Norway, and Norway-Russia. Agreed boundaries within 200 nm are described first.

Resolved Maritime Boundaries in the Arctic within 200 nm of Baselines

Canada–Denmark (Greenland)

The boundary between Canada and Denmark in Davis Strait, Baffin Bay, and Nares Strait is a continental shelf boundary that was signed in 1973.¹⁷⁵ The boundary ends within the Robeson Channel before it enters the Arctic Ocean. In 2004, as permitted under Article 4 of the 1973 Agreement, a slight adjustment was made to the original 1973 line as a result of new surveys and information.¹⁷⁶ While it is within 400 nm of both coasts, it does not include the EEZ. For most of its length, however, both parties have unilaterally decided to use the boundary to divide their fisheries zones as well, although these waters are not major commercial fishing grounds.

There is no delimitation of the EEZ and ECS north of the end point into the Lincoln Sea. The disagreement to extend this line is based on whether to give full effect to Denmark’s Beaumont Island, which would move the line at one point some 70 nm to Denmark’s favour. However in 2012, Canada and Denmark (Greenland) announced an agreement in principle on a maritime boundary out to 200 nm in the Lincoln Sea.¹⁷⁷ The announcement indicated that

¹⁷⁴ Starting with the unanimous opinion in the *Maritime Delimitation in the Black Sea (Romania v Ukraine)*, [2009] ICJ Rep 61, online: <http://www.icj-cij.org/docket/files/132/14987.pdf>.

¹⁷⁵ Agreement between the Government of the Kingdom of Denmark and the Government of Canada relating to the Delimitation of the Continental Shelf between Greenland and Canada, signed 17 December 1973, 950 UNTS 147 (entered into force 13 March 1974) (Intl Treaty); Jonathan I Charney and Lewis M Alexander (eds), *International Maritime Boundaries* (Martinus Nijhoff Publishers, 1993) vol 1 at 380-85; Victor Prescott & Clive Schofield, *The Maritime Political Boundaries of the World*, 2nd ed (Martinus Nijhoff Publishers, 2005) at 527-28; Limits in the Seas No. 72, online: <http://www.state.gov/documents/organization/61370.pdf>. The continental shelf in the vicinity of Hans Island and in the Arctic Ocean remain to be delimited.

¹⁷⁶ Exchange of Notes Constituting an Agreement to Amend the 1973 Canada – Denmark Continental Shelf Agreement, signed 5 and 20 April 2004, 2695 UNTS [redacted], (entered into force 16 December 2009) online: <https://treaties.un.org/doc/Publication/UNTS/No%20Volume/13550/A-13550-08000002802a2a81.pdf>. This agreement did not change the coordinates of points 122 and 123.

¹⁷⁷ Canadian Department of Foreign Affairs, Trade and Development, News Release, ‘Canada and Kingdom of Denmark Reach Tentative Agreement on Lincoln Sea Boundary’ (28 November 2012) online: <http://www.thefreelibrary.com/Canada+%3A+Canada+and+Kingdom+of+Denmark+Reach+Tentative+Agreement+on...-a0310327798>.

equidistance was applied and that further technical adjustments were to be made to the 1973 Agreement. A finalised agreement has not yet been made public.

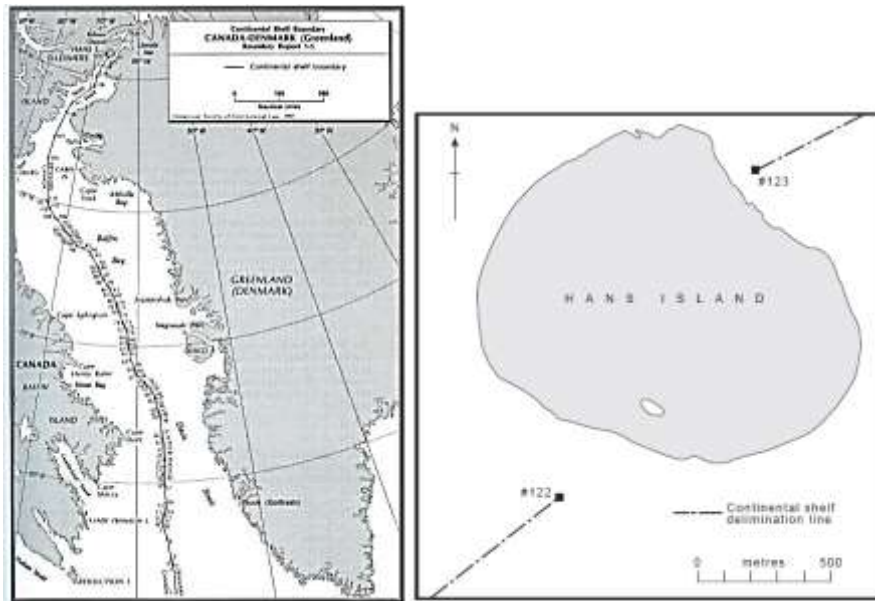


Figure 15. Canada-Denmark (Greenland) Continental Shelf Boundary and Hans Island
Source: ASIL, *International Maritime Boundaries*, vol II

Denmark (Greenland)–Norway (Svalbard)

Denmark and Norway signed a maritime boundary agreement in February 2006 that divides the sovereign rights of Greenland and Svalbard.¹⁷⁸

¹⁷⁸ Agreement between the Government of the Kingdom of Norway on the one hand, and the Government of the Kingdom of Denmark together with the Home Rule Government of Greenland on the other hand, concerning the delimitation of the continental shelf and the fisheries zone in the area between Greenland and Svalbard, signed 20 February 2006, 2378 UNTS 21 (entered into force 2 June 2006); *International Maritime Boundaries*, *supra* note 180, vol 4 at 4529-31; Prescott and Schofield, *supra* note 183, at 524, online: <http://treaties.un.org/doc/Publication/UNTS/Volume%202378/v2378.pdf>. The Agreement supports the position of Norway that Svalbard is capable of generating maritime zones and is to be taken into account in maritime boundary delimitation.

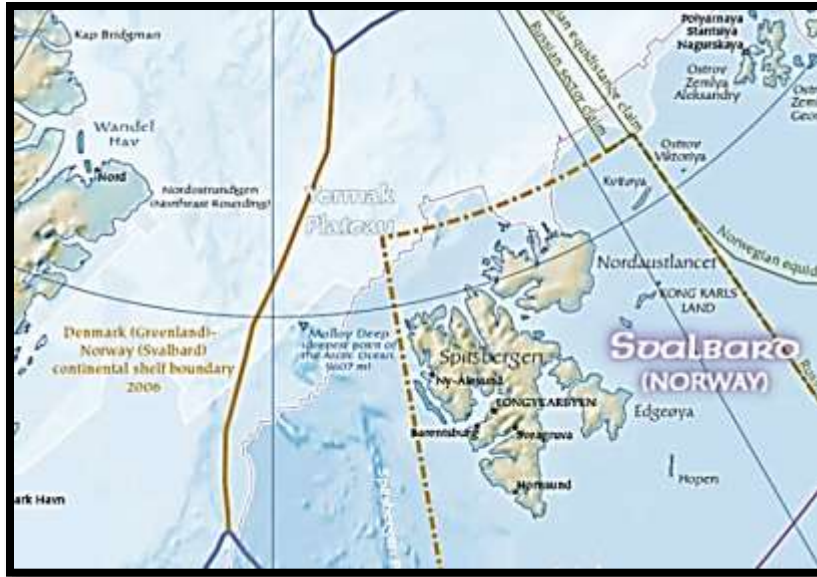


Figure 16. Denmark (Greenland)-Norway (Svalbard) Continental Shelf Boundary 2006
Source: U.S. Government (2008)

Denmark (Greenland)-Iceland-Norway (Jan Mayen)

In the Greenland Sea, north of the Arctic Circle, between 1979 and 1997, Denmark on behalf of Greenland, Iceland and Norway, in respect of Jan Mayen, resolved their overlapping 200 nm zone through negotiations,¹⁷⁹ a court case,¹⁸⁰ and a conciliation commission.¹⁸¹

¹⁷⁹ Agreement between the Government of the Kingdom of Denmark and the Government of the Kingdom of Norway concerning the delimitation of the continental shelf in the area between the Faroe Islands and Norway and the boundary between the fishery zone near the Faroe Islands and the Norwegian economic zone, signed 15 June 1979, 1211 UNTS 169, *International Maritime Boundaries*, *supra* note 183, vol 2 at 1717-18 (entered into force 3 June 1980) online: <http://treaties.un.org/doc/Publication/UNTS/Volume%201211/v1211.pdf>; Agreement between the Kingdom of Denmark and the Kingdom of Norway concerning the delimitation of the continental shelf in the area between Jan Mayen and Greenland and concerning the boundary between the fishery zones in the area, signed 18 December 1995, 1903 UNTS 171, *International Maritime Boundaries*, *supra* note 183, vol 3 at 2524-25 (entered into force 27 May 1998) online: <http://treaties.un.org/doc/Publication/UNTS/Volume%201903/v1903.pdf>; Agreement between Denmark along with the Local Government of Greenland and Iceland on the Delimitation of the Continental Shelf and Fishery Zone in the Area between Greenland and Iceland, signed 11 November 1997, 2074 UNTS 43 (entered into force 27 May 1998); Additional Protocol to the Agreement of December 18, 1995 between the Kingdom of Norway and the Kingdom of Denmark concerning the Delimitation of the Continental Shelf in the Area between Jan Mayen and Greenland and concerning the boundary between Fishery Zones in the Area, signed 11 November 1997, 2074 UNTS 61, *International Maritime Boundaries*, *supra* note 183, vol 4 at 2919-20 (entered into force 28 May 1998) online: <http://treaties.un.org/doc/Publication/UNTS/Volume%202074/v2074.pdf>; Additional Protocol to the Agreement of 28 May 1980 between Iceland and Norway concerning Fishery and Continental Shelf Questions and the Agreement derived therefrom of 22 October 1981 on the Continental Shelf between Jan Mayen and Iceland, signed 11 November 1987, 2127 UNTS 227, (1999) 39 *Law of the Sea Bulletin* 38 (entered into force 27 May 1998) online: http://www.un.org/Depts/los/doalos_publications/LOSBulletins/bulletinpdf/bulletinE39.pdf.

¹⁸⁰ Case concerning the *Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v. Norway)* [1993] ICJ Rep 38, online: <http://www.icj-cij.org/docket/files/78/6743.pdf>.

¹⁸¹ Agreement Between Norway and Iceland on Fishery and Continental Shelf Questions, signed 28 May 1980, 2124 UNTS 225 (entered into force 13 June 1980), Art 9; Report and Recommendations to the Governments of Iceland and Norway of the Conciliation Commission on the Continental Shelf Area between Iceland and Jan Mayen, May

Norway–Russia

The territorial sea, EEZ and continental shelf between Norway and Russia in the Barents Sea have been delimited by three treaties signed in 1957,¹⁸² 2007,¹⁸³ and 2010.¹⁸⁴

1981, reprinted in (1981) 20 ILM 787; Iceland – Norway: Agreement on the Continental Shelf between Iceland and Jan Mayen, signed 22 October 1981, 2124 UNTS 247, (1982) 21 ILM 1222 (entered into force 2 June 1982) online: <https://treaties.un.org/doc/Publication/UNTS/Volume%202124/v2124.pdf>; Agreement between Norway and Iceland concerning transboundary hydrocarbon deposits, signed 3 November 2008, UNTS ... (entered into force 3 October 2011) online: <https://treaties.un.org/doc/Publication/UNTS/No%20Volume/50378/Part/I-50378-0800000280321996.pdf>.

¹⁸² Agreement between the Royal Norwegian Government and the Government of the Union of Soviet Socialist Republics concerning the sea frontier between Norway and the USSR in the Varangerfjord, signed 15 February 1957, 312 UNTS 323, *International Maritime Boundaries*, *supra* note 183, vol 2 at 1781-89 (entered into force 24 April 1957); Limits in the Seas No 17, 'Continental Shelf Boundary: Norway-Soviet Union' online: <http://www.state.gov/documents/organization/61609.pdf>.

¹⁸³ Agreement on Maritime Delimitation of Coastal Area in Mouth of the Varangerfjord, signed 11 July 2007, 2526 UNTS 33, *International Maritime Boundaries*, *supra* note 183, vol 4 at 4485-87 (entered into force 9 July 2008) online: <http://www.regjeringen.no/en/dep/ud/press/News/2007/Agreement-signed-between-Norway-and-Russ.html?id=476347>.

¹⁸⁴ Treaty between the Russian Federation and the Kingdom of Norway Concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean, adopted 15 September 2010, 2791 UNTS ..., (2011) 50 ILM 1113 (entered into force 7 July 2011) online: <https://treaties.un.org/doc/Publication/UNTS/No%20Volume/49095/Part/I-49095-08000002802f6f0e.pdf> and http://www.regjeringen.no/upload/SMK/Vedlegg/2010/avtale_engelsk.pdf.

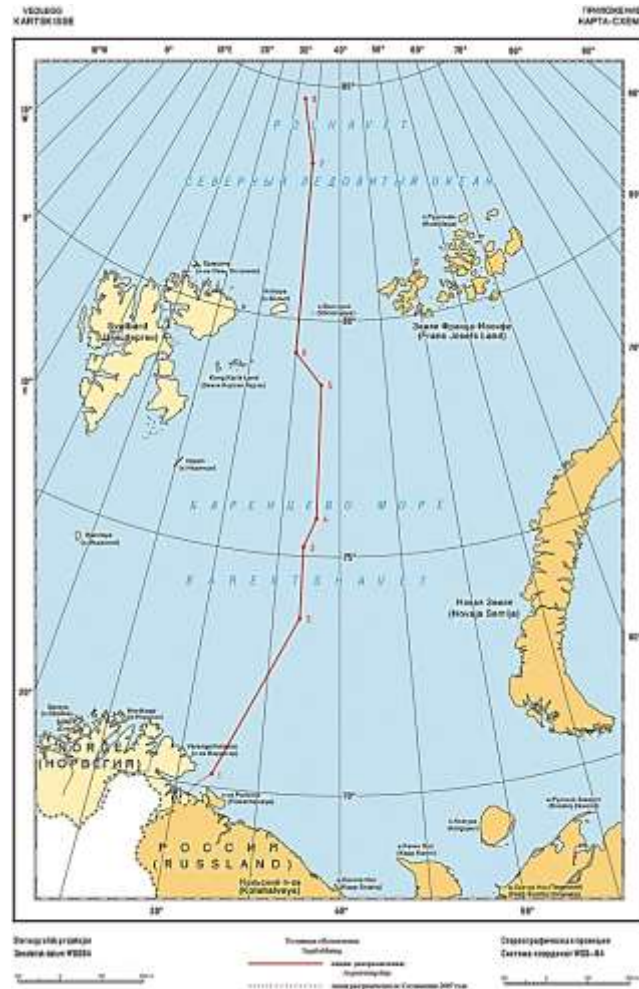


Figure 17. Norway-Russia Maritime Boundary 2010

Source: http://www.regjeringen.no/upload/SMK/Vedlegg/2010/avtale_engelsk.pdf

US–Russia

The United States-Russia maritime boundary – running from the Bering Sea north to the Arctic – has been negotiated. The 1990 US-USSR (now Russia) treaty is being applied provisionally pending ratification by the Russian Duma.¹⁸⁵ The US Senate gave its advice and consent in 1992.¹⁸⁶ The treaty provides that the maritime boundary extends north along the 168°58'37" meridian through the Bering Strait and Chukchi Sea into the Arctic Ocean 'as far as is permitted under international law.'¹⁸⁷

¹⁸⁵ Agreement between the U.S. and the USSR to abide by the terms of the maritime boundary agreement of June 1, 1990, pending its entry into force, effected by an exchange of notes, signed 1 June 1990, TIAS 11451, *International Maritime Boundaries*, supra note 183, vol 1 at 454, online:

<http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/TREATIES/USA-RUS1990MB.PDF>.

¹⁸⁶ Sen Ex Rep 102-13; resolution of advice and consent approved 86-6, (16 September 1991) Cong Rec S13036-S13040, online: <http://thomas.loc.gov/home/r102query.html>.

¹⁸⁷ Sen Tr Doc 101-22 (26 September 1990); 29 ILM 941 (1990); *International Maritime Boundaries*, supra note 183, vol 1 at 447-460, online:

<http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/TREATIES/USA-RUS1990MB.PDF>.



Figure 18. United States-Russia Maritime Boundary 1990
Source: U.S. Department of State (OES/OLP)

We turn next to ECS claims in the Arctic Ocean.

Continental Shelf Claims beyond 200 nm in the Arctic Ocean

Canada¹⁸⁸

Canada filed preliminary information on its Arctic ECS on 6 December 2013 (the LOS Convention had entered into force for Canada on 7 December 2003).¹⁸⁹ The preliminary information states that the Canadian continental margin in the Arctic Ocean is part of a morphologically continuous margin around the Canadian basin and along the Amundsen Basin, and is the submerged prolongation of Canada's landmass beyond 200 nm from its baselines. Canada states that its ECS is comprised of a number of seafloor elevations (including the

See John H McNeill, 'America's Maritime Boundary with the Soviet Union', (1991) 44 *Naval War College Review* 46, reprinted in John Norton Moore and Robert F Turner (eds), 'Readings on International Law from the Naval War College Review 1978-1994' (1995) 68 *International Law Studies* 219, online:

<http://stockton.usnwc.edu/ils/vol68/iss1/30>. Article 3 contains a novel provision for the transfer of sovereign rights between the parties in four 'special areas'. In other words, the line created fragments of EEZ, known as Special Areas, which are beyond 200 nautical miles from one State but within 200 nautical miles of the other.

¹⁸⁸ See Department of Foreign Affairs, Trade and Development, 'Canada's Extended Continental Shelf', online: <http://www.international.gc.ca/arctic-arctique/continental/index.aspx?lang=eng>.

¹⁸⁹ Thereby meeting the 10-year rule in article 4 of Annex II to the LOS Convention. For the Canadian preliminary information, online: http://www.un.org/Depts/los/clcs_new/submissions_files/preliminary/can_pi_en.pdf. On the same day Canada made a partial submission for its ECS in portions of the western Atlantic Ocean (Labrador Sea, Grand Banks, Nova Scotia), the text of the Executive Summary is online: http://www.un.org/Depts/los/clcs_new/submissions_files/submission_can_70_2013.htm.

Lomonosov Ridge and Alpha Ridge beyond the 350 nm constraint line¹⁹⁰). Former Canadian Prime Minister Harper wanted the North Pole,¹⁹¹ as does Denmark.¹⁹²

Denmark¹⁹³

Denmark has so far made five partial submissions to the CLCS:

- North of the Faroe Islands in 2009;¹⁹⁴
- Faroe-Rockall Plateau Region in 2010;¹⁹⁵
- Southern ECS of Greenland in 2012;¹⁹⁶
- North-Eastern ECS of Greenland in 2013;¹⁹⁷ and
- in respect of the Northern Continental Shelf of Greenland.¹⁹⁸

Norway¹⁹⁹

In 2006, Norway made a partial submission for portions of its ECS in the Arctic (Western Nansen Basin north of Svalbard), Barents Sea and North East Atlantic.²⁰⁰ In 2009, the CLCS made favourable recommendations.²⁰¹ Norway has not deposited with the UN the information required by Article 76(9) if it has accepted those recommendations.²⁰²

¹⁹⁰ LOS Convention, *supra* note 7, Art 76(6) (submarine ridges).

¹⁹¹ 'Stephen Harper has ordered government bureaucrats back to the drawing board to craft a more expansive international claim for seabed riches in the Arctic after the proposed submission they showed him failed to include the geographic North Pole ...' - Steven Chase, 'Harper orders new draft of Arctic seabed claim to include North Pole', *The Globe and Mail* (4 December 2013) 1. In September 2016 Canadian researchers wrapped up a three-year mission to map the limits of the Arctic continental shelf and scientifically prove the claim for a resource-rich area leading up to the North Pole. Elyse Skura, 'All high fives': Canada wraps up research mission to prove Arctic ownership claims' *CBC News* (23 September 2016) online: <http://www.cbc.ca/beta/news/canada/north/unclos-arctic-research-mission-wraps-1.3774985>.

¹⁹² See 'The Continental Shelf Project' online: http://a76.dk/Ing_uk/main.html.

¹⁹³ *Ibid.*

¹⁹⁴ UN Oceans & Law of the Sea (CLCS), 'Submission by Denmark for North of the Faroe Islands', online: http://www.un.org/Depts/los/clcs_new/submissions_files/submission_dnk_28_2009.htm.

¹⁹⁵ CLCS, 'Submission by Denmark for Faroe-Rockall Plateau Region', online: http://www.un.org/Depts/los/clcs_new/submissions_files/submission_dnk_54_2010.htm.

¹⁹⁶ CLCS, 'Submission by Denmark for South of Greenland', online: http://www.un.org/Depts/los/clcs_new/submissions_files/submission_dnk_61_2012.htm.

¹⁹⁷ CLCS, 'Submission by Denmark for North-East of Greenland', online: http://www.un.org/Depts/los/clcs_new/submissions_files/submission_dnk_68_2013.htm.

¹⁹⁸ CLCS, 'Submission by Denmark in respect of the Northern Continental Shelf of Greenland', online: http://www.un.org/Depts/los/clcs_new/submissions_files/submission_dnk_76_2014.htm.

¹⁹⁹ See Ministry of Foreign Affairs Norway, 'Continental Shelf – Questions and Answers', online: <http://www.regjeringen.no/en/dep/ud/selected-topics/civil--rights/spesiell-folkerett/continental-shelf--questions-and-answers.html?id=448309>.

²⁰⁰ CLCS, 'Submission by Norway', online: http://www.un.org/Depts/los/clcs_new/submissions_files/submission_nor.htm.

²⁰¹ Statement by Chairman of CLCS on the progress of work in the Commission – 23rd Session (CLCS/62) online: http://www.un.org/Depts/los/clcs_new/commission_documents.htm#Statements%20by%20the%20Chairman%20of%20the%20Commission.

²⁰² In 2009, Norway made another partial submission, this time in respect of Bouvetøya in the South Atlantic Ocean and Dronning Maud Land in the Southern Ocean online:

establishment of the outer limits of their continental shelves in the Arctic.²⁰⁸ The United States is presently analysing this data to determine the outer limits of its ECS in nine locations in the Arctic, Atlantic and Pacific Oceans.²⁰⁹

We next turn to consider those maritime boundary situations within 200 nm that have not been resolved.

Unresolved Arctic Maritime Boundary Situations within 200 nm

Canada–Denmark (Greenland)

Sovereignty over Hans Island in the Davis Strait is disputed between Canada and Denmark (Greenland). Hans Island is a half square mile island or about one-seventh the size of New York’s Central Park. This uninhabited island is the only sovereignty dispute in the Arctic. The dispute prevents completion of the maritime boundary as the existing boundaries stop short of the island both north and south.²¹⁰

In addition, the boundaries of the EEZ (south of Alert), and the EEZ and continental shelf (north of Alert in the Lincoln Sea) remain to be agreed.²¹¹

Canada–US

The United States and Canada disagree on the location of the maritime boundary in the Beaufort Sea and northward. Canada considers that the maritime boundary follows the 141st meridian, which forms the land boundary between Alaska and the Northwest Territories. The United States rejects that the 1825 Anglo-Russian²¹² and 1867 Russo-American²¹³ treaties establishing the land boundary also established the maritime boundary and considers that the 200 nm boundary should be based on the ‘equidistance’ methodology.²¹⁴ Because of the configuration of the Canadian coast, the position of Canada in delimitation of the ECS in the

²⁰⁸ See ‘US Extended Continental Shelf Project’, online: <http://continentalshelf.gov>.

²⁰⁹ See ‘Extended Continental Shelf Summary of Missions’, online: <http://continentalshelf.gov/missions.html>.

²¹⁰ See Gabrielle Canon, ‘Why Are Canada and Denmark Fighting Over a Tiny Arctic Island?’ (13 November 2015) online: <https://upvoted.com/2015/11/13/will-the-long-lived-battle-between-canada-and-denmark-ever-end/>.

²¹¹ See *supra* note 185 and accompanying text.

²¹² Convention between Great Britain and Russia concerning the Limits of the Respective Possessions on the North-West Coast of America and the Navigation of the Pacific Ocean, adopted 16(28) February 1825, 12 BFSP 38, 75 CTS 95 (entered into force 9 April 1825) online: <http://explorenorth.com/library/history/bl-ruseng1825.htm>. Article III provides ‘[t]he line of demarcation between the Possessions of the High Contracting Parties, upon the Coast of the Continent . . . the line of demarcation shall follow the summit of the mountains situated parallel to the Coast, as far as the point of intersection of the 141st degree of West longitude (of the same Meridian); and, finally, from the said point of intersection, the said Meridian Line of the 141st degree, in its prolongation as far as the Frozen Ocean, shall form the limit between the Russian and British Possessions on the Continent of America to the North-West’ [emphasis added]. The authentic French text reads ‘. . . dans son prolongement jusqu’à la Mer Glaciale’.

²¹³ Article I of the US-Russia Convention ceding Alaska, March 30, 1867, signed 30 March 1867, 15 Stat 539, TS 301, 11 Bevans 1216, 134 CTS 331 (entered into force 20 June 1867) online: <http://www.bartleby.com/43/43.html>; International Boundary Study No 14 (revised) online:

<http://www.law.fsu.edu/library/collection/limitsinseas/ibs014.pdf> (quoting Art III of the 1825 treaty).

²¹⁴ Cumulative Digest, vol II, at 1889-90; Prescott and Schofield, *supra* note 183 at 526-27; and Beaufort Sea dispute, 2005 Digest at 705-07 online: <http://www.state.gov/s/l/c22824.htm>.

Beaufort Sea favours the United States, while the United States position in favour of equidistance favours Canada.



Figure 20. Beaufort Sea: U.S. and Canadian Maritime Boundary Claims
Source: Sovereign Graphics, Inc. 2010

We now turn to consider the situations in the Arctic involving ECS.

Arctic ECS Boundary Situations

The 2010 Norway-Russia agreement delimits areas of the continental shelf beyond 200 nm to the north of Svalbard and Franz Josef Land.²¹⁵ No other ECS boundaries have yet been delimited in the Arctic between adjacent or opposite States. ECS boundaries to be delimited, before or after the outer limits of the ECS are delineated,²¹⁶ include:

²¹⁵ *Supra* note 192. The Loophole in the Barents Sea is a pocket of high seas beyond the 200 nm jurisdiction of both Norway and Russia. The 2010 treaty delimited this area with a provision (identical in terms to the Special Areas in the US-Russia 1990 maritime boundary agreement, *supra* note 193), which allows the Russians to exercise EEZ jurisdiction in the area on the Russian side of the line that would otherwise be within Norway's 200 nm zone (Article 3, 2010 treaty).

²¹⁶ It should be noted that ITLOS delimited a portion of the ECS in the Bay of Bengal between Bangladesh and Myanmar, because there was no dispute as to the existence of geologic continental shelf there, before the CLCS decided on the outer limits. Dispute concerning the *Delimitation of the Maritime Boundary between Bangladesh and Myanmar in the Bay of Bengal (Bangladesh v Myanmar)*, [2012] ITLOS Case No 16, online: http://www.itlos.org/fileadmin/itlos/documents/cases/case_no_16/C16_Judgment_14_03_2012_rev.pdf. The award of the arbitral panel *In the Matter of the Bay of Bengal Maritime Boundary Arbitration between The People's Republic of Bangladesh and The Republic of India (Bangladesh v India)*, 7 July 2014, similarly delimited a portion of the ECS of Bangladesh and India where they overlap, online: <https://pcacases.com/web/sendAttach/383>. While the Myanmar submission was made on 16 December 2008, the Indian submission on 11 May 2009 and the Bangladesh submission on 25 February 2011, the CLCS has not yet made its recommendations on them, online: http://www.un.org/Depts/los/clcs_new/commission_submissions.htm.

- Denmark-Iceland-Norway (southern Banana Hole);²¹⁷
- Denmark (Greenland)-Norway;
- Denmark (Greenland)-Iceland;
- Denmark (Greenland)-Canada (Labrador Sea);
- Canada-US (Grand Banks); and
- Canada-US-Russia-Denmark (Beaufort Sea).²¹⁸

Only after the outer limits of the ECS in the Arctic Ocean are delineated will the geographic extent of the Area beneath the Arctic Ocean be determined (see Chapter 2).

Role of the Commission on the Limits of the Continental Shelf (CLCS)

The role of the CLCS is to examine a coastal State's submission for compliance with Article 76 of the LOS Convention, and to make recommendations for the outer limits of the ECS. If the submitting State agrees with its recommendations, the outer limits are fixed ('final and binding' in the words of Article 76(8)) and that State must delineate them on charts submitted to the UN (Articles 76(7 & 9)).

The 21 members of the CLCS are scientists (experts in the fields of geology, geophysics or hydrography), not lawyers (Annex II, Article 2). The commission's proceedings are closed to all but the submitting State.

The same situation occurred earlier between Mexico and the United States in the Western Gap of the Gulf of Mexico. Treaty between the Government of the United States of America and the Government of the United Mexican States on the Delimitation of the Continental Shelf in the Western Gulf of Mexico beyond 200 Nautical Miles, signed 9 June 2000, 2143 UNTS 417, *International Maritime Boundaries*, *supra* note 183, vol 4 at 2629-33 and 2000 Digest 697-700 (entered into force 17 January 2001) online: <http://treaties.un.org/doc/Publication/UNTS/Volume%202143/v2143.pdf>. The Mexican submission for this area was made on 13 December 2007 and approved on 31 March 2009, online:

http://www.un.org/Depts/los/clcs_new/submissions_files/submission_mex.htm.

See also Andrew Serdy, 'Delineation of the Outer Limits of Canada's Arctic Ocean Continental Shelf and Its Delimitation with Neighboring States: Does It Matter Which Comes First?', *International Law and Politics of the Arctic Ocean: Essays in Honor of Donat Pharand*, *supra* note 45 at 415-33.

²¹⁷ In September 2006, Denmark (Faroe Islands), Iceland and Norway completed 'Agreed Minutes' respecting a maritime boundary for those areas of overlapping claims of the continental shelf that may exist beyond the 200 nautical mile zones of each State. The Agreed Minutes establishes the shelf boundary between the three States, subject to each of the States documenting to the Commission that the continental margin adjacent to each of the three States extends to the boundary limit. While this tripartite maritime boundary agreement is provisional pending the completion of the Commission process, it does indicate that in this area the three States have essentially resolved their outer continental shelf boundaries. Agreed Minutes on the Delimitation of the Continental Shelf beyond 200 nautical miles between the Faroe Islands, Iceland and Norway in the southern part of the Banana Hole of the Northeast Atlantic, New York, 20 September 2006, online:

http://www.regjeringen.no/nb/dep/ud/dok/lover_regler/retningslinjer/2006/Agreed-Minutes.html?id=446839.

²¹⁸ Respecting some of the key issues regarding the outer limits in the central Arctic Ocean, see Michael Byers, *International Law and the Arctic* (Cambridge University Press, 2013) at 104-09.

Land or maritime disputes preclude consideration of a submission without the consent of all claimants (CLCS Rules of Procedure Annex I para. 5(a) (CLCS/40/Rev.1)).

The provisions of Article 76 are without prejudice to the question of delimitation of the continental shelf between States with opposite or adjacent coasts (Article 76(10)).²¹⁹

The maximum breadth (or outer limits) of the extended continental shelf depends on the geomorphology of the shelf in any particular location. The relevant provisions of Article 76 are paragraphs 5 and 6.

Paragraph 5 provides the general rule with two variations. The outer limit either shall not exceed 350 nm from the baselines from which the breadth of the territorial sea is measured, or shall not exceed 100 nm from the 2500 metre isobath (which is a line connecting the depth of 2500 metres).

Paragraph 6 provides two additional exceptions. First, notwithstanding the provisions of paragraph 5, on *submarine ridges*, the outer limit of the continental shelf shall not exceed 350 nm from the baselines. Second, the first sentence of paragraph 6 does not apply to *submarine elevations* that are natural components of the continental margin, such as its *plateaux*, *rises*, *caps*, *banks* and *spurs*. In such locations, there is no limit on the outer limit of the ECS.

As of October 2016 CLCS has received 77 full and partial submissions and 47 indications of preliminary information pending a full submission. The Commission has made recommendations on 18 submissions.

²¹⁹ For a useful discussion of the differences between *delineation* of the outer limits of the continental shelf and *delimitation* of maritime boundaries, see the separate opinion of Judge Donoghue in *Territorial and Maritime Dispute (Nicaragua v Colombia)*, Merits, [2012] ICJ Rep 751, online: <http://www.icj-cij.org/docket/files/124/17174.pdf>.

Chapter 9 IMO and the Arctic

This chapter briefly describes the International Maritime Organization (IMO) and its efforts regarding shipping in the Arctic Ocean and protection of the marine environment of the Arctic. Singapore's participation in the work of the IMO is noted.

The International Maritime Organization

The IMO is a specialised agency of the United Nations. It is responsible for measures to improve the safety and security of international shipping and to prevent marine pollution from ships. It is also involved in maritime security and legal matters, including liability and compensation issues, facilitation of international maritime traffic, and technical cooperation.

The IMO's governing body is the Assembly, which is made up of all 172 Member States and meets normally once every two years in late November. It adopts the budget for the next biennium together with technical resolutions and recommendations prepared by subsidiary bodies during the previous two years.

The Council acts as governing body in between Assembly sessions, and it prepares the budget and work programme for the Assembly. Since 1993, Singapore sought re-election every two years for a seat on the Council. The following principles have guided Singapore in its participation in the decision-making at the Council and other IMO rule-making bodies:

- To promote safe and secure shipping and to minimize the risk of marine pollution from ships, through the formulation of practical and effective regulations and measures within the IMO framework.
- To achieve a global framework of rules and standards governing international shipping, and oppose unilateral measures imposed by one State or region.
- To strike a balance between the rights of coastal States, flag States and port States, especially in sustaining the principle of freedom of navigation, seeking to safeguard the provisions of the LOS Convention against any measures that would impede the freedom of navigation for international shipping.
- To encourage universal and uniform implementation of IMO regulations by helping States through capacity building programmes.²²⁰

²²⁰ Mary Seet-Cheng, 'Singapore in the International Maritime Organization (IMO),' in Tommy Koh and Li Lin Chang (eds), *50 Years of Singapore and the United Nations* (Singapore: World Scientific, 2015) 138-144 at 140.

The main technical work is carried out by the Maritime Safety (MSC), Marine Environment Protection (MEPC), Legal (LEG), Technical Co-operation (TC) and Facilitation (FAL) Committees and a number of sub-committees.²²¹ Officials from the Maritime and Port Authority of Singapore represent Singapore at most IMO meetings. A senior MPA official (Captain Segar) served as Vice Chair of MSC from 2012-2015 (MSC 90-95).

Non-governmental international organisations that have the capability to make a substantial contribution to the work of the IMO may be granted consultative status by the Council, with the approval of the Assembly.²²²

International Code for Ships Operating in Polar Waters (Polar Code)

Following the adoption of the Guidelines for Ships Operating in Polar Waters in 2009, the IMO agreed to develop a mandatory Code for ships operating in polar waters to supplement SOLAS, MARPOL and STCW. Various subcommittees progressed the work during the years 2010-2014,²²³ and the MEPC and MSC considered the draft Code in 2014 and 2015. The mandatory Code became effective on 1 January 2017 by tacit amendments to SOLAS and MARPOL annexes.

The Polar Code has mandatory measures on safety in Part I-A and on pollution prevention in Part II-A. The Code also has non-binding recommendatory guidance in Part I-B and Part II-B.

The Polar Code will be made mandatory through the addition to SOLAS of a new chapter XIV, Safety measures for ships operating in polar waters, and amendments to MARPOL Annexes I, II, IV and V. The dates for the entry into force of these amendments were set at the time of their adoption by the two committees.²²⁴

²²¹ The IMO Sub-Committees were reorganised in 2013, as follows: CCC - Sub-Committee on Carriage of Cargoes and Containers (formerly DSC); HTW - Sub-Committee on Human Element, Training and Watchkeeping (formerly STW); III - Sub-Committee on Implementation of IMO Instruments (formerly FSI); NCSR - Sub-Committee on Navigation, Communications and Search and Rescue (formerly COMSAR and NAV); PPR - Sub-Committee on Pollution Prevention and Response (formerly BLG); SDC - Sub-Committee on Ship Design and Construction (formerly DE, FP and SLF); and SSE - Sub-Committee on Ship Systems and Equipment (formerly DE, FP and SLF).

²²² For additional information on the IMO, online: <http://www.imo.org/About/Pages/Default.aspx> and Thomas A Mensah, 'International Maritime Organization (IMO)', in Rüdiger Wolfrum (ed), *Max Planck Encyclopedia of Public International Law* (Oxford University Press, 2012) vol 5 at 1001-06.

²²³ Initial discussions at the IMO on how to make the Polar Code mandatory are recounted in J Ashley Roach, 'A Note on Making the Polar Code Mandatory,' in *International Law and Politics of the Arctic Ocean: Essays in Honor of Donat Pharand*, *supra* note 45 at 125-40.

²²⁴ MSC 94/21, *supra* note 81 at para 3.24 (the Committee decided SOLAS chapter XIV will be deemed to the accepted on 1 July 2016 and enter into force on 1 January 2017).

The Maritime Safety Committee at MSC 93, 14-23 May 2014, and MSC 94, 17-21 November 2014, considered Parts I-A and I-B of the Polar Code. MSC 94 adopted the safety-related provisions of the Introduction, and the whole of Parts I-A and I-B of the Polar Code.²²⁵

The Marine Environment Protection Committee at MEPC 66, April 2014; MEPC 67, 13-17 October 2014; and MEPC 68, 11-15 May 2015, considered Parts II-A and II-B of the Polar Code. MEPC 68 adopted the pollution prevention provisions (parts II-A and II-B) of the Code.

Seafarer Training

Until the Polar Code entered into force on 1 January 2017, there were no specific requirements for training and certification standards, and crew qualifications for ships operating in the Arctic or Southern Oceans, particularly the ice navigator.²²⁶

The first meeting of the new Sub-Committee on Human Element, Training and Watchkeeping (HTW) (formerly STW) (17-24 February 2014) formally endorsed the draft chapter 13 (now 12) of the Polar Code on manning and training familiarity for ships operating in polar waters. HTW 1 also progressed work in developing amendments to update certification and training requirements for officers and crew serving onboard ships operating in polar waters in Chapter V of the Annex to the STCW Convention, to reflect the training requirements in the draft chapter.²²⁷ As the HTW meets only once a year, work on the amendments resumed on 5 February 2015 at HTW 2. Acting on the proposals of the United States,²²⁸ HTW 2 endorsed amendments to Chapter V of the Annex to the STCW Convention and Code relating to training requirements for officers and crew on board ships operating in polar waters, and invited MSC 95 to approve them for circulation and adoption at MSC 96 in May 2016, be deemed to be accepted on 1 July 2017 and enter into force on 1 January 2018 through the tacit acceptance procedure.²²⁹ MSC 95 approved the draft amendments relating to revised training requirements for masters and deck officers onboard ships operating in polar waters, along with the associated draft MSC resolution and STCW Circular.²³⁰ However, for legal reasons, MSC 96 delayed until MSC 97 approval of the amendments.²³¹

²²⁵ IMO, *Amendments to the SOLAS Convention*, Resolution MSC.386(94), MSC 94/21/Add.1, Annex 7 (27 November 2014).

²²⁶ Initial efforts to include training provisions in the Polar Code are recounted in Roach, *supra* note 228 at 133-35.

²²⁷ IMO, *HTW Report to the MSC*, HTW 1/21 (7 March 2014) at para 11.16, Annex 3.

²²⁸ IMO, *Training Requirements for Officers and Crew on board Ships Operating in Polar Waters*, HTW 2/9 (31 October 2014).

²²⁹ IMO, *Report to the Maritime Safety Committee*, HTW 2/19 (6 February 2015) at para 9.10 and Annexes 2 to 4.

²³⁰ IMO, *Report of the MSC on its 95th Session*, MSC 95/22 (19 June 2015), at 18 para 9.5 and Annexes 8 to 11. The amendments were sent to governments by IMO Circular Letter No. 3556, 28 July 2015 and are contained in MSC 96/3/2 (4 November 2015) (Secretariat). The US Coast Guard has funded the development of training programs for navigating Arctic ice. Don Carrigan, 'Maine Maritime begins training merchant marines,' *WCSH* (16 May 2016), <http://www.wcsh6.com/news/local/maine-maritime-begins-training-merchant-marines-for-arctic-ice/190848125>.

²³¹ MSC 96/25, *supra* note 219, para. 3.52, 3.55.

At HTW 1 and MSC 93, Russia and Canada respectively, sought to include in the chapter on manning and training familiarity a provision authorising the use of an ice navigator.²³² The proposals were rebuffed in both cases.²³³ This situation has been criticised by experienced ice navigators.²³⁴ The effort appears not to have been renewed at HTW 2, although Russia expressed similar views that practical experience can only be gained through sea-going practice in polar waters and that adopting a sea service equivalent may result in weaker training requirements for masters and chief mates.²³⁵

The requirements in chapter I-A/12 provide that

... companies shall ensure that masters, chief mates and officers in charge of a navigational watch on board ships operating in polar waters shall have completed training to attain the abilities that are appropriate to the capacity to be filled and duties and responsibilities to be taken up, taking into account the provisions of the STCW Convention and the STCW Code, as amended.

Regulation I-A/12.3 then requires basic or advanced training for master, chief mate and officers in charge of a navigational watch on tankers and passenger ships, or other ships, as set out in STCW Convention and Code, depending on ice conditions. There are no requirements for other members of the crew.

The amendments to the STCW Code require, i.e., approved seagoing service, performing functions appropriate to the certificate held, for a period of at least two months in total during the preceding five years, or having performed functions considered to be equivalent to the required seagoing service, or passing an approved test, or successfully completing an approved training course or courses. The STCW amendments are expected to enter into force 1 July 2018, 18 months after the Polar Code enters into force.²³⁶

Tacit Acceptance Procedure

Articles of SOLAS and its Chapter I cannot be amended by the tacit acceptance procedure, only through the explicit acceptance process.²³⁷ Only the annexes in SOLAS Chapters II *et seq.* can be amended by the tacit acceptance procedure, including the addition of additional

²³² HTW 1/21, *supra* note 235, Annex 12, at 1 (statement of Russia); IMO, *Proposal by Canada*, MSC 93/11/2 (25 March 2014) (Canada), MSC 93/22/Add.3 Annex 32 at 4-5 (statement by Canada).

²³³ HTW 1/21, *supra* note 235, at para 11.16; MSC 93/22, *infra* note 256, at 45 para 10.38.

²³⁴ Sian Prior, 'A New Mandatory Code for Shipping in Polar Waters' (Sept/Oct 2014) 48 *Marine Technology Society Journal* 92, 94.

²³⁵ HTW 2/19, *supra* note 237, Annex 9 at 2.

²³⁶ MSC 97 (November 2016) adopted the amendments without change. IMO, *Report of the Maritime Safety Committee on its 97th Session*, MSC 97/22 (2 December 2016), paras 3.49-3.47, 3.90-3.95, and MSC 97/22/Add.1 Annexes 8 (Resolution MSC.416(97)) & 9 (Resolution MSC.417(97)). Effective 12 February 2016, the U.S. Coast Guard issued a policy letter recommending training guidelines for deck officers on vessels operating in polar waters to ensure there are sufficiently trained U.S. mariners by the time the Polar Code's training requirements enter into force. 81 Fed. Reg. 7552-53, 12 Feb. 2016.

²³⁷ SOLAS Convention, *supra* note 106, Art VIII, para (b)(vi)(1).

chapters.²³⁸ In the last 18 years, six new chapters have been added to SOLAS by the tacit acceptance procedure: Chapters IX (Management for the safe operation of ships - ISM Code), X (1994 High Speed Craft Code), XI-1 (Casualty Investigation Code), XI-2 (ISPS Code), XII (Bulk carrier safety), XIII (Verification of compliance). Following these examples, in May 2014, the MSC approved for circulation a new Chapter XIV, Safety Measures for Ships Operating in Polar Waters, and adopted it at its November 2014 session.

Part II of the draft Polar Code, Pollution Prevention Measures, is structured into four chapters, corresponding to Annexes I, II, IV and V of MARPOL. Like SOLAS, amendments to articles of the 1973/1978 MARPOL Convention can only be done through the explicit acceptance process,²³⁹ including adoption of new annexes (e.g., Annex VI on air pollution from ships), while existing annexes may be amended by the tacit acceptance procedure.²⁴⁰

The idea was to make these four chapters of the Polar Code mandatory through additions to four of the MARPOL annexes (I, II, IV and V). However, at MEPC 66, it became clear that the texts of the proposed amendments before the MEPC from SDC 1 lacked legal clarity and certainty. The MEPC had before it proposals from four Members, namely the Netherlands and Panama (MEPC 66/11/5), Germany (MEPC 66/11/9) and the United States (MEPC 66/11/14, /15, /16, /17 and /18), on how best to make the amendments to the annexes mandatory with legal clarity and certainty. No approach received consensus; rather the MEPC instructed the correspondence group to prepare draft amendments to the four annexes taking into account portions of each submission.²⁴¹ The correspondence group made insufficient progress in the early summer, so an intersessional meeting was held on 7-9 October 2014, just prior to MEPC 67.²⁴² The United States submitted legal comments on the draft amendments to the MARPOL annexes for consideration by MEPC 67²⁴³ that were considered by the Working Group.²⁴⁴ The revised amendments were approved by MEPC 67 for circulation and adoption at MEPC 68.²⁴⁵ As noted above, the amendments were adopted by MEPC 68.²⁴⁶

The following table illustrates the tacit acceptance procedure for making the Polar Code mandatory:

²³⁸ *Ibid*, para (b)(vi)(2).

²³⁹ MARPOL, *supra* note 94, Art 16(2)(f)(i).

²⁴⁰ *Ibid* Art 16(2)(f)(ii). New annexes are adopted by IMO diplomatic conferences, not MEPC.

²⁴¹ IMO, *Report of the MEPC on its 66th Session*, MEPC 66/21 (25 April 2014) at 54 para 11.46.

²⁴² IMO, *Report of the Polar Code Correspondence Group (Submitted by the United Kingdom)*, MEPC 67/9 (10 July 2014); IMO Circular Letter No. 3465 (23 June 2014); MEPC 67/WP.8, *supra* note 96.

²⁴³ IMO, Legal and Technical comments on Polar Code, part II and amendments to MARPOL (United States), MEPC 67/9/5 (20 August 2014) at paras 10-19.

²⁴⁴ IMO, *Report of the Polar Code Working Group*, MEPC 67/WP.14 (15 October 2014).

²⁴⁵ MEPC 67/20, *supra* note 96, para 9.45. The amendments were circulated by IMO Circular Letter No 3495 (30 October 2014), Annex 1. The texts of the amendments are annexed to MEPC 68/6 (21 January 2015).

²⁴⁶ IMO, *Report of the MEPC on its 68th Session*, MEPC 68/21 (29 May 2025) at 46, paras 6.22-6.23 by MEPC resolution MEPC.265(68) set out in MEPC 68/21/Add.1 Annex 11. MEPC 68 also approved MEPC.1/Circ.856, *Guidance for issuing revised certificates, manuals and record books of MARPOL for compliance with environment-related requirements of the Polar Code*. MEPC/68/21/Add.1, *supra* note 69, at 47 para 6.27.

Table 2. IMO Tacit Acceptance Procedure

	Committee Meeting	Interval	Committee Meeting	Interval	Entry into force
SOLAS Article VIII Amendments to Regulations except Chapter I	MSC 93 approved for circulation new Chapter XIV May 2014	Minimum 6 months	MSC 94 adopted Nov. 2014	Minimum one year	Deemed accepted 1 July 2016 EIF 1 January 2017
MARPOL Article 16 Amendments to Annexes I, II, IV, V	MEPC 67 approved for circulation October 2014	Minimum 6 months	MEPC 68 adopted May 2015	Minimum 10 months	Deemed accepted 1 July 2016 EIF 1 January 2017
STCW Article XII Amendments to Annex	MSC 95 approved for circulation June 2015	Minimum 6 months	MSC 97 adopted Nov 2016	Minimum one year	MSC 97 Deemed accepted 1 January 2018 EIF 1 July 2018

Geographic Scope of the Polar Code

The geographic scope of the Polar Code in the Arctic is illustrated below:²⁴⁷



Figure 21. Polar Code Arctic Geographic Scope of Application

²⁴⁷ SOLAS Convention, *supra* note 106, Regulation XIV/1.3, IMO Circular Letter No 3451 (20 May 2014), Annex 2.

Application of the Polar Code

SOLAS regulation XIV/2.1 provides that '[u]nless expressly provided otherwise, this chapter applies to ships operating in polar waters, certified in accordance with chapter I [of SOLAS], ' i.e., ships of 500 gross tonnes and greater. It is understood that the Polar Code applies only to those ships, whether or not they are on international voyages.²⁴⁸ Regulation XIV/2.2 provides that ships constructed before the date of entry into force of the chapter 'shall meet the relevant requirements of the Polar Code by the first intermediate or renewal survey, whichever occurs first, after' one year after the date of entry into force.

At DE 55, March 2011, the Sub-Committee had agreed, in principle, that:

*[A] two step approach should be taken, i.e., the Code should initially apply to SOLAS passenger and cargo ships, taking into account the urgent need for relevant mandatory requirements, and later requirements for non-SOLAS ships, such as fishing vessels, may be developed, after consideration by the Organization.*²⁴⁹

This agreement was confirmed by DE 56, and repeated by New Zealand at DE 57 and MSC 91.²⁵⁰

In this regard, it should be noted that the applicability limitations in SOLAS Chapter I are each caveated 'unless expressly provided otherwise.' If that requirement is met by MSC 93 agreeing for the record, without including it in the text of the regulation, then the Polar Code applies to SOLAS certificated ships whether or not on international voyages, as specified in SOLAS Regulation I(a). If that requirement is not met, Canada and Russia would be free to apply its domestic regulations to their ships on purely domestic voyages in the NWP and NSR, respectively. This omission should be corrected at the earliest possible time, perhaps in conjunction with and when work turns to Phase 2, when it would be prudent for any amendment to SOLAS Chapter XIV explicitly to apply the Polar Code to SOLAS vessels on domestic voyages to meet this requirement of SOLAS Regulation I(a), whether or not the Polar Code is extended to fishing vessels or vessels below 500 gross tonnes.

The applicability regulations of the amendments to MARPOL Annexes I, II, IV and V are variously worded, but do contain most of the elements of SOLAS regulation XIV/2.1:²⁵¹

²⁴⁸ IMO, *Report of the MSC on its 93rd Session*, MSC 93/22 (30 May 2014) at 40, para 10.20.

²⁴⁹ IMO, *DE Report to the MSC*, DE 55/22 (15 April 2011) at 23, para 12.7.1.

²⁵⁰ IMO, *DE Report to the MSC*, DE 56/25 (28 February 2012) at 22, para 10.7; IMO, *DE Report to the MSC and MEPC*, DE 57/25 (5 April 2013) at 23, para 11.7; IMO, *Report of the MSC on its 91st Session*, MSC 91/22 (17 December 2012) at 35, para 8.5.

²⁵¹ MEPC 67/WP.14, *supra* note 252, Annex 2.

Annex I, regulation 47/1: ‘This chapter [11] applies to all ships operating in polar waters.’

Annex II, regulation 22/1: ‘This chapter [10] applies to all ships certified to carry noxious liquid substances in bulk, operating in polar waters.’

Annex IV, regulation 18/1: ‘This chapter [7] applies to all ships operating in polar waters certified in accordance with this Annex.’

Annex V, regulation 14/1: ‘This chapter [3] applies to all ships to which this Annex applies, operating in polar waters.’

The Polar Code Working Group ‘agreed to use the same approach as approved by the MSC with regard to the application provisions for part I-A.’²⁵²

SOLAS regulation XIV/2.4 provides that ‘[t]his chapter shall not apply to ships owned or operated by a Contracting Government and used, for the time being, only in Government non-commercial service. However, ships owned or operated by a Contracting Government and used, for the time being, only in Government non-commercial service are encouraged to act in a manner consistent, so far as reasonable and practicable, with this chapter.’ This provision is based on SOLAS regulation V/1.1 (Application), but is weaker than Article 236 of the LOS Convention (‘encouraged’ rather than ‘shall ensure’).

SOLAS regulation XIV/2.5 is a savings clause that provides ‘[n]othing in this chapter shall prejudice the rights or obligations of States under international law.’ This provision likely protects the Canadian and Russian unilateral national regulations on Arctic shipping from being preempted by the Polar Code.

Article 3(3) of MARPOL 1973 provides:

(3) The present Convention shall not apply to any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service. However, each Party shall ensure by the adoption of appropriate measures not impairing the operations or operational capabilities of such ships owned or operated by it, that such ships act in a manner consistent, so far as is reasonable and practicable, with the present Convention.

Consequently, and in contrast to SOLAS, the amendments to MARPOL Annexes I, II, IV and V did not need to address this issue.

Adoption of the Polar Code

As noted above, the Maritime Safety Committee adopted the Introduction and parts I-A and I-B of the International Code for Ships Operating in polar Waters (Polar Code) on 21

²⁵² *Ibid* at 5 para 27.

November 2014.²⁵³ The Marine Environment Protection Committee adopted parts II-A and II-B of the Polar Code on 15 May 2015 in conjunction with the adoption of the associated amendments to MARPOL Annexes I, II, IV and V.²⁵⁴

Future Work on the Polar Code

Unless a proposal fits under a continuous agenda item, it must first get approval from MSC/MEPC for a new work item/unplanned output, as described below. There are two relevant continuous agenda items:

NCSR: Routeing measures and mandatory ship reporting systems; and

MEPC: Identification and protection of Special Areas and PSSAs.

MEPC 67 stressed that any future amendments to the Polar Code to introduce additional or new environment-related requirements requires approval by the Committee as a new output in accordance with the Committee's Guidelines, MSC-MEPC.1/Circ.4/Rev.2, 8 June 2012, as amended.²⁵⁵ The Polar Code has been criticised for focusing more on prevention of pollution than on environmental protection more broadly, perhaps because of the push to finalise the Code quickly.²⁵⁶

Risk assessment

Another matter being considered is risk assessment, i.e. judging whether, when and where a particular class of ship may safely operate in the intended voyage in polar waters. This is of particular importance to the ability to obtain maritime insurance for voyages in polar waters.²⁵⁷

Paragraph I-A/1.37 of the Polar Code provides that the Polar Ship Certificate 'shall reference a methodology to assess operational capabilities and limitations in ice to the satisfaction of the Administration, taking into account the guidelines developed by the Organization.' At MSC 94, the Committee agreed on the establishment of a correspondence group to prepare draft guidance on a methodology for determining limitations for operation in ice for structural risk assessment, and to exchange information on experience with operations in ice

²⁵³ Resolution MSC.385(94), 21 November 2014, MSC 94/21/Add.1 Annex 6.

²⁵⁴ IMO, *Draft International Code for Ships Operating in Polar Waters (Polar Code)*, MEPC 68/6/2 (21 January 2015) (Secretariat); MEPC 68/21, *supra* note 254, para 6.21, by MEPC resolution MEPC.264(68) set out in MEPC 68/21/Add.1 Annex 10. MEPC 68 also approved the *Guidance for issuing revised certificates, manuals and record books under Annexes I, II, and V of MARPOL for compliance with environment-related requirements of the Polar Code* issued as MEPC.1/Circ.856, 22 May 2015.

²⁵⁵ MEPC 67/20, *supra* note 96, at 46 para 9.21. On black carbon, *see infra* note 301.

²⁵⁶ IMO, *Environmental protection in the Polar Code*, MEPC 68/INF.37 (6 March 2015) (FOEI, WWF, CSC); David Snider, 'Polar Shipping: A 2014 Recap', *The Maritime Executive*, reprinted in *International Shipping News* (12 January 2015) online: <http://cimsec.org/polar-shipping-2014-recap/14248>; and Bob Weber 'New international shipping rules to protect Arctic are flawed: experts' *The Canadian Press* (13 May 2015) online: <http://www.ctvnews.ca/sci-tech/new-international-shipping-rules-to-protect-arctic-are-flawed-experts-1.2372073>.

²⁵⁷ Michael Kingston, 'Implementing the Polar Code; Education about requirements and fostering best practice in operational safety to make it work: Insurance Industry Contributions,' presentation at ShipArc2015, 26 August 2015, online: <http://commons.wmu.se/shiparc/2015/allpresentations/31>.

to validate guidance for operations in ice.²⁵⁸ The correspondence group reported to MSC 95 that it has made some progress on the development of the guidance but recommended the group be reestablished by MSC 95.²⁵⁹ Taking into account the need to make progress in light of the adoption of the Polar Code by MSC 94 and MEPC 68, MSC 95 decided to re-establish the Correspondence Group on the Development of guidance on a methodology for determining limitations for operation in ice, and associate draft MSC circular, for structural risk assessment and inclusion in the ship's documents, based on the documents previously submitted. MSC 96 approved the report in general and MSC.1/Circ.1519 on *Guidance on methodologies for assessing operational capabilities and limitations in ice*.²⁶⁰ With regard to the future review of the Guidance, which could include discussion on the treatment of brash ice, the Committee agreed that this should be undertaken by the SDC Sub-Committee, without a need for a new output, under the existing output 5.2.1.15 (Consequential work related to the new Code for ships operating in polar waters), in due course.²⁶¹

Additional performance and test standards

At MSC 95 the Committee also instructed SSE 3, in light of the adoption of the Polar Code, to consider whether additional performance or test standards for fire safety/protection and life-saving appliances and arrangements in relation to the Polar Code and necessary, and advise MSC 96 on the best way to proceed.²⁶²

In a submission to SSE 3, it was recommended that the Sub-Committee advise MSC 97 that the International Life-Saving Appliance (LSA) Code should be further reviewed to identify and develop necessary amendments, with a view to meeting the additional demands that the Polar Code put on life-saving appliances and arrangements. The submission emphasized that any amendments would be additional performance and/or test criteria for the equipment and systems on board ships to which a Polar Ship Certificate is issued. For equipment and systems used on ships operating outside polar waters, the test regimes would remain unchanged.²⁶³

Following discussion, the Sub-Committee endorsed the view that additional performance and test standards for the equipment and systems on board ships operating in polar waters should be developed. In this connection, the Sub-Committee invited MSC 97 to endorse this decision

²⁵⁸ MSC 94/21, *supra* note 81, at para 3.62.

²⁵⁹ IMO, *Report of the Correspondence Group on the Development of guidance on a methodology for determining limitations for operation in ice*, MSC 95/3/7 (6 March 2015) (Norway).

²⁶⁰ MSC 95/22, *supra* note 235 at 22 para 3.91; MSC 96/3/4 (9 February 2016) (Norway); MSC 96/25, *supra* note 236, paras. 3.74-3.78.

²⁶¹ MSC 96/25, *supra* note 238, 7-18 at paras 3.75-3.78.

²⁶² *Ibid* at 23 para 3.93. SSE 3 considered one submission, SSE 3/15/5 (Argentina, Marshall Islands, New Zealand, Norway and Vanuatu) (15 December 2015), suggesting there is a need to review the LSA Code to ensure the relevant requirements of the Polar Code are consistently and globally implemented. SSE 3 agreed and invited MSC 97 (November 2016) to concur. *Report to the Maritime Safety Committee*, SSE 3/16, paras 15.15-15.16 and 16.2.12 (24 March 2016).

²⁶³ IMO, *Additional performance and/or test standards in support of the implementation of the Polar Code*, SSE 3/15/4 (December 15, 2015) (Argentina, the Marshall Islands, New Zealand, Norway and Vanuatu).

and take action as appropriate. The Sub-Committee also invited interested Member Governments and international organizations to submit comments and proposals pertaining to the scope of work, type of equipment, etc. for consideration at MSC 97.²⁶⁴ At MSC 97 the Committee considered documents MSC 97/21/3 (Argentina, the Marshall Islands, New Zealand, Norway and Vanuatu) and MSC 97/21/12 (ICS and CLIA) commenting on MSC 97/21/3 proposing the Committee instruct SSE and NCSR Sub-Committees review, adapt and/or develop the necessary requirements. The Committee noted this work was necessary to support implementation of the Polar Code, instructed SSE to review the LSA Code and relevant IMO resolutions to adapt current testing and performance standards to the Polar Code provisions or develop additional requirements if necessary, and develop guidance on extinguishing media a polar service temperature. The Committee instructed NCSR to consider current communication requirements in SOLAS and the need for any amendments, and to consider the need for a new performance standard for GNSS compasses.²⁶⁵

Extending the Polar Code to non-SOLAS ships

As noted above (under Application), the Committee had previously agreed to consider extending the Polar Code to non-SOLAS ships after the Polar Code was adopted.

MSC 95 noted two documents regarding incidents in polar waters involving non-SOLAS vessels²⁶⁶ and encouraged Member States and international organisations to submit information on incidents in polar waters to assist in assessing the potential scope of the Polar Code to non-Convention vessels operating in polar waters, for consideration at MSC 96. MSC 96 noted three submissions and invited addition information be provided to MSC 97. MSC 97 considered two papers and noted their information would support the next phase of the Polar Code once it commences.²⁶⁷

Polar Code-related amendments to the Survey Guidelines

²⁶⁴ IMO, *Report of the Sub-Committee on Ship Systems and Equipment on its 3rd session*, SSE 3/16 (March 24, 2016), 50 at paras 15.15-15.16.

²⁶⁵ IMO, *Report of the Marine Safety Committee on its 97th session*, MSC 97/22, paras 8.27-8.32, 21.7-21.8. In that regard Germany submitted a paper to NCSR 4, *Development of amendments to performance standards for navigation and communication equipment used in polar waters in support of the implementation of the Polar Code*, NCSR 4/28 (20 January 2017).

²⁶⁶ *Request for data on incidents within polar waters*, MSC 95/21/3 (24 March 2015) (Iceland, New Zealand and South Africa) and *Request for data on incidents within polar waters*, MSC 95/21/11 (14 April 2015) (Friends of the Earth International (FOEI) and Pacific Environment).

²⁶⁷ MSC 95/22, *supra* note 238, at 85 para 21.24. Information was submitted to MSC 96 by New Zealand as MSC 96/24 (14 December 2015), by Iceland as MSC 96/24/3 (8 March 2016), and by FOEI and others as MSC 96/24/7 (8 March 2016). The Committee noted this information and invited Members to provide more information to MSC 97. MSC 96/25, *supra* note 239, paras 24.1-24.3. Two papers providing addition information were submitted to MSC 97, *International Code for Ships Operating in Polar Waters (Polar Code)*, MSC 97/21/8/Rev 1 (21 November 2016) (Chile) and *Non-SOLAS vessel operations in polar waters in preparation for work on phase 2 of the Polar Code*, MSC 97/21/10 (16 September 2016) (FOEI, WWW and the Pacific Environment). MSC 97/22, *supra* note 273, paras 21.9-21.10. These papers were submitted to SDC 4 as SDC 4/13 (9 December 2016) (FOEI, WWW and the Pacific Environment) and SDC 4/13/1 (8 December 2016) (New Zealand).

MSC 97, with the concurrence of MEPC 70, approved MSC-MEPC.5/Circ.11 on *Amendments to the Survey Guidelines under the Harmonized System of Surveys and Certification, 2015 for Ships Operating in Polar Waters*. The Committee had considered a submission by IACS seeking clarification of paragraph 1.3 of chapter I-A of the Polar Code that was not specific as to which statutory certificate SOLAS regulation XIV/2/2 applied to passenger and cargo ships. In approving the circular the Committee recognized that the amendments should be incorporated in the draft Assembly resolution on the Survey Guidelines under the HSSC to be developed by III 4 and considered by A 30 for adoption.²⁶⁸

As experience is gained in the years following its entry into force in 2017 and implementation, it can be expected that modification and improvements to the Polar Code will occur. However, it must not be forgotten that the Polar Code supplements and does not replace the many existing IMO conventions applicable to international shipping worldwide.

²⁶⁸ *Clarification on the requirements related to the initial and maintenance surveys required by the Polar Code*, MSC 97/16/2 (16 September 2016) (IACS); MSC 97/22, *supra* note 273, paras 9.22-9.23, 16.6-16.7.

Chapter 10 Potential New Measures Affecting Arctic Shipping

This chapter discusses the various potential new measures available through the IMO that might affect Arctic shipping. Some are under the cognizance of MSC and others of MEPC. In any event, unless a proposal fits under a continuous agenda item, it must first get approval from MSC/MEPC for a new work item/unplanned output, as described below. There are two continuous agenda items that can involve new measures affecting Arctic shipping, one for MSC and one for MEPC. Discussed first are measures under the cognizance of the Maritime Safety Committee.

Routeing and Reporting Systems; Vessel Traffic Services

The Sub-committee on Navigation, Communications and Search and Rescue (NCSR), which reports to MSC, has several continuing agenda items, one of which is ‘Routeing measures and mandatory ship reporting systems’. The Arctic 8 and Arctic Council Observer States are all party to the International Convention for the Safety of Life at Sea, 1974, as amended (SOLAS). Chapter V of the regulations annexed to SOLAS provides for the establishment of ships’ routeing systems and ship reporting systems, which can be made mandatory if the IMO approves them (Regulations V/10 and 11). SOLAS regulation V/12 provides for the establishment by parties of vessel traffic services where the volume of traffic or the degree of risk justified such services. These regulations are discussed next.

Ships’ routeing systems are regulated by SOLAS Regulation V/10, which provides:

*1 Ships’ routeing systems contribute to safety of life at sea, safety and efficiency of navigation and/or protection of the marine environment. Ships’ routeing systems are recommended for use by, and may be made mandatory for, all ships, certain categories of ships or ships carrying certain cargoes, when adopted and implemented in accordance with the guidelines and criteria developed by the Organization.**

2 The Organization is recognized as the only international body for developing guidelines, criteria and regulations on an international level for ships’ routeing systems. Contracting Governments shall refer proposals for the adoption of ships’ routeing systems to the Organization. The Organization will collate and disseminate to Contracting Governments all relevant information with regard to any adopted ships’ routeing systems.

3 The initiation of action for establishing a ships’ routeing system is the responsibility of the Government or Governments concerned. In developing such systems for adoption by the Organization, the guidelines and criteria developed by the Organization shall be taken into account.

4 *Ships' routing systems should be submitted to the Organization for adoption. However, a Government or Governments implementing ships' routing systems not intended to be submitted to the Organization for adoption or which have not been adopted by the Organization are encouraged to take into account, wherever possible, the guidelines and criteria developed by the Organization.**

5 *Where two or more Governments have a common interest in a particular area, they should formulate joint proposals for the delineation and use of a routing system therein on the basis of an agreement between them. Upon receipt of such proposal and before proceeding with consideration of it for adoption, the Organization shall ensure details of the proposal are disseminated to the Governments which have a common interest in the area, including countries in the vicinity of the proposed ships' routing system.*

6 *Contracting Governments shall adhere to the measures adopted by the Organization concerning ships' routing. They shall promulgate all information necessary for the safe and effective use of adopted ships' routing systems. A Government or Governments concerned may monitor traffic in those systems. Contracting Governments shall do everything in their power to secure the appropriate use of ships' routing systems adopted by the Organization.*

7 *A ship shall use a mandatory ships' routing system adopted by the Organization as required for its category or cargo carried and in accordance with the relevant provisions in force unless there are compelling reasons not to use a particular ships' routing system. Any such reason shall be recorded in the ships' log.*

8 *Mandatory ships' routing systems shall be reviewed by the Contracting Government or Governments concerned in accordance with the guidelines and criteria developed by the Organization.*

9 *All adopted ships' routing systems and actions taken to enforce compliance with those systems shall be consistent with international law, including the relevant provisions of the 1982 United Nations Convention on the Law of the Sea.*

10 *Nothing in this regulation nor its associated guidelines and criteria shall prejudice the rights and duties of Governments under international law or the legal regimes of straits used for international navigation and archipelagic sea lanes.*

* Refer to the General Provisions on Ships' Routing adopted by the Organization by resolution A.572(14)), as amended.²⁶⁹

Ship reporting systems are regulated by SOLAS Regulation V/11, which provides in part:

²⁶⁹ The IMO Publication *Ships' Routing* includes General provisions on ships' routing, first adopted by IMO in 1973, and subsequently amended over the years. The provisions are aimed at standardising the design, development, charted presentation and use of routing measures adopted by IMO. For additional information on ships' routing, online: <http://www.imo.org/OurWork/Safety/Navigation/Pages/ShipsRouting.aspx>.

1 Ship reporting systems contribute to safety of life at sea, safety and efficiency of navigation and/or protection of the marine environment. A ship reporting system, when adopted and implemented in accordance with the guidelines and criteria developed by the Organization pursuant to this regulation, shall be used by all ships, or certain categories of ships or ships carrying certain cargoes in accordance with the provisions of each system so adopted.

2 The Organization is recognized as the only international body for developing guidelines, criteria and regulations on an international level for ship reporting systems. Contracting Government shall refer proposals for the adoption of ship reporting systems to the Organization. The Organization will collate and disseminate to Contracting Governments all relevant information with regard to any adopted ship reporting system.

* * * *

8 All adopted ship reporting systems and actions taken to enforce compliance with those systems shall be consistent with international law, including the relevant provisions of the United Nations Convention on the Law of the Sea.

9 Nothing in this regulation or its associated guidelines and criteria shall prejudice the rights and duties of Governments under international law or the legal regimes of straits used for international navigation and archipelagic sea lanes.

The basic regulations on vessel traffic services are contained in SOLAS Regulation V/12, which reads in part:

1 Vessel traffic services (VTS) contribute to safety of life at sea, safety and efficiency of navigation and protection of the marine environment, adjacent shore areas, work sites and offshore installations from possible adverse effects of maritime traffic.

* * * *

3 Contracting Governments planning and implementing VTS shall, wherever possible, follow the guidelines developed by the Organization*. The use of VTS may only be made mandatory in sea areas within the territorial seas of a coastal State.

* Refer to the Guidelines on Vessel Traffic Services adopted by the Organization by resolution A.857(20).

* * * *

5 Nothing in this regulation or the guidelines adopted by the Organization shall prejudice the rights and duties of Governments under international law or the legal regimes of straits used for international navigation and archipelagic sea lanes.

IMO guidance for ship routing and reporting systems is contained in various IMO resolutions.²⁷⁰ Guidance for vessel traffic services is contained in a manual prepared by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA).²⁷¹

Mandatory Ship Reporting Systems in Straits

Mandatory ship reporting systems for straits used for international navigation have been approved by the IMO for the Straits of Malacca and Singapore (resolution MSC.73(69)), Torres Strait (resolution MSC.161(78)), Great Belt (resolution MSC.230(82)), Strait of Gibraltar (resolution MSC.300(87)), and The Sound (resolution MSC.314(88)).²⁷² In addition, pursuant to a Russian and Norwegian proposal, in 2012 the MSC adopted a new mandatory ship reporting system 'In the Barents Area (BARENTS SRS)' by Resolution MSC.348(91), 28 November 2012, effective 1 June 2013.²⁷³ Reports are to be made to either Vardø VTS center or Murmansk VTS center. The reporting area is between 66°N and 72°N along the northern coast of Norway.

Port State Control

Port State Control is the inspection of foreign flag ships in national ports to verify the condition of the ship and its equipment comply with the requirements of international regulations and that the ship is manned and operated in compliance with these rules. The basis in international law for port state control lies in provisions of the Law of the Sea Convention²⁷⁴ and IMO treaties.²⁷⁵ Guidance on the conduct of port state control is contained IMO Assembly

²⁷⁰ The General Provisions on Ships' Routing, *ibid*, reflect IMO, General Principles for Ship Reporting Systems and Ship Reporting Requirements, including Guidelines for Reporting Incidents involving Dangerous Goods, Harmful Substances and/or Marine Pollutants, Resolution A.851(20) (27 November 1997) online: http://www.imo.org/blast/blastData.asp?doc_id=9884&filename=A%20851%2820%29.pdf; IMO, Guidance Note on the Preparation of Proposals on Ships' Routing Systems and Ship Reporting Systems for Submission to the Sub-Committee on Safety of Navigation, MSC.1/Circ.1060 (6 January 2003); and IMO, Amendment to the Guidance Note on the Preparation of Proposals on Ships' Routing Systems and Ship Reporting Systems for Submission to the Sub-Committee on Safety of Navigation, MSC.1/Circ.1060/Add.1 (26 May 2006) online: <https://docs.imo.org/Shared/Download.aspx?did=37577>. NCSR was tasked by MSC 95 to consider revisions of the Guidelines and criteria for ship reporting systems (MSC.43(64) as amended by MSC.111(73)), with a target completion year of 2017. MSC 95/22, *supra* note 238, para. 19.12.3.

²⁷¹ IALA, 'Establishment of a Vessel Traffic Service beyond territorial seas', IALA Guideline No. 1071 (9 December 2009); and IALA, *Vessel Traffic Services Manual*, 5th ed (IALA, 2012) online: http://www.pmo.ir/psa_content/media/files/2013/1/22176.pdf. For additional information on VTS, online <http://www.imo.org/OurWork/Safety/Navigation/Pages/VesselTrafficServices.aspx>.

²⁷² USCG, 'IMO MSC Resolutions', online: <http://www.navcen.uscg.gov/?pageName=mscResolutions>.

²⁷³ IMO, *Annexes to the Report of the MSC on its 91st Session*, MSC 91/22/Add.1 (17 December 2012) Annex 27. A list of MSC resolutions may be found online: <http://www.imo.org/KnowledgeCentre/IndexofIMOResolutions/Maritime-Safety-Committee-%28MSC%29/Pages/default.aspx>.

²⁷⁴ LOS Convention, *supra* note 7, articles 94(6) and 219.

²⁷⁵ SOLAS Convention, *supra* note 106, regulations I/19, IX/6.2, XI-1/4, XI-2/9; Convention on Load Lines, 640 UNTS 133, London April 5, 1966 (entered into force July 21, 1968), article 21; MARPOL 73/78, *supra* note 94, Annex I articles 5 & 6 and regulation 11, Annex II regulation 16.9, Annex III regulation 8, Annex IV regulation 13, Annex V regulation 8, Annex VI regulation 10; International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, with Annex (STCW) London July 7, 1978 (entered into force April 28, 1984), 1361

resolution A.1052(27) (2011). In addition there are nine regional agreements on port state control to coordinate the inspections to focus on substandard ships and avoid multiple inspections.²⁷⁶ It can be expected that the IMO resolution will be revised to include guidance regarding the Polar Code.

ISPS Code

Following September 11, the IMO adopted special measures to enhance maritime security, as amendments to SOLAS (chapter XI-2) and the International Ship and Port Facility Security (ISPS) Code.²⁷⁷ These are applicable to commercial ships that could be expected to traverse the Arctic Ocean, and will be applicable to ports on the rim.²⁷⁸

*Special Protection for Arctic Ocean Areas under the Cognizance of MEPC*²⁷⁹

MEPC has as one of its continuing agenda items ‘Identification and protection of Special Areas and PSSAs.’

MARPOL Special Areas

In Annexes I (Prevention of pollution by oil), II (Control of pollution by noxious liquid substances) and V (Prevention of pollution by garbage from ships), MARPOL defines certain sea areas as ‘special areas’ in which, for technical reasons relating to their oceanographical and ecological condition and to their sea traffic, the adoption of special mandatory methods for the prevention of sea pollution is required. Under the Convention, these special areas are provided with a higher level of protection than other areas of the sea.²⁸⁰

Annex I to MARPOL 73/78 contains regulations for the prevention of pollution by oil. The Annex provides for the establishment of special sea areas where for recognised technical reasons in relation to its oceanographic and ecological condition and to the particular character of its traffic, the adoption of special mandatory methods for the prevention of sea pollution by oil is

UNTS 75, article X and regulation I/4; International Convention on the Tonnage Measurements of Ships, 1969, with annexes, London June 23, 1969 (entered into force July 18, 1982), 1291 UNTS 3, article 121; International Convention on the Control of Harmful Anti-Fouling Systems on Ships, 2001, London Oct. 5, 2001 (entered into force Sept. 17, 2008), UNTS , IMO doc. AFS/CONF/26, article 11.

²⁷⁶ See IMO, ‘Port State Control’ online: <http://www.imo.org/en/OurWork/MSAS/Pages/PortStateControl.aspx>.

²⁷⁷ SOLAS Convention, *supra* note 106, Chapter XI-2 (Special Measures To Enhance Maritime Security) and the International Ship and Port Facility Security Code, adopted 12 Dec. 2002 by the Conference of Contracting Governments to the International Convention for the Safety of Life at Sea, 1974.

²⁷⁸ *Ibid*, Regulation XI-2/2.

²⁷⁹ See also DNV Report, *supra* note 18 (finding it difficult to find support for a MARPOL Special Area for the high seas of the Arctic Ocean).

²⁸⁰ For a table listing all MARPOL Special Areas approved by IMO, online: <http://www.imo.org/OurWork/Environment/SpecialAreasUnderMARPOL/Pages/Default.aspx>. A prerequisite for the establishment of a MARPOL Special Area is the availability of adequate port waste reception facilities. See further *supra* chapter 5.

required.²⁸¹ Guidelines on designating MARPOL Special Areas are contained in resolution A.1087(28), *2013 Guidelines for the Designation of Special Areas under MARPOL* (21 February 2014).

In respect of the Arctic Ocean, Part II-A of the Polar Code prohibits any discharge into the sea by oil or oily mixtures from any ship (regulation 1.1.1), and any discharge into the sea of noxious liquid substances or mixtures containing such substances (regulation 2.1.1). With regard to sewage and garbage from ships in Arctic waters, any such discharges are prohibited, except when in accordance with MARPOL Annexes IV and V and the requirements of Regulations 4.2.1-4.2.3 and 5.2.1.

As these prohibitions are more stringent than the normal restrictions in these MARPOL Annexes it can be said that the Polar Code discharge restrictions in effect make the Arctic Ocean MARPOL Special Areas without saying so.

In respect of the Antarctic area, any discharge into the sea of oil or oily mixtures, or noxious liquid substances or mixtures containing such substances, from any ship is prohibited.²⁸² The discharge of garbage into several special areas, including Antarctica, is also prohibited.²⁸³ A prohibition on the use of heavy fuel oil (HFO) in the Southern Ocean was adopted by MEPC 60, effective 1 August 2011,²⁸⁴ and amended by MEPC 67, effective 1 March 2016.²⁸⁵ A similar prohibition for the Arctic Ocean was considered at MEPC 70 and is being supported by the Arctic cruise industry.²⁸⁶

²⁸¹ MARPOL, *supra* note 94, Annex I, Regulation I/1.11. Resolution A.1087(28). 'Guidelines for the Designation of Special Areas under MARPOL' (2013), *is not yet available* at <http://www.imo.org/KnowledgeCentre/IndexofIMOResolutions/Pages/Assembly-%28A%29.aspx>.

²⁸² *Ibid*, Annex I, Regulation I/15.4 and Annex II, Regulation II/13.8.2.

²⁸³ *Ibid*, Annex V, Regulation V/5.

²⁸⁴ IMO, *Amendments to the Annex of MARPOL*, Resolution MEPC.189(60) (26 March 2010), MEPC 60/22, Annex 10, adding chapter 9 to MARPOL Annex I.

²⁸⁵ IMO, *Draft Report of the MEPC on its 67th Session*, MEPC 67/WP.1 (16 October 2014) at paras 7.26-7.27; MEPC 67/7 adding the carriage of HFO as ballast to the prohibition.

²⁸⁶ At MEPC 67, several environmental groups made such a proposal in MEPC 67/9/9 (22 August 2014). MEPC 67 stressed that this would have to be treated as a new work item. See *supra* note 263 and accompanying text. These environmental groups have provided additional information to MEPC 69 on the hazards posed by the use of HFO in the Arctic. IMO, *Heavy fuel oil use by vessels in Arctic waters*, MEPC 69/20/1 (12 February 2016) (FOEI, WWF, Pacific Environment and CSC). Differing views were expressed on this paper at MEPC 69. The Committee noted the paper and invited further proposals for a new output to address this matter to a future session. MEPC 69/21, *supra* note 96, paras 20.3-20.4. Submissions to MEPC 70 were made by FOEI and others, MEPC 70/17/4 (22 July 2016), Russian comments thereon, MEPC 70/17/9 (19 August 2016), by Canada and the United States, MEPC 70/17/11 (2 September 2016), and by FOEI, WWF and Pacific Environment on Arctic indigenous food security and shipping, MEPC 70/17/10 (19 August 2016). The Committee, having noted the concerns expressed regarding the protection of Arctic indigenous food security from the effects of shipping and the discussion and currently ongoing work on the use of HFO by ships operating in Arctic waters, invited Member States and other stakeholders to submit relevant information to future sessions, noting that further substantive work on these issues would require a new output. MEPC 70/18, *supra* note 157, para 17.20. MarEx, 'Arctic Expedition Cruise Operators Support HFO Ban' (16 November 2016), online: <http://maritime-executive.com/article/arctic-expedition-cruise-operators-support-hfo-ban>; Clean Arctic Alliance Press Release, 'Clean Arctic Alliance Response to Cruise Operators' support of Arctic

Particularly Sensitive Sea Areas (PSSAs)

A PSSA is an area that needs special protection through action by IMO because of its significance for recognised ecological, socio-economic or scientific reasons, and which may be vulnerable to damage by international maritime activities.

Guidelines on designating a PSSA are contained in IMO resolution A.982(24) *Revised guidelines for the identification and designation of PSSAs*, as amended.²⁸⁷ These guidelines include several criteria to allow areas to be designated as a PSSA if they fulfil a number of criteria, including: ecological criteria, such as unique or rare ecosystem, diversity of the ecosystem or vulnerability to degradation by natural events or human activities; social, cultural and economic criteria, such as significance of the area for recreation or tourism; and scientific and educational criteria, such as biological research or historical value.

An application for PSSA designation should contain a proposal for an associated protective measure, or measures aimed at preventing, reducing or eliminating the threat or identified vulnerability. Associated protective measures for PSSAs are limited to actions that are to be, or have been, approved and adopted by IMO.

When an area is approved as a PSSA, specific measures can be used to control the maritime activities in that area, such as routeing measures, strict application of MARPOL discharge and equipment requirements for ships, such as oil tankers; and installation of Vessel Traffic Services (VTS). Another routeing measure that can be used in a PSSA is an area to be avoided (i.e., an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships, or by certain classes of ships).

The guidelines provide advice to IMO Member Governments in the formulation and submission of applications for the designation of PSSAs to ensure that in the process, all interests – those of the coastal State, flag States, and the environmental and shipping communities – are thoroughly considered on the basis of relevant scientific, technical, economic, and environmental information regarding the area at risk of damage from international shipping activities.²⁸⁸

Heavy Fuel Oil Ban (17 November 2016), online: <http://arcticjournal.com/press-releases/2706/clean-arctic-alliance-response-cruise-operators-support-arctic-heavy-fuel-oil>.

²⁸⁷ The text of IMO, *Revised Guidelines for the Identification and Designation of PSSAs*, Resolution A.982(24) (1 December 2005) online: http://www.imo.org/blastData.asp?doc_id=11277&filename=A%20982%2824%29.pdf. The guidelines update IMO, *Guidelines for the Designation of Special Areas under MARPOL 73/78 and Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas*, Resolution A.927(22) (29 November 2001). Consequential amendments to resolution A.982(24) proposed by MEPC 67/10 (22 July 2014) were deferred to MEPC 68, MEPC 67/20, *supra* note 96, para 10.1. MEPC 68 adopted resolution MEPC.267(68) on Amendments to resolution A.982(24) as set out in Annex 13 to MEPC 68/21/Add.1. MEPC 68/21, *supra* note 254, at 48 para 10.3.

²⁸⁸ The International Chamber of Shipping has publicly stated its desire and willingness to be consulted by States

An approved PSSA is charted.²⁸⁹ This serves to warn the mariner of the need for careful navigation. Reporting of any subsequent developments or requirements for review are minimal at best. This may be considered at MEPC 70.²⁹⁰

Reporting of any subsequent developments or requirements for review are minimal at best. At MEPC 70 the Committee considered a proposal by the Russian Federation to introduce requirements to evaluate regularly the status and effectiveness of Special Areas and PSSAs.²⁹¹

The Committee noted that with regard to the evaluation of existing PSSAs, in particular the effectiveness of APMs, MEPC 65 (May 2011) has requested Member Governments to submit such evaluations in accordance with paragraph 8.4 of the Revised PSSA Guidelines or to bring any concerns with the APMs to the IMO's attention so that any necessary adjustments may be made.²⁹² It was noted that to date no specific evaluations have been received.

With regard to Special Areas, the Committee noted that there are no requirements to evaluate the effectiveness of such areas once they have been designated, although such an evaluation procedure could be incorporated in the *2013 Guidelines for the designation of Special Areas under MARPOL* (resolution A.1087(28)).

After debating the proposal, the Committee noted the Russian proposals and reminded Member Governments of their requirement to bring any concerns and proposals for additional measures or modifications to any APMs or PSSAs to the attention of the IMO, particularly if the levels of threat from shipping have changed, so that any necessary adjustments may be made. Finally the Committee invited interested Member Governments wishing to amend the 2013 Guidelines to submit proposals for a new output to a future session, in accordance with the Committee's Guidelines.²⁹³

A study for the Protection of the Arctic Marine Environment Arctic Council Working Group (PAME) found support for a PSSA for the high seas area of the Arctic Ocean, with APMs of VTS, ship reporting system and ATBA, and establishment of one or more '[c]ore sea ice areas'.²⁹⁴

contemplating PSSA submissions. For a list of IMO approved PSSAs, online:
<http://www.imo.org/OurWork/Environment/PSSAs/Pages/Default.aspx>.

²⁸⁹ IHO Chart Specification B-437.6; MPA Singapore, 'Symbols, Abbreviations, Terms and S-57 Objected used on Singaporean Nautical and Electronic Navigational Charts,' N22, at 37 (2011) online:

<http://www.mpa.gov.sg/web/portal/home/publications/chart-symbols-and-abbreviations>. See also IMO, *Special Areas and Particularly Sensitive Sea Areas*, NAV 48/INF.2 (4 April 2002) (IHO).

²⁹⁰ See the submission by Russia, 'The need to evaluate the status of effectiveness of Special Areas and Particularly Sensitive Sea Areas,' MEPC 70/8/1 (15 August 2016).

²⁹¹ *Ibid.*

²⁹² IMO, *Report of the MEPC on its 65th Session*, MEPC 65/22 (24 May 2013) para 9.7.

²⁹³ MEPC 70/18, *supra* note 157, paras 8.6-8.10.

²⁹⁴ DNV report, *supra* note 18 at 56-60.

Emission Control Areas (ECAs)

MARPOL Annex VI (Regulations for the Prevention of Air Pollution from Ships (1997)) establishes certain sulphur oxide (SOx) ECAs with more stringent controls on sulphur emissions. Annex VI was revised in 2008 to make the requirements more stringent, including particulate matter, and update the regulations on the establishment of ECAs.²⁹⁵ This may assist in dealing with the melting caused by the deposit of black carbon on the ice.²⁹⁶

Marine Protected Areas (MPAs)

MPAs are not adopted by the IMO. However, MPAs like any protected area, are regions in which human activity has been placed under some restrictions by other organizations in the interest of protecting the natural environment, its surrounding waters and the occupant ecosystems, and any cultural or historical resources that may require preservation or management. MPAs' boundaries will include some area of ocean, even if it is only a small fraction of the total area of the territory.²⁹⁷

With regard to MPAs in the Arctic, the Biodiversity Committee (BDC) of the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic is considering a proposal by Greenpeace and the World Wildlife Fund for a high seas MPA in that portion of the Arctic Ocean included in OSPAR Region 1. At its meeting 2-6 March 2015 the BDC agreed for a small drafting group should update the scientific evidence in the proposal before the OSPAR Commission would consider it.²⁹⁸ At its meeting 29 February-4 March 2016, the BDC endorsed the proposal as being scientifically robust. The Commission next meets 20-24 June 2016 in Spain.²⁹⁹

²⁹⁵ Amendments to MARPOL Annex VI adopted during the October 2008 session of the Marine Environment Protection Committee (by resolution MEPC.176(58)) included a revised regulation 14 on Sulphur Oxides (SOx) and Particulate Matter that permits the establishment of Emission Control Areas. Appendix III provides the criteria and procedures for designation of Emission Control Areas. These amendments entered into force 1 March 2010. The text of the revised Annex VI, IMO, MEPC 58/23/Add.1 Annex 13, online:

http://www.imo.org/blast/blastData.asp?doc_id=10407&filename=176%2858%29.pdf. A list of ECAs may be found at <http://www.imo.org/OurWork/Environment/SpecialAreasUnderMARPOL/Pages/Default.aspx>.

²⁹⁶ For information on the impact of black carbon on the Arctic, see Arctic Monitoring and Assessment Program Working Group (AMAP), 'The Impact of Black Carbon on Arctic Climate', AMAP Technical Report No 4 (2001) online: <http://www.amap.no/documents/doc/the-impact-of-black-carbon-on-arctic-climate/746> and the results of PPR 2 considerations in the *Report of the Working Group on Air Pollution from Ships*, PPR 2/WP.5 (22 January 2015) paras 35-47 and *Report to the MEPC*, PPR 2/21 (16 February 2015) paras 8.1-8.7, and the Arctic Council Task Force for Action on Black Carbon and Methane (TFBCM), *infra* text accompanying notes 413-417.

²⁹⁷ For more information on MPAs, see Wikipedia, 'Marine Protected Area', online: http://en.wikipedia.org/wiki/Marine_protected_area; online: <http://ocean.nationalgeographic.com/ocean/take-action/marine-protected-areas/>; and online: <http://www.marine-conservation.org/what-we-do/program-areas/mpas/>.

²⁹⁸ OSPAR Commission, *Summary Record of BDC 2015*, BDC 15/10/1-E, pages 21-24 paras. 5.22-5.32, online: <http://www.ospar.org/meetings/archive/biodiversity-committee-13>.

²⁹⁹ Greenpeace press release, 'Massive step to protect a vital part of the Arctic high seas taken today in Gothenburg,' *The Arctic Journal* (4 March 2016) online: <http://arcticjournal.com/press-releases/2195/massive-step-protect-vital-part-arctic-high-seas-taken-today-gothenburg>.

At its 2015 Ministerial, the Arctic Council approved the Framework for a Pan-Arctic Network of Marine Protected Areas,³⁰⁰ and decided to continue work to develop such a network, based on the best available knowledge and science in order to strengthen marine ecosystem resilience, taking into account the cultural and sustainable use of marine resources.³⁰¹

Ballast Water Controls

Consideration could be given to implementation of the ballast water rules under the 2004 IMO International Convention for the Control and Management of Ships' Ballast Water and Sediments.³⁰² The Convention will enter into force 12 months after ratification by 30 States, representing 35 per cent of world merchant shipping tonnage, on 8 September 2017.³⁰³

The adoption of the last set of Guidelines for the uniform implementation of the Convention and the approval and certification of modern ballast water treatment technologies have removed the last barriers to the ratification of the instrument and a significant number of countries have indicated their intention to accede to this Convention in the near future.³⁰⁴

Questions remain whether the technologies have been satisfactorily tested in polar waters.

Anti-Fouling

The International Convention on the Control of Harmful Anti-fouling Systems on Ships, which was adopted on 5 October 2001, prohibits the use of harmful organotins in anti-fouling paints used on ships' hulls and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems. The Convention entered into force on 17 September 2008. As of February 2017, there are 75 parties, including the Arctic 5 (Canada, Denmark, Norway, the Russian Federation and the United States), representing 93.71 per cent of the world shipping tonnage.

Under the terms of the Convention, Parties to the Convention are required to prohibit and/or restrict the use of harmful anti-fouling systems on ships flying their flag, as well as ships

³⁰⁰ PAME, 'Framework for a Pan-Arctic Network of Marine Protected Areas (April 2015), online: <https://oarchive.arctic-council.org/handle/11374/417>. The framework is intended only for areas under the national jurisdiction of the Arctic States, and not for areas beyond national jurisdiction (page 5).

³⁰¹ 2015 Iqaluit Declaration, 24 April 2015, para 40, online: https://oarchive.arctic-council.org/bitstream/handle/11374/662/EDOCs-3431-v1-ACMMCA09_Iqaluit_2015_Iqaluit_Declaration_original_scanned_signed_version.PDF?sequence=7&isAllowed=y.

³⁰² The text of the Ballast Water Convention, and other information on the convention, online: <http://www.imo.org/OurWork/Environment/SpecialAreasUnderMARPOL/Pages/Default.aspx>.

³⁰³ For the current ratification status, online: <http://www.imo.org/About/Conventions/StatusOfConventions/Pages/Default.aspx>.

³⁰⁴ For further information on ballast water control, online: <http://www.imo.org/OurWork/Environment/BallastWaterManagement/Pages/Default.aspx>.

not entitled to fly their flag but which operate under their authority and all ships that enter a port, shipyard or offshore terminal of a Party.³⁰⁵

An information paper was submitted to MEPC 69 about the risks that ballast water discharge and hull fouling pose to the Arctic, and also about possible mechanisms to control those risks,³⁰⁶ which the Committee noted.³⁰⁷

³⁰⁵ For additional information on the Anti-Fouling Convention, online:

<http://www.imo.org/OurWork/Environment/Anti-foulingSystems/Pages/Default.aspx>.

³⁰⁶ IMO, “Ship-mediated bioinvasions in the Arctic: pathways and control strategies,” MEPC 69/INF.17 (9 February 2016 (FOEI) Annex.

³⁰⁷ MEPC 69/21, *supra* note 96, para 4.24.2.

Chapter 11 Unilateral National Regulation of Shipping in the Arctic Ocean

This chapter analyses for consistency with international law, including the mandatory Polar Code, the unilateral regulations by Canada and Russia to control shipping through the NWP and the NSR, respectively.

Canada

On 27 August 2008, Canadian Prime Minister Harper announced plans to make the existing voluntary Arctic Ship Reporting System (NORDREG)³⁰⁸ mandatory, and extend the geographic scope of its application to Canada's full Arctic 200 nautical mile EEZ.³⁰⁹ The amendments contained in Bill C-3 received royal assent on 11 June 2009, and came into force on 1 August 2009.³¹⁰ The implementing regulations, and thus the mandatory requirements, came into force 1 July 2010.³¹¹ The geographic area of the NORDREG Zone, in which mandatory ship reporting is now required, includes not only the Canadian EEZ in the Arctic, but also the waters of Canada's Arctic archipelago, including the seven routes of the NWP.³¹²

³⁰⁸ *Canada Annual Notice to Mariners 2008*, section 6.1, copy on file with author; Canadian Coast Guard, 'Radio Aids to Marine Navigation (Atlantic, St. Lawrence, Great Lakes, Lake Winnipeg and Eastern Arctic)', Annual Edition (2006) Part 3, online: <http://dsp-psd.pwgsc.gc.ca/Collection/T51-4-2006E-3.pdf>; Arctic Ice Regime Shipping System Standards, TP 12259E (1988) online: <http://www.tc.gc.ca/MarineSafety/TP/tp12259.htm>. The 2010 version, Arctic Ice Regime Shipping System (AIRSS) Standards, TP 12259, online: <http://www.tc.gc.ca/eng/marinesafety/tp-tp12259-menu-605.htm>.

³⁰⁹ Prime Minister of Canada [Harper], News Release, 'PM Announces Government of Canada Will Extend Jurisdiction over Arctic Waters' (27 August 2008) copy on file with author.

³¹⁰ Transport Canada, News Release, H088/09, 'The Government of Canada Takes Action To Protect Canada's Arctic Waters and Enhance Northern Sovereignty' (17 June 2009) online: http://news.gc.ca/web/article-en.do?m=/index&nid=459889&_ga=1.104509440.1295564120.1427901093; and Transport Canada, News Release, H110/09, 'Legislation to Protect Canada's Arctic Waters Comes into Force' (6 August 2009), copy on file with author.

³¹¹ Northern Canada Vessel Traffic Services Zone Regulations, SOR/2010-127, online: <http://laws-lois.justice.gc.ca/PDF/SOR-2010-127.pdf>.

³¹² Transport Canada, News Release, H078/10, 'Government of Canada Takes Action to Protect Canadian Arctic Waters' (22 June 2010) online: http://news.gc.ca/web/article-en.do?nid=548709&_ga=1.17478457.1295564120.1427901093.

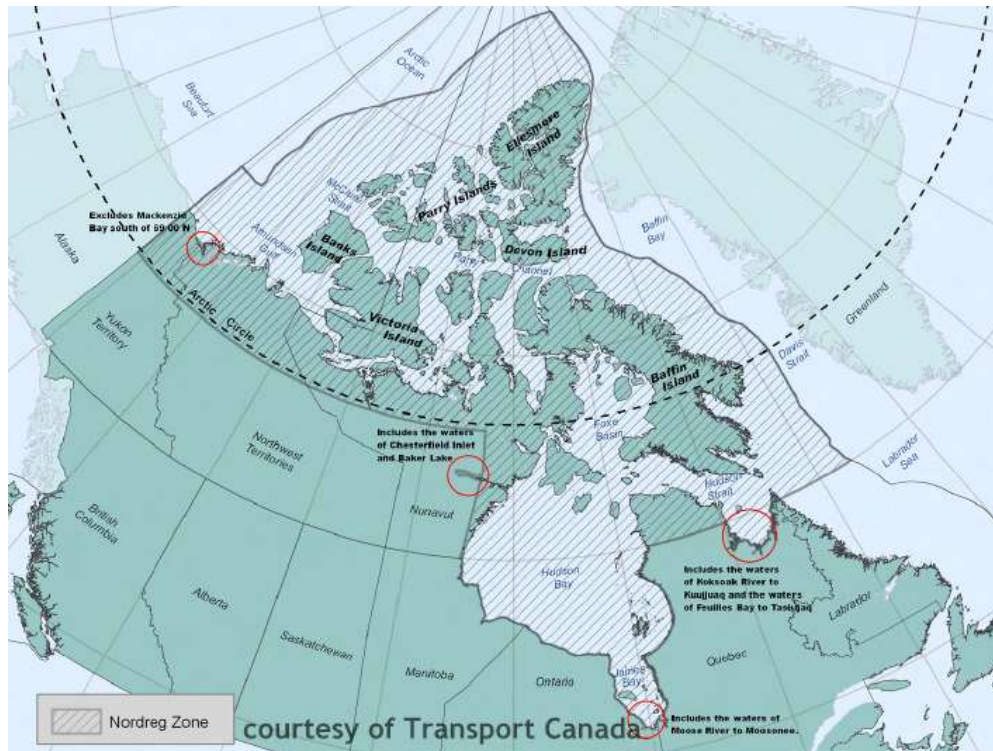


Figure 22. Canadian NORDREG Geographic Scope of Application
Source: Transport Canada

The Canadian Coast Guard has described the objectives of NORDREG as follows:

*The Northern Canada Vessel Traffic Services Zone Regulations formally establish the Northern Canada Vessel Traffic Services (NORDREG) Zone and, consistent with international law regarding ice-covered areas, implement the requirements for vessels to report information prior to entering, while operating within and upon exiting Canada's northern waters. The Regulations replace the informal NORDREG Zone (i.e. Arctic Canada VTS zone) and the voluntary reporting system that has existed in Canada's northern waters, enhancing the effectiveness of the official NORDREG Zone and Canada's ability to facilitate the safe and efficient movement of marine traffic. The Regulations will enhance the safety of vessels, crew and passengers, and will safeguard the unique and fragile Arctic marine environment. The Regulations are designed to ensure that the most effective services are available to accommodate current and future levels of marine traffic.*³¹³

The regulations require the filing of a sailing plan when a vessel is about to enter the NORDREG Zone (i) more than one hour but not more than two hours before a vessel departs from a berth within the NORDREG Zone, unless the vessel is moving to another berth in the same port; and (ii) immediately before a vessel gets underway within the NORDREG Zone, if the vessel has been stranded, has stopped as a result of a breakdown in the main propulsion or steering system, or has been involved in a collision. The regulations further require filing a position report immediately after a vessel enters the NORDREG Zone; and daily at 1600 Coordinated Universal Time (UTC), if a vessel is underway within the NORDREG Zone, unless

³¹³ Canadian Coast Guard, 'NORDREG', online: http://www.ccg-gcc.gc.ca/eng/MCTS/Vtr_Arctic_Canada.

the information required by Regulation 19-1, LRIT of Ships, of Chapter V of SOLAS, is being transmitted in accordance with that regulation. The regulations require further filing of a report on departure from the zone and a deviation report.³¹⁴

Russia

In 2008, then-President Medvedev adopted the ‘Basics of the State Policy of the Russian Federation in the Arctic for the period till 2020 and for a further perspective.’³¹⁵ Of greatest relevance to this Guide is the following provision:

*Strategic priorities of the state policy of the Russian Federation in the Arctic are . . . in the use of the Northern Sea Route for international navigation under the jurisdiction of the Russian Federation and according to international treaties of the Russian Federation.*³¹⁶

In 2012, the Russian Duma enacted, and the Council of Federation approved, a ‘Federal Law on Amendments to Specific Legislative Acts of the Russian Federation related to Governmental Regulation of Merchant Shipping in the water area of the Northern Sea Route’.³¹⁷ In pertinent part, the legislation provided that:

*Navigation in the water area of the Northern Sea Route, the historically emerged national transportation route of the Russian Federation, shall be performed according to the commonly accepted principles and norms of the international law, international agreements of the Russian Federation, this Federal Law, other Federal Laws and other regulatory legal documents issued in relation with the above.*³¹⁸

The relevant international agreements to which Russia is a party are, of course, the LOS Convention, the various IMO Conventions and Codes,³¹⁹ and when adopted and in force, the mandatory Polar Code.

The legislation also mandated what the rules on safe navigation of the NSR should contain. It also required that ships desiring to navigate the NSR must receive permits to do so, which are to be issued if the vessel complies with the rules, has adequate insurance and pays for icebreaker support ‘based on the amount of services actually delivered.’³²⁰

³¹⁴ *Ibid.* On LRIT, see Chapter 5 *supra*.

³¹⁵ The policy was adopted on 18 September 2008 and promulgated 30 March 2009. The text is online: http://www.arctic-lho.com/docs/nsr/legislation/Policy_of_the_RF_in_the_Arctic.pdf.

³¹⁶ *Ibid.*, para 7(d) [emphasis added].

³¹⁷ Federal Law No 132-03 (28 July 2012) (Russian Federation) online: http://www.arctic-lho.com/docs/nsr/legislation/federal_law_nsr.pdf.

³¹⁸ *Ibid.*, clause 2, amending clause 14 of Federal Law No 155-03 (31 July 1998) On Internal Waters, Territorial Sea and Adjacent Zone of the Russian Federation [emphasis added].

³¹⁹ See Status of IMO Conventions, online: <http://www.imo.org/About/Conventions/StatusOfConventions/Documents/status-x.xls>.

³²⁰ Act No 132-03, *supra* note 325, Clause 3 [emphasis added]. Note that this last provision in quotes, which seems consistent with LOS Convention, *supra* note 7, Art 26, differs from earlier legislation criticised by Kraska, *infra*

In 2013, the Ministry of Transport of Russia approved the ‘Rules of navigation in the water area of the Northern Sea Route.’³²¹ For the purposes of this Guide, the most notable provisions are the requirements for:

- prior permission to navigate the NSR applied for between 15 working days and 120 calendar days, which if granted is valid for no more than 365 calendar days;
- civil liability insurance for pollution or other damage pursuant to international treaties of the Russian Federation;
- need for icebreaker assistance and pilot ice assistance;
- 72 hours and 24 hours prior notices of planned time of arrival at the boundary of the NSR and at actual time of entrance at and departure from the boundary; and
- daily position reporting.

The basic question thus raised is to what extent are the Canadian and Russian regulations consistent with the applicable international law.

*Compatibility with International Law*³²²

As an initial matter, it is clear that domestic legislation that contravenes international law does not justify the deviation.³²³

NORDREG

The action by the Government of Canada to impose the mandatory NORDREG ship reporting unilaterally has been criticised by the United States, other IMO Member States and industry, and was the subject of discussion at the 2010 meetings of the IMO Subcommittee on the Safety of Navigation³²⁴ and the MSC.³²⁵ The criticism is grounded in Canada’s failure to follow the requirements of SOLAS to seek IMO approval, particularly Regulation V/11 (Ship-

note 336.

³²¹ Ministry of Transport of Russia Order No 7 (17 January 2013) online: http://www.arctic-lio.com/docs/nsr/legislation/20130425185806en-Rules_unof.pdf [unofficial translation].

³²² The treaty law analysis immediately below is taken from Roach and Smith, *supra* note 20 at 493-96.

³²³ Vienna Convention on the Law of Treaties, adopted 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980) (VCLT), Art 27, online: <http://treaties.un.org/doc/Publication/UNTS/Volume%201155/v1155.pdf> (‘[a] party may not invoke the provisions of its internal law as a justification for its failure to perform a treaty’). Canada and Russia are party to the VCLT.

³²⁴ IMO, *NAV Report to the MSC*, NAV 56/20 (31 August 2010) at paras 19.21-19.24.

³²⁵ IMO, *Safety of Navigation due to Northern Canada Vessel Traffic Services Zone Regulations* (INTERTANKO and US), MSC 88/11/2 (22 September 2010), and IMO, *Report of MSC on its 88th session*, MSC 88/26 (15 December 2010) at paras 11.28-11.39 and Annexes 27 (statement of Canada) and 29 (statement of Singapore). At MSC 88, Canada sought but did not receive the Committee’s recognition of the mandatory system, MSC 88/26 at para 11.39. See Northern Canada Vessel Traffic Service Zone, 2010 Digest at 514-20, online: <http://www.state.gov/s/l/c8183.htm>, and <http://www.state.gov/s/l/2010/ch12/index.htm>, documents 54a-d for details.

reporting systems) and Regulation V/12 (Vessel traffic services), and the IMO and IALA implementing guidance.³²⁶

Canada has justified its unilateral action on the basis of Article 234 of the LOS Convention (Ice-covered areas),³²⁷ which 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.

Whether Article 234 provides sufficient justification is the subject of scholarly analysis.³²⁸ As a textual matter, Article 234 applies only in the EEZ because Article 55 of the LOS Convention defines the geographic scope of the EEZ as ‘an area beyond and adjacent to the territorial sea’. Canada claims the area of application of Article 234 is seaward of its straight baselines enclosing its arctic archipelago, and only 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 ...’.

One unanswered question is whether, given the retreat of the Polar ice cap, those climatic requirements for ice-covered areas are now met in the NORDREG Zone. It that regard it has been reported that both the Northwest Passage (NWP) and the Northern Sea Route (NSR) were open for the first time since 2013, but only from 1 September and 18 August 2015, respectively. The report stated that the NSR was expected to remain open until early October 2015 and the

³²⁶ See Chapter 10 *supra*.

³²⁷ NAV 56/20, *supra* note 332, para 19.22; IMO, Comments on document MSC 88/11/2, MSC 88/11/3, (5 October 2010) (Canada); IMO, Information on the Mandatory Canadian Ship Reporting System in Canada’s Northern Waters (NORDREG), SN.1/Circ.291 (5 October 2010) online: <https://imo.amsa.gov.au/secure/circulars/sn/291.pdf>.

³²⁸ See, e.g., Armand de Mestral, ‘Article 234 of the United Nations Convention on the Law of the Sea: Its Origins and Its Future,’ in *International Law and Politics of the Arctic Ocean: Essays in Honor of Donat Pharand*, *supra* note 44 at 111-24; Ted 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 *ibid* at 142-59; Bernard H Oxman, ‘Canada’s Arctic Waters: Circumnavigating the Legal Dispute,’ in *ibid* at 197-200; Kristin Bartenstein, ‘The “Arctic Exception” in the Law of the Sea Convention: A Contribution to Safer Navigation in the Northwest Passage?’ (2011) 42 *Ocean Development & International Law* 22; R Douglas Brubaker, *The Russian Arctic Straits* (Martinus Nijhoff Publishers, 2005) at 43-109, 133-39; James Kraska, ‘The Northern Canada Vessel Traffic Services Zone Regulations (NORDREG) and the Law of the Sea’ (2015) 30 *Journal of Marine and Coastal Law* 225-54. The negotiation process, from the US perspective, of Article 234 is recounted, based on declassified US diplomatic correspondence, in James Kraska, ‘Governance of Ice-Covered Areas: Rule Construction in the Arctic Ocean’ (2014) 45 *Ocean Development & International Law* 260. Unfortunately, the article does not parse the phrases in Article 234.

NWP to close in late September 2015.³²⁹ This suggests that the requirement for areas to be ice-covered most of the year continues to exist in the Arctic Ocean. **LATER DATA????**

Regardless of the geographic and climatic scope of application of Article 234, the relationship between that article and SOLAS Regulations V/8-1 (now V/11) and V/12 needs to be examined under the law of treaties, reflected in the 1969 Vienna Convention on the Law of Treaties (Vienna Convention). Canada is a party to the LOS Convention, SOLAS and the Vienna Convention. Under Article 30(3) of the Vienna Convention, ‘the earlier treaty applies only to the extent that its provisions are compatible with those of the later treaty.’ What constitutes ‘incompatibility’ is not clear.

A former deputy legal adviser of the UK Foreign and Commonwealth Office, and author of a book on modern treaty law and practice, has written: ‘in determining which treaty is the earlier and which is the later, the relevant date is the date of adoption, not entry into force. . . . The obligations under Article 30 [of the Vienna Convention] apply to a state only as from the date it becomes a party to the treaty.’³³⁰

In this context, the LOS Convention is the earlier treaty, as it was adopted on 10 December 1982, while SOLAS Regulation V/8-1 was adopted on 23 May 1994³³¹ and Regulations V/11 and V/12 were adopted on 5 December 2000.³³² Canada became a party to the LOS Convention on 17 November 2003.³³³ When the Polar Code becomes mandatory, it too will be the later treaty.

Since SOLAS Regulations V/8-1, V/11 and V/12, and the Polar Code, are setting international rules and standards, and as they are *lex specialis*, ‘a special rule prevails over a general rule,’³³⁴ Article 234 of the LOS Convention would not permit Canada to enact exceptions to them.

However, SOLAS Regulations V/8-1(j) (now V/11(9)) and V/12(5) also provide that ‘[n]othing in this regulation . . . shall prejudice the rights and duties of Governments under international law’. Aust states that this provision means that ‘[t]he treaty is subordinate to an

³²⁹ gCaptain, ‘Arctic Shipping Lanes Open for First Time Since 2013’ (11 September 2015) online: <http://gcaptain.com/arctic-shipping-lanes-open-for-first-time-since-2013>, quoting a report from Weathernews, a private Japanese company.

³³⁰ Anthony Aust, *Modern Treaty Law and Practice*, 3rd ed (Cambridge University Press, 2013) is of the view that “the adopted wording operates as a savings or relationship clause”.

³³¹ IMO, *Adoption of Amendments to the SOLAS Convention*, Resolution MSC.31(63), MSC 63/23/Add.1 Annex 2 (23 May 1994) at 2-3, online: http://www.imo.org/blast/blastData.asp?doc_id=6750&filename=31%2863%29.pdf.

³³² IMO, *Adoption of Amendments to the SOLAS Convention*, Resolution MSC.99(73), MSC 73/21/Add.2 Annex 7 (5 December 2000) at 128-130, online: http://www.navcen.uscg.gov/pdf/marcomms/imo/msc_resolutions/MSC73-21a2-7.pdf.

³³³ List of parties to the LOS Convention (as of **13 September 2016**) online: http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#The%20United%20Nations%20Convention%20on%20the%20Law%20of%20the%20Sea.

³³⁴ Aust, *supra* note **338**, at 221.

earlier one'.³³⁵ If his analysis is correct, then Article 234 still lives. But then, the geographic and climatic scope of application of Article 234 becomes important to resolve.

Northern Sea Route Regulations

The compatibility of the earlier Russian unilateral actions with international law has similarly been the subject of international attention³³⁶ and need not be repeated here. However, the new regulations, described above, have not received much attention.

In that regard, it may be noted that while payment for ice breaker services is now contingent on the amount of services provided, the requirement to obtain prior permission to transit the NSR is not compatible with the legal regime of straits used for international navigation where the regime of transit passage applies and a notice or permissive requirement is not permitted.³³⁷ In addition, Russia has not obtained IMO approval for its mandatory reporting system, as other States have done for the transit of straits.³³⁸

Legal Effect of Polar Code on National Regulations

In the context of the development of a mandatory Polar Code, Canada and the Russian Federation sought to protect their national regulations regarding foreign shipping in their national Arctic waters from the effects of the Polar Code.³³⁹

Canada and Russia initially sought explicit exemption for NORDREG and the NSR Regulations, which was not accepted in 2011 after the United States, supported by other delegations, expressed doubt regarding the application of Article 234 of the LOS Convention by

³³⁵ *Ibid* at 220, quoting the 1995 UN Fish Stocks Agreement, Art 4.

³³⁶ See Roach and Smith, *supra* note 20 at 312-18; James Kraska, 'The New Arctic Geography and US Strategy' in James Kraska (ed), *Arctic Security in an Age of Climate Change* (Cambridge University Press, 2011) at 250 (pilotage fees not related to services rendered); *passim* Brubaker, *supra* note 336; and Erik Franckx, 'The Legal Regime of Navigation in the Russian Arctic' (2009) 18 *Journal of Transnational Law & Policy* 327, online: http://archive.law.fsu.edu/journals/transnational/vol18_2/franckx.pdf; and summarised in *The Northern Sea Route: The shortest sea route linking East Asia and Europe* (Ship and Ocean Foundation, 2001) at 85-86, online: http://www.sof.or.jp/en/report/pdf/200103_rp_ar0103e.pdf.

³³⁷ LOS Convention, *supra* note 7, Art 26 and Part III.

³³⁸ See *supra* notes 280-281 and accompanying text for details. On 29 May 2015 the United States delivered a diplomatic note to Russia regarding the NSR developments. The note presented US objections to aspects of the scheme that are inconsistent with international law, and encouraged Russia to submit relevant aspects of the scheme to the IMO for consideration and adoption. The text of the note appears in 2015 Digest 526-528, online: <http://www.state.gov/documents/organization/258187.pdf>.

³³⁹ Michael Byers has reported that on 20 February 2009 the Russian and Canadian Legal Advisers consulted in Moscow on common Arctic concerns: 'Both sides stated a high degree of **similarity in their position on the issue of international shipping in the Northwest Passage** (Canada) and the **Northern Sea Route** (Russia) - the existing limitations that are being applied to those areas are necessary to preserve the fragile maritime environment and are in sync with the rights that UNCLOS concedes to coastal states in ice-covered areas. Both sides agreed to have more detailed consultations on this topic, including the issue of rights to historical waters in the context of the existing disputes over their status with the US.' - Michael Byers, 'Russia-Canada Consultations on the Legal Status of the Arctic' (*Who Owns the Arctic? Arctic Sovereignty and International Relations*, 20 February 2009) online: <http://byers.typepad.com/arctic/russiacanada-consultations-on-the-legal-status-of-the-arctic.html> [emphasis in the original].

Canada and Russia, or that the Polar Code in itself would provide the international legal basis for those systems.³⁴⁰ Although Russia made no further overt efforts in this regard, Canada changed its approach and sought a saving clause in the Polar Code. Ultimately, the MSC decided to put such as clause in the new Chapter XIV of SOLAS, the mechanism by which Part I-A of the Polar Code is to be made mandatory. Regulation 2 of the new SOLAS Chapter XIV provides:

*5 Nothing in this chapter shall prejudice the rights or obligations of States under international law.*³⁴¹

This provision likely protects the Canadian and Russian unilateral national regulations on Arctic shipping from being preempted by the safety provisions of the Polar Code.

Canada proposed a similar statement be included in the amendments to MARPOL Annexes I, II, IV and V by which Part II-A of the Polar Code will be made mandatory. Instead, the MEPC decided that an existing statement in Article 9(2) of the MARPOL Convention will suffice.³⁴² Article 9(2) provides:

Nothing in the present Convention shall prejudice ... the present or future claims and legal views of any State concerning the law of the sea and the nature and extent of coastal and flag State jurisdiction.

At MEPC 66, Canada expressed satisfaction with this outcome.³⁴³

Nevertheless, the International Chamber of Shipping (ICS) has called for

“all current national maritime regulatory regimes applicable to Arctic waters, within the jurisdiction of States that are members of the Arctic Council, [to] be harmonized in conformity with the final IMO ‘Polar Code’, as well as all other relevant IMO Conventions and Codes, consistent with the provisions of the United Nations Convention on the Law of the Sea (UNCLOS). Arctic nations should only apply requirements to foreign flag ships consistent with ‘generally accepted international rules and standards’ (GAIRAS).³⁴⁴

ICS further stated it “believes that the UNCLOS regime of transit passage for straits used for international navigation (as codified in Part III of UNCLOS) takes precedence over the rights of coastal States under Article 234.” ICS also urged that relationship between Article 234 and the

³⁴⁰ DE 55/22, *supra* note 257, at 24 para 12.7 (2nd para).

³⁴¹ IMO, *Amendments to the SOLAS Convention*, MSC 94/21/Add.1, Annex 7 (27 November 2014) at 4.

³⁴² MEPC 66/21, *supra* note 249, at 54 para 11.47.

³⁴³ *Ibid*, Annex 20 at 12.

³⁴⁴ International Chamber of Shipping, *Arctic Shipping Position Paper* (2014) online: http://www.ukpandi.com/fileadmin/uploads/uk-pi/Documents/Polar_ice_navigation/ics-position-paper-on-arctic-shipping.pdf.

transit passage regime should be clarified, as well as the meaning of the various terms used in Article 234 given the diminution of polar ice.³⁴⁵

³⁴⁵ *Ibid.*

Chapter 12 Arctic Council and Other Arctic Organizations

This chapter describes the Arctic Council, the role of Observer States, the Arctic Economic Council (AEC), and the Conference of Parliamentarians of the Arctic Region (CPAR). The chapter begins with the Arctic Council.

Purpose

The Arctic Council was formed in 1996 by decision of the eight States with land territory above the Arctic Circle: Canada, Denmark (Greenland, Faroe Islands), Finland, Iceland, Norway, Russia, Sweden, and the United States.³⁴⁶ In addition to these eight members, six indigenous organisations are ‘Permanent Participants’:

- Aleut International Association (AIA);
- Arctic Athabaskan Council (AAC);
- Gwich’in Council International (GCI);
- Inuit Circumpolar Council (ICC);
- Russian Association of Indigenous Peoples of the North (RAIPON); and
- Saami Council.

The role of the Arctic Council is to promote cooperation, coordination and interaction on common Arctic issues, particularly environmental protection and sustainable development. The Council functions through six working groups:

- Arctic Contaminants Action Program (ACAP);
- Arctic Monitoring and Assessment Program (AMAP);
- Conservation of Arctic Flora and Fauna (CAFF);
- Protection of the Marine Environment (PAME);
- Emergency Preparedness, Prevention and Response (EPPR); and
- Sustainable Development (SDWG).

In addition, there are currently three Task Forces:

- Enhancing Scientific Cooperation in the Arctic (SCTF) (established 2013);
- Telecommunications Infrastructure in the Arctic (TFTIA) (established 2015); and
- Arctic Marine Cooperation (TFAMC) (established 2015).

Past Task Forces include:

³⁴⁶ Evan T Bloom, ‘Establishment of the Arctic Council,’ (1999) 93 *American Journal of International Law* 712, online: <http://www.state.gov/documents/organization/212368.pdf>.

- Arctic Marine Oil Pollution Prevention (TFOPP);
- Black Carbon and Methane (TFBCM);
- Facilitate the Circumpolar Business Forum (TFCBF);
- Institutional Issues (TFII);
- Search and Rescue;
- Arctic Marine Pollution Preparedness and Response;
- Short-Lived Climate Forces (SLCF).³⁴⁷

The working groups and task forces report to the eight Senior Arctic Officials (SAO) who meet semi-annually. The SAOs report to the biennial Ministers meeting.³⁴⁸

Working Methods

The Arctic Council operates by consensus. Its rules of procedure were updated in 2013.³⁴⁹ Its decisions, which are not legally binding, are recorded in declarations. The most recent ministerial declarations are the Tromsø Declaration, 29 April 2009, Nuuk Declaration, 12 May 2011, Kiruna Declaration, 15 May 2013, and the 2015 Iqaluit Declaration, 24 April 2015, named after the cities in which the ministerial meetings were held, normally in the country of the chair. The May 2017 ministerial will be held in Fairbanks, Alaska.³⁵⁰ Its chairmanship rotates every two years among the eight member states.³⁵¹ Canada chaired 2013-2015.³⁵² The United States chairs 2015-2017.³⁵³ Finland will assume the Chair in 2017, followed by Iceland in 2019.

The Council is not a formal international organisation. The Council does not deal with security issues.³⁵⁴

A Secretariat was established in 2013 in Tromsø, Norway.³⁵⁵

³⁴⁷ 'Task Forces of the Arctic Council,' (17 August 2016) online: <http://www.arctic-council.org/imdex.php/en/about-us/subsidiary-bodies/task-forces>.

³⁴⁸ SAO reports to Ministers and reports of SAO meetings, online: <https://oaarchive.arctic-council.org/handle/11374/250>. The October 2015 SAO meeting was held in Anchorage; the March 2016 meeting was held in Fairbanks, online <https://oaarchive.arctic-council.org/handle/11374/1481>.

³⁴⁹ See online: <https://oaarchive.arctic-council.org/handle/11374/940>.

³⁵⁰ Weston Morrow, 'Fairbanks to host Arctic Council ministerial meeting in 2017,' *Fairbanks Daily News-Miner* (25 January 2016) online: http://newsminer.com/news/local_news/fairbanks-to-host-arctic-council-ministerial-meeting-in/article_60243ed4-c3ae-11e5-9816-c71b2b6f32fa.html.

³⁵¹ For all nine of the prior declarations (1996-2013) online: <https://oaarchive.arctic-council.org/handle/11374/84>.

³⁵² For the Canadian Chairmanship program, see online: <http://www.arctic-council.org/index.php/en/about-us/arctic-council/canadian-chairmanship/735-canadian-chairmanship-program-2013-2015>.

³⁵³ For the United States Chairmanship program, see online: <http://www.state.gov/e/oes/ocns/opa/arc/uschair/index.htm>.

³⁵⁴ Footnote 1 to the *Ottawa Declaration on the Establishment of the Arctic Council*, 19 September 1996 ('[t]he Arctic Council should not deal with matters related to military security') online: <https://oaarchive.arctic-council.org/handle/11374/85>.

³⁵⁵ See online: www.arctic-council.org. For documents of the Arctic Council, online: <http://www.arctic-council.org/index.php/en/document-archive>, including its rules of procedure.

Permanent Participants

Out of a total of 4 million inhabitants of the Arctic, approximately 500,000 belong to indigenous peoples. Indigenous peoples' organisations have been granted Permanent Participants status in the Arctic Council. The Permanent Participants have full consultation rights in connection with the Council's negotiations and decisions. The Permanent Participants represent a unique feature of the Arctic Council, and they make valuable contributions to its activities in all areas. Issues of importance to the Permanent Participants include their sovereignty, the UN Declaration on the Rights of Indigenous Peoples³⁵⁶ and its relevance to the Arctic, socio-economic and public health problems, dependence on the Arctic ecosystem, dependence on the hunting of species with which some environmentalists disagree, what ice routes are and why they are vital for subsistence and the way of life in the North.

Information on the six Permanent Participants is contained in the following paragraphs.

- Aleut International Association (AIA) is an Alaska Native not-for-profit corporation, 501(c)(3), registered in the State of Alaska, United States of America, in 1998.

AIA was formed by the Aleutian/Pribilof Islands Association, U.S., one of the thirteen regional not-for-profit Alaska Native corporations created as a result of Alaska Native Settlement Claims Act in 1971,³⁵⁷ and the Association of the Indigenous Peoples of the North of the Aleut District of the Kamchatka Region of the Russian Federation (AIPNADKR). AIA is governed by a Board of Directors comprised of four Alaskan and four Russian Aleuts under the leadership of a president. The current president is Arlene Gundersen.

The organisation was formed to address environmental and cultural concerns of the extended Aleut family whose wellbeing has been connected to the rich resources of the Bering Sea for millennia. Russian and American Aleuts are separated by distances, borders and the International Date Line but united by the great Bering Sea and the North Pacific. Today, not only does the Aleut community share the resources of the region but the environmental problems as well. The need to understand global processes, such as transboundary contaminants transport, the impacts of climate change, and the effects of commercial fisheries on the ecosystem of the Bering Sea to name a few, was an impetus in joining in the work of international fora where AIA is actively pursuing collaboration with governments, scientists, and other organisations in developing programmes and policies that could improve the wellbeing of the Aleut people and their environment. AIA was admitted as a permanent participant of the Arctic Council in 1998 and was granted Special Consultative Status by the Economic and Social Council of the United

³⁵⁶ *UN Declaration on the Rights of Indigenous Peoples*, UN General Assembly resolution 61/295 (13 September 2007) Annex, online: http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf.

³⁵⁷ Alaska Native Settlement Claims Act, 43 U.S. Code chapter 33, Pub L 92-203, 85 Stat 688 (18 December 1971) online: <https://www.law.cornell.edu/uscode/text/43/chapter-33>.

Nations in 2004. In addition, AIA is an accredited Non Governmental Organization (NGO) with the United Nations Framework Convention on Climate Change (UNFCCC) and the Global Environment Facility (GEF).³⁵⁸

- The Arctic Athabaskan Council (AAC) is an international treaty organisation established to defend the rights and further the interests internationally of American and Canadian Athabaskan member First Nation governments in the eight-nation Arctic Council and other international fora. AAC is an authorised ‘Permanent Participant’ in the Arctic Council. In addition, AAC seeks to foster a greater understanding of the shared heritage of Athabaskan peoples of Arctic North America.

In 2000, founding members of the AAC represented approximately 32,000 indigenous peoples of Athabaskan descent at the time of signing the AAC treaty. At present, AAC members in Alaska (including fifteen traditional villages), Yukon (the Council of Yukon First Nations and the Kaska Tribal Council) and Northwest Territories (Dene Nation) span across 76 communities and represent approximately 45,000 people. The member organisations are the Allakaket Tribal Council, Chickaloon Village, Council of Yukon First Nations, Dene Nation, Dot Lake Traditional Council, Eagle Tribal Council, Native Village of Eklutna, Healy Lake Traditional Council, Huslia Tribal Council, Kaska Tribal Council, Native Village of Kluti-kaah, Loudon Tribal Council, Mentasta Tribal Council, Northway Tribal Council, Nulato Traditional Council, Stevens Village Tribal Government, Native Village of Tanana and the Tetlin Tribal Council.

Between AAC meetings, the organisation is directed politically by International Chairperson Michael Stickman, currently President of the Nulato Traditional Council in Alaska. The AAC also has an International Vice-Chair, Bill Erasmus, currently Dene National Chief, based in Yellowknife, NWT. Day-to-day activities of the AAC Secretariat are directed and managed by AAC Executive Directors (Canada and United States).

The Athabaskan peoples, residing in Arctic and sub-Arctic Alaska, USA, and the Yukon Territory and Northwest Territories of Canada have traditionally occupied a vast geographic area of approximately 3 million square kilometres. This vast region has been continuously occupied by Athabaskan peoples for at least 10,000 years and includes three of North America’s largest river systems (Mackenzie, Yukon and Churchill Rivers). It also includes vast areas of both tundra (barren lands) and taiga (boreal forest) as well as North America’s highest mountains (Mount McKinley and Mount Logan) and the world’s largest non-polar ice field (St. Elias Mountains). The southeastern boundary of the Arctic Athabaskan peoples’ traditional territories includes portions of provincial northern Canada.

³⁵⁸ <http://www.arctic-council.org/index.php/en/about-us/permanent-participants/aia>. For further information on the AIA, see <http://aleut-international.org/>.

The ancestors of contemporary Athabaskan peoples were semi-nomadic hunters. The staples of Athabaskan life are caribou, moose, beaver, rabbits and fish. Athabaskan peoples today continue to enjoy their traditional practices and diet.

Except for south-central Alaska (Tanana and Eyak) and the Hudson Bay (Chipweyan), Athabaskan peoples are predominately inland taiga and tundra dwellers. Collectively, the Arctic Athabaskan peoples share 23 distinct languages and live in communities as far flung as Tanana, Alaska and Tadoule Lake, northern Manitoba, nearly 5400 kilometres apart.

Peoples of Arctic Athabaskan descent represent approximately 2% of the resident population of Alaska, U.S.A. (12,000), compared with about one-third of the Yukon Territory (10,000), the Northwest Territories and provincial norths (20,000) in Canada. Athabaskan peoples are a relatively young and growing population, compared with non-Aboriginal Arctic resident groups.

Forms of political and cultural organisation vary, depending upon the place of residence of a particular Athabaskan people. In Alaska, Athabaskan peoples have organised themselves in accordance with federal and State statutes which provide funding for government operations, including the Indian Reorganization Act for tribal governments, Alaska Native Claims Settlement Act for incorporated Villages, and a variety of state- legislated and traditional political entities. In Canada, Athabaskan peoples have organised themselves into political bodies under federal legislation including bands created under the Indian Act, self-governing First Nations as mandated through negotiated Settlement Agreements, and regional umbrella organizations.³⁵⁹

- The Gwich'in Council International (GCI) represents the Gwich'in in Canada and US.

The Gwich'in Council International (GCI) was established as a non-profit organisation in 1999 by the Gwich'in Tribal Council in Inuvik, NWT, to ensure all regions of the Gwich'in Nation in the Northwest Territories, Yukon and Alaska are represented at the Arctic Council, as well as to play an active and significant role in the development of policies that relate to the Circumpolar Arctic. GCI has a number of priorities that relate to the environment, youth, culture and tradition, social and economic development and education.

The founding members of GCI includes six Alaskan Gwich'in communities (Arctic Village, Chalkyitsik, Fort Yukon, Birtch, Circle and Venetie) two Gwich'in representative bodies in Canada - Vuntut Gwitchin First Nation representing Vuntut Gwitchin in Old Crow, Yukon, and Gwich'in Tribal Council representing four communities in the Beaufort Delta region in the Northwest Territories. In total, the Gwich'in Council International founding members represent approximately 9,000 indigenous peoples of Gwich'in descent. The GCI Secretariat rotates

³⁵⁹ <http://www.arctic-council.org/index.php/en/about-us/permanent-participants/aac>. For further information on the AAC, see <http://www.arcticathabaskancouncil.com/aac/>.

between the Gwich'in Tribal Council in Inuvik, NWT and the Vuntut Gwitchin First Nation in Old Crow, Yukon.

As a permanent participant to the Arctic Council, funding for GCI comes from the Department of Foreign Affairs and International Trade in Canada. These funds allow for management of a Secretariat and travel of GCI members to the Arctic Council and its affiliated working group meetings. The US State Department in Alaska provides some funding through the Indigenous Peoples Secretariat to support Gwich'in who are US citizens to participate in the Arctic Council meetings. To supplement these funds the GCI applies for funds through proposal submissions to take part in specific projects.³⁶⁰

- The Inuit Circumpolar Council (ICC) represents approximately 160,000 Inuit in Alaska/United States, Canada, Greenland/Denmark and Chukotka/Russia. Founded in 1977 by the late Eben Hopson Sr. in Barrow, Alaska, the ICC has flourished and grown into a major international indigenous peoples organisation. The ICC international office is housed with the Chair and each member country maintains a national office under the political guidance of a president.

Inuit Circumpolar Council-Alaska (ICC-AK) is a 501(c) 3 non-profit corporation that represents and advocates for the Iñupiat of the Arctic Slope, Northwest, and Bering Straits; St. Lawrence Island (Siberian) Yupik; and Central Yup'ik and Cup'ik of the Yukon-Kuskokwim Delta in Southwest Alaska.

The ICC in Canada is a non-profit organisation led by a board of directors comprising the elected leaders of the four land-claims settlement regions: Inuvialuit, Nunatsiavut, Nunavik, and Nunavut. An elected executive, including a president, two vice-presidents, and a secretary-treasurer, manages the organization. Staff members are responsible for day-to-day operations, under the direction of the executive director. The land-claims regions provide core funding; however, raising additional resources to pursue the objectives of ICC (Canada) and implement its projects remains an important responsibility for the executive and staff.

To thrive in their circumpolar homeland, Inuit had the vision to realise they must speak with a united voice on issues of common concern and combine their energies and talents towards protecting and promoting their way of life. The principle goals of ICC are to

- strengthen unity among Inuit of the circumpolar region;
- promote Inuit rights and interests on an international level;
- develop and encourage long-term policies that safeguard the Arctic environment; and

³⁶⁰ <http://www.arctic-council.org/index.php/en/about-us/permanent-participants/gci>. For further information on the GCI, see <http://www.gwichin.org/>.

- seek full and active partnership in the political, economic, and social development of circumpolar regions.

ICC has held Consultative Status II at the United Nations Economic and Social Council since 1983 and is active within the United Nations and its various subsidiary bodies. ICC consults regularly with the UN on a broad range of issues concerning the Arctic. ICC also consults with the United Nations on issues concerning indigenous human rights.

ICC was actively involved in the Arctic Environmental Protection Strategy, which later became the Arctic Council in 1996. ICC is one of the original permanent participants under the Arctic Council structure. ICC focuses great effort within the Arctic Council and has been active in its various working groups, task forces and projects. ICC also participates regularly in Senior Arctic Officials meetings and Arctic Ministerial meetings. ICC considers the Arctic Council to be the premier international forum dealing with Arctic policy issues today.³⁶¹

- The Russian Association of Indigenous Peoples of the North (RAIPON) was founded in 1990 at the First Congress of Indigenous Peoples of the North of USSR.

Now RAIPON is the Russian umbrella organization, which organizes 35 regional and ethnic organisations of indigenous peoples in the regions where they live. RAIPON represents 41 groups of indigenous peoples of the North, Siberia and the Far East. The total number of people is more than 270 thousand and they live in 60% of the whole territory of the Russian Federation from Murmansk to Kamchatka.

The purpose of RAIPON is to protect indigenous peoples' human rights, defend their legal interests, assist in solving environmental, social, economic, cultural and educational issues, and to promote their right to self-governance. RAIPON works with the State Duma and the Government of the Russian Federation regarding legislation related to indigenous peoples' issues.

The highest body of RAIPON is the Congress of all indigenous peoples of the North, Siberia and Far East of the Russian Federation, which is held every four years. The President of RAIPON Grigoriy Ledkov is also a deputy of the State Duma of the RF. He is the Chair of the Duma Working Group for Nationality Issues, which develops draft federal legislation connected with the protection of indigenous peoples' rights in the Russian Federation. Mr Ledkov is also the Head of the Permanent Delegation of the State Duma to the Nordic Council – a regional inter-parliamentary forum for cooperation between the Nordic Countries (Denmark, Iceland, Norway and Finland).

³⁶¹ <http://www.arctic-council.org/index.php/en/about-us/permanent-participants/icc>. For further information on the ICC, see <http://www.inuitcircumpolar.com/>.

RAIPON participates in international structures such as the Arctic Council as a permanent participant, the United Nations Economic and Social Council with a special consultative status and the Governing Council/Global Ministerial Environment Forum of the United Nations Environment Program as an observer. Members of RAIPON's presidium are now members in the Public Chamber of the Russian Federation, United Nations Permanent Forum on Indigenous Issues, UN Expert Mechanism on indigenous rights, and the UN Working Group on the issue of human rights and transnational corporations and other business enterprises.³⁶²

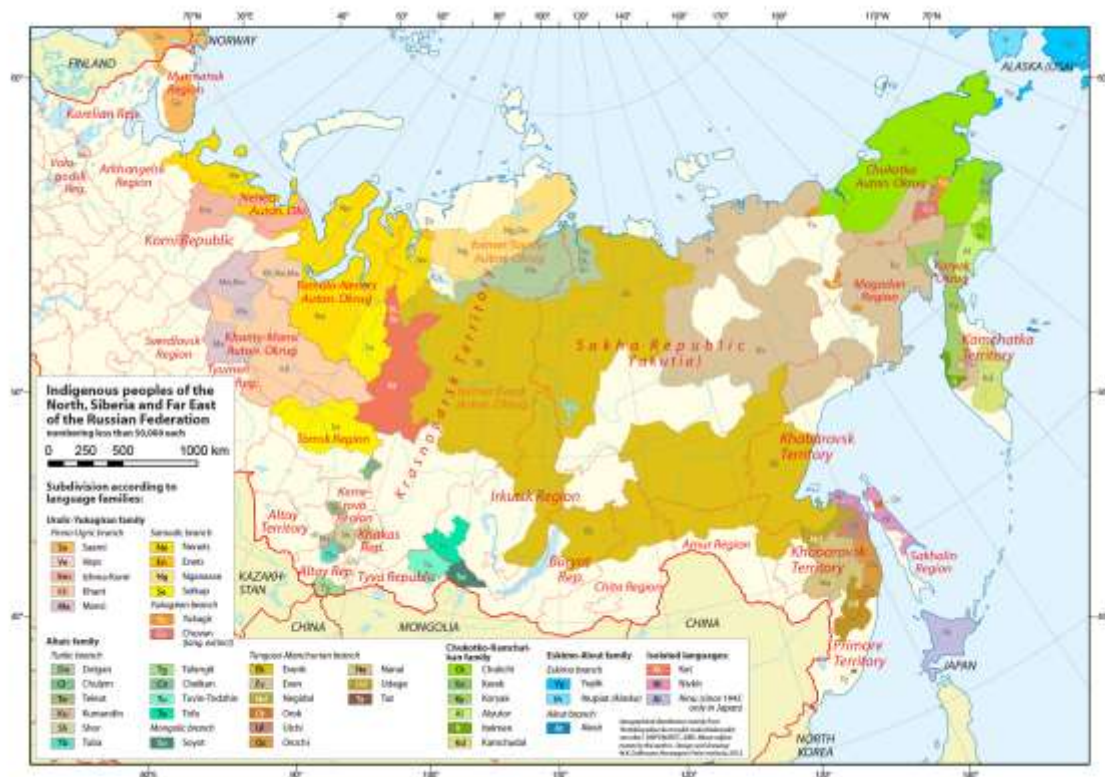


Figure 23. Indigenous Peoples of the North, Siberia and Far East of the Russian Federation

Source: <http://www.arcticpeoples.org/images/stories/temp/RussiaIP.png>

- The Saami Council is a voluntary Saami organisation (a non-governmental organisation), with Saami member organisations in Finland, Russia, Norway and Sweden. Since its foundation in 1956, the Saami Council has actively dealt with Saami policy tasks. For this reason, the Saami Council is one of the indigenous peoples' organisations that has existed longest.

The primary aim of the Saami Council is the promotion of Saami rights and interests in the four countries where the Saami are living, to consolidate the feeling of affinity among the Saami people, to attain recognition for the Saami as a nation and to maintain the economic, social and cultural rights of the Saami in the legislation of the four states. (Norway, Sweden,

³⁶² <http://www.arctic-council.org/index.php/en/about-us/permanent-participants/raipon>. For further information on RAIPON, see <http://www.raipon.info/index.php>.

Russia and Finland). This objective can be achieved through agreements between these states and the bodies representing the Saami people, the Saami parliaments.

Saami Council renders opinions and makes proposals on questions concerning Saami people's rights, language and culture and especially on issues concerning Saami in different countries.³⁶³

- The Permanent Participants are supported by the Arctic Council Indigenous Peoples Secretariat, now located in Tromsø, Norway.³⁶⁴

Observers

The Council has a large number of observers. The original six observer states (France, Germany, Netherlands, Poland, Spain and the UK) were joined in 2013 by six others: China, India, Italy, Japan, Singapore and South Korea.³⁶⁵ Other observers include nine Intergovernmental and Inter-Parliamentary Organisations. The EU's application has been deferred because of differences with Canada over seals, but it still observes the workings of the Council; however, those differences appear to have been resolved.³⁶⁶ Further, there are 11 non-governmental organisations with Observer status. However, at the Iqaluit Ministerial all decisions on observer issues were deferred to the 2017 Ministerial.³⁶⁷ In addition there are a large number of applications for observer status that will be considered at the 2017 Ministerial.³⁶⁸

The role of Observers is to provide scientific and other expertise, information and financial resources, primarily in working group meetings and projects; to enhance and complement the Arctic Council's work; and to support the work of the Permanent Participants.

³⁶³ <http://www.arctic-council.org/index.php/en/about-us/permanent-participants/sc>. For further information on the SC, see <http://www.saamicouncil.net/>.

³⁶⁴ www.arcticpeoples.org.

³⁶⁵ At the seventh Ministerial Meeting of the Arctic Council, 12 May 2011, the Ministers adopted the recommendation of the Senior Arctic Officials (SAOs) on the role and criteria for observers to the Arctic Council set out in Annex 1 to their report (pages 50-51), and decided to apply these criteria to evaluate pending applicants for observer status. Nuuk Declaration, online: <https://oaarchive.arctic-council.org/handle/11374/92>.

³⁶⁶ EC, Commission Decision of 18 August 2014 on the Joint Statement by Canada and the European Union on access to the European Union of seal products from indigenous communities of Canada, online: www.eeas.europa.eu/canada/docs/joint_statement_c_2014_5881_f1_annex_en.pdf. See Chris Plecash, 'Seal deal clears way for EU observer status at Arctic Council,' *Embassy News* (22 October 2014) copy on file with author. See further Timo Koivurova, 'The EU in the Arctic: Correcting Misconceptions,' *Arctic Deeply* (29 February 2016) online: <http://www.arcticdeeply.org/op-eds/2016/02/8621/eu-arctic-correcting-misconceptions/>.

³⁶⁷ Iqaluit Ministerial Declaration, 24 April 2015, para 51, online: <https://oaarchive.arctic-council.org/handle/11374/662>.

³⁶⁸ At the SAO meeting in Portland, Maine, 6-8 October 2016, the US SAO there were 18 applications, including four States – Greece, Turkey, Switzerland and Mongolia – and 14 other organizations – ranging from Greenpeace to oil and gas interests. Kevin McGwin, 'US to end chairmanship on science note (8 October 2016),' *The Arctic Journal* (14 October 2016), online: <http://www.arcticjournal.com/politics/2611/us-end-chairmanship-science-note>.

At the May 2011 Arctic Council meeting in Nuuk, Greenland, the Ministers approved the recommendations of the Senior Arctic Officials (SAO) on the process for admitting new observers. That report reads as follows:³⁶⁹

**The criteria for admitting observers and role for their participation
in the Arctic Council**

Introduction:

The Arctic Council is the leading high level forum with the objective of promoting cooperation, coordination and interaction among the Arctic States, with the involvement of the Arctic indigenous peoples and other Arctic inhabitants on common Arctic issues, in particular issues of sustainable development and environmental protection in the Arctic. Since the establishment of the Arctic Council participation by observers has been a valuable feature through their provision of scientific and other expertise, information and financial resources. The involvement of observers should enhance and complement the unique and critical role of Permanent Participants in the Arctic Council.

Criteria for admitting observers:

As set out in the Declaration on the Establishment of the Arctic Council³⁷⁰ and governed by the Arctic Council Rules of Procedure,³⁷¹ observer status in the Arctic Council is open to non-Arctic States; inter-governmental and inter-parliamentary organizations, global and regional; and non-governmental organizations that the Council determines can contribute to its work.

In the determination by the Council of the general suitability of an applicant for observer status the Council will, inter alia, take into account the extent to which observers:

- *Accept and support the objectives of the Arctic Council defined in the Ottawa declaration.³⁷²*
- *Recognize Arctic States' sovereignty, sovereign rights and jurisdiction in the Arctic.*
- *Recognize that an extensive legal framework applies to the Arctic Ocean including, notably, the Law of the Sea, and that this framework provides a solid foundation for responsible management of this ocean.*
- *Respect the values, interests, culture and traditions of Arctic indigenous peoples and other Arctic inhabitants.*

³⁶⁹ SAO Report to Ministers, Nuuk 2011, online: <https://oaarchive.arctic-council.org/handle/11374/1535>.

³⁷⁰ Ottawa Declaration, *supra* note 362.

³⁷¹ Arctic Council Rules of Procedure, *supra* note 363.

³⁷² Ottawa Declaration, *supra* note 362.

- *Have demonstrated a political willingness as well as financial ability to contribute to the work of the Permanent Participants and other Arctic indigenous peoples.*
- *Have demonstrated their Arctic interests and expertise relevant to the work of the Arctic Council.*
- *Have demonstrated a concrete interest and ability to support the work of the Arctic Council, including through partnerships with member states and Permanent Participants bringing Arctic concerns to global decision making bodies.*

Role of observers:

Decisions at all levels in the Arctic Council are the exclusive right and responsibility of the eight Arctic States with the involvement of the Permanent Participants.

- *Observers shall be invited to the meetings of the Arctic Council once observer status has been granted.*
- *While the primary role of observers is to observe the work of the Arctic Council, observers should continue to make relevant contributions through their engagement in the Arctic Council primarily at the level of Working Groups.*
- *Observers may propose projects through an Arctic State or a Permanent Participant but financial contributions from observers to any given project may not exceed the financing from Arctic States, unless otherwise decided by the SAOs.*
- *In meetings of the Council's subsidiary bodies to which observers have been invited to participate, observers may, at the discretion of the Chair, make statements after Arctic states and Permanent Participants, present written statements, submit relevant documents and provide views on the issues under discussion. Observers may also submit written statements at Ministerial meetings.*

Accreditation and review of observers of the Arctic Council:

- *Not later than 120 days before a ministerial meeting, the host country shall circulate, to all Arctic states and Permanent Participants, a list of entities that have applied for observer status.*
- *Observers are requested to submit to the Arctic Council, not later than 120 days before a Ministerial meeting, up to date information about relevant activities and their contributions to the work of the Arctic Council should they wish to continue as an observer to the Council.*
- *Every four years, from the date of being granted observer status, observers should state affirmatively their continued interest in observer status. Not later than 120 days before a Ministerial meeting where observers will be reviewed, the SAO Chair shall circulate to the Arctic States and Permanent Participants a list of all accredited observers and up to date information on their activities relevant to the work of the Arctic Council.*

- “Ad-hoc observer” status for specific meetings may be granted to the present applicants for observer status according to the Rules of Procedure until the Ministers have decided upon their applications. Ad-hoc observer status will no longer be applied otherwise and appropriate amendments will be made to the Rules of Procedure.

Observer manual:

An observer manual will be published by the Arctic Council to guide the Council’s subsidiary bodies in relation to meeting logistics and the roles played by observers.

The Arctic Council adopted an Observer Manual for Subsidiary Bodies in 2013.³⁷³ The Manual has been published in a brochure format with the updated Rules of Procedure.³⁷⁴ The Observer Manual states, in part, that:

*Observer status continues for such time as consensus exists among Ministers. Any observer that engages in activities which are at odds with the Ottawa Declaration or with the Rules of Procedure will have its status as an observer suspended.*³⁷⁵

The Arctic Council Chairs

The Chair of the Arctic Council rotates every two years at the biennial ministerial meeting among the eight members of the Arctic Council. The Chairs have been, in chronological order:

Canada	1996-1998	United States	1998-2000
Finland	2000-2002	Iceland	2002-2004
Russian Federation	2004-2006	Norway	2006-2009
Denmark	2009-2011	Sweden	2011-2013
Canada	2013-2015	United States	2015-2017

The Chair sets the program for its term. The program set by the United States for its term 2015-2017 focuses on three crucial areas: improving economic and living conditions; Arctic Ocean safety, security and stewardship; and addressing the impacts of climate change.³⁷⁶

Finland is next in line to assume the Arctic Council Chair in 2017. Finland has announced its priorities for its chairmanship 2017-2019: implementation of the Paris Agreement on climate change and the UN sustainable development goals in Arctic cooperation, strengthen the Arctic Council by securing its continuity, and engage in close collaboration with the Arctic Economic Council.³⁷⁷ The main elements of Finland’s 2013 Arctic strategy remain valid:

³⁷³ The Observers Manual may be found online at <https://oaarchive.arctic-council.org/handle/11374/939>.

³⁷⁴ Arctic Council Rules of Procedure, *supra* note 363.

³⁷⁵ Observer Manual, *supra* note 382, at 5.

³⁷⁶ For details, see U.S. Chairmanship of the Arctic Council, ‘One Arctic: Shared Opportunities, Challenges and Responsibilities,’ <http://www.state.gov/e/oes/ocns/opa/arc/uschair/index.htm>.

³⁷⁷ Press release, ‘Finland promotes environmental protection, stability, vitality and viability in the Arctic Region,’

identifying and elaborating on the four pillars of its Arctic policy -- an Arctic country, Arctic expertise, Sustainable development and environmental considerations, and International cooperation.³⁷⁸

The program for the first Finnish Arctic Council Chairmanship 2000-2002 focused on making the Arctic Council a mouthpiece for the Arctic, by raising the Arctic Council's profile; improving cooperation with the EU; rationalizing the AC's work; intensifying the protection of the Arctic environment, while clarifying actions in support of sustainable development; promoting Arctic research, economic and social development; as well as strengthening the participation of the Arctic people in the development of cooperation in their region.³⁷⁹

The theme of Canada's chairmanship 2013-2015 was "development for the people of the North," with a focus on responsible Arctic resource development, safe Arctic shipping and sustainable circumpolar communities.³⁸⁰

Sweden's Chairmanship Program for the Arctic Council 2011-2013 gave priority to issues that will promote environmentally sustainable development of the Arctic, while making it possible to maintain positive cooperation between the Arctic states and with the indigenous peoples of the region. Activities and cooperation in the Arctic must be based on the rules of international law, including UN conventions and other international agreements. The Arctic Council and its working groups should link their scientifically based reports to practical decision-making and policies. Sweden worked to ensure that previously adopted recommendations are followed up. The Arctic Council should display the shared future vision of the Arctic states so as to consolidate the good cooperation in the region. Its work should be guided by openness and flexibility to enable it to address topical issues.³⁸¹

Denmark's program for 2009-2011 prioritized peoples of the Arctic, the International Polar Year (IPY) legacy, climate change, biodiversity, megatrends in the Arctic, integrated resource management, operational cooperation, and the AC in a new geopolitical framework.³⁸²

(4 October 2016), online: http://vnk.fi/en/article/-/asset_publisher/suomi-tukee-arktisen-alueen-ymparistoa-vakauttaja-elinvoimaa.

³⁷⁸ 'Finland's Strategy for the Arctic Region 2013,' online: <http://vnk.fi/julkaisu?pubid=2411>.

³⁷⁹ <https://oarchive.arctic-council.org/handle/11374/1781>.

³⁸⁰ For details, see http://www.arctic-council.org/images/PDF_attachments/Canadian_Chairmanship/Canadian_Chairmanship_Programme_2013-2015_Brochure_Oct_2013.pdf.

³⁸¹ For details, see 'Sweden's Chairmanship Programme for the Arctic Council 2011-2013 Reference No.: UD11.023,' <http://www.government.se/information-material/2011/01/swedens-chairmanship-programme-for-the-arctic-council-2011-2013/>.

³⁸² <https://www.arcus.org/witness-the-arctic/2009/2/article/496>.

Norway set three top priorities for its 2006-2009 chairmanship: First: integrated resource management; second: climate change – our biggest challenge; and third: review of the Arctic Council structure.³⁸³

*Working Groups Results*³⁸⁴

The Arctic Monitoring and Assessment Program (AMAP) published the Arctic Climate Impact Assessment (2004),³⁸⁵ a 2006 Assessment of Acidification and Arctic Haze, and a 2004 study of Persistent Toxic Substances, Food Security and Indigenous People in the Russian North.³⁸⁶ AMAP also released the Assessment of Oil and Gas Activities in the Arctic in January 2008,³⁸⁷ the Arctic Ocean Acidification Overview Report (2014),³⁸⁸ and the AMAP Arctic Monitoring Assessment (2015): Human Health in the Arctic,³⁸⁹ among many others.

The working group on Conservation of Arctic Flora and Fauna (CAFF)³⁹⁰ launched an ongoing Circumpolar Biodiversity Monitoring Program³⁹¹ in 2006 and a ten-year Arctic Biodiversity Assessment.³⁹² Publications include, for example, Arctic Flora and Fauna: Status and Conservation (2001),³⁹³ Arctic Flora and Fauna: Recommendation for Conservation (2002),³⁹⁴ Protected Areas of the Arctic: Conserving a Full Range of Values (2002),³⁹⁵ and Vital Arctic Graphics.³⁹⁶

At its 2015 Ministerial, the Arctic Council welcomed the Arctic Migratory Bird Initiative Action Plan,³⁹⁷ and invited all participants and observers in the Arctic Council to contribute to

³⁸³ <https://www.regjeringen.no/no/aktuelt/the-norwegian-chairmanship-of-the-arctic/id436983/>.

³⁸⁴ Sections 2 and 4 of Part A of the Iqaluit SAO Report to Ministers describe the work of the Working Groups during 2013-2015 and section 1 of Part B their work plans for 2015-2017, online: <https://oaarchive.arctic-council.org/handle/11374/494>. The reports of the working groups to the meetings of the SAO, online: <https://oaarchive.arctic-council.org/handle/11374/250>.

³⁸⁵ Arctic Climate Impact Assessment, online: <http://www.amap.no/acia/index.html>.

³⁸⁶ Arctic Monitoring and Assessment Program, online: <http://www.amap.no/>.

³⁸⁷ 'Arctic Oil and Gas 2007', online: <http://www.amap.no/oga/>.

³⁸⁸ 'Arctic Ocean Acidification 2013: An Overview', online: <http://www.amap.no/documents/doc/arctic-ocean-acidification-2013-an-overview/1061>.

³⁸⁹ Online: <http://library.arcticportal.org/1924/>.

³⁹⁰ Conservation of Arctic and Fauna, online: <https://oaarchive.arctic-council.org/handle/11374/126>.

³⁹¹ Circumpolar Biodiversity Monitoring Program, online: <http://caff.is/monitoring>.

³⁹² Arctic Biodiversity Assessment, online: <https://oaarchive.arctic-council.org/handle/11374/133>.

³⁹³ <https://oaarchive.arctic-council.org/handle/11374/169>.

³⁹⁴ 'Arctic Flora and Fauna: Recommendation for Conservation' (2002) online: <http://library.arcticportal.org/1296/1/CAFF-brochure.2002.pdf>.

³⁹⁵ Pagnan and Legare, *Protected Areas of the Arctic: Conserving a Full Range of Values* (2002) online: <http://library.arcticportal.org/1294/1/HCR-10---Protected-Areas-of-the-Arctic--Conserving-a-Full-Range-of-Values-2002.pdf>.

³⁹⁶ 'Vital Arctic Graphics', online: www.grida.no/publications/vg/arctic.

³⁹⁷ Iqaluit Ministerial Declaration, *supra* note 372, para 39. See 'Arctic Migratory Birds Initiative' online: <http://caff.is/strategies-series/317-the-arctic-migratory-birds-initiative-ambi-fact-sheet.pdf>, and the 'Arctic Migratory Birds Initiative Work Plan 2015-2019,' CAFF Strategy Series Report No. 6 (March 2015) online: <http://www.caff.is/administrative-series/295-arctic-migratory-birds-initiative-ambi-work-plan-2015-2019.pdf>. An

this initiative to improve the health of migratory bird populations and the ecosystems on which they depend. The Ministers also approved the Framework for a Pan-Arctic Network of Marine Protected Areas, and decided to continue work to develop such a network, based on the best available knowledge and science in order to strengthen marine ecosystem resilience, taking into account the cultural and sustainable use of marine resources.³⁹⁸

The AMSA Report was prepared under PAME and approved at the 2009 Ministerial meeting in Tromsø, Norway.³⁹⁹

The Assessment made seventeen recommendations in three broad and inter-related themes: Enhancing Arctic Marine Safety, Protecting Arctic People and the Arctic Environment, and Building Arctic Marine Infrastructure.⁴⁰⁰ The focus is on trans-Arctic shipping, the Bering Strait, development of the Polar Code, seafarer training, Arctic nautical mapping, new Arctic navigation warning areas and maritime safety information services, and negotiation of the new Arctic SAR agreement.⁴⁰¹ It closes by raising concerns concerning the continuing — and counterproductive — propensity for unilateral regulation of shipping in the Arctic.

In 2014, PAME issued its Arctic Offshore Oil and Gas Guidelines on systems safety management and safety culture.⁴⁰²

The Sustainable Development Working Group (SDWG)⁴⁰³ published the Survey of Living Conditions in the Arctic (2006); the Arctic Human Development Report (2004); Analysis of Arctic Children and Youth Health Indicators (2005); and International Circumpolar Surveillance: Prevention and Control of Infectious Diseases (2006).⁴⁰⁴

Task Forces

update was provided to the SAO meeting in Portland, Maine 5-6 October 2016, online: https://oaarchive.arctic-council.org/bitstream/handle/11374/1819/EDOCS-3833-v1B-ACSAOUS203_Portland_2016_InfoDoc5_CAFF_Memo_AMBI.pdf?sequence=1&isAllowed=y. Singapore will host a AMBI workshop in January 2017.

³⁹⁸ Iqaluit Ministerial Declaration, *supra* note 382, para 40.

³⁹⁹ See AMSA 2009 Report, *supra* note 18. See also E J Molenaar, 'Arctic Marine Shipping: Overview of the International Legal Framework, Gaps, and Options' (2009) 18 *Journal of Transnational Law & Policy* 289.

⁴⁰⁰ The AMSA's recommendations are collated in Appendix I to Lawson W Brigham and Michael P Sfraga (eds), 'Considering a Roadmap Forward: The Arctic University of the Arctic Institute for Applied Circumpolar Policy' (University of Alaska Fairbanks and University of the Arctic Institute for Applied Circumpolar Policy, 2010) online: http://www.uarctic.org/media/732588/AMSA_workshop_report_final_092010_-3FYy.pdf.

⁴⁰¹ On the 2011 Arctic SAR Agreement, see *supra* Chapter 7.

⁴⁰² PAME, *supra* note 127.

⁴⁰³ Sustainable Development Working Group, online: <https://oaarchive.arctic-council.org/handle/11374/4>.

⁴⁰⁴ <https://oaarchive.arctic-council.org/handle/11374/32>.

Task Force for Action on Black Carbon and Methane (TFBCM)

The 2013 Kiruna Declaration provided that the Ministers decided “to establish a Task Force to develop arrangements on actions to achieve enhanced black carbon and methane emission reductions in the Arctic, and report at the next Ministerial meeting in 2015.”

The TFBCM was co-chaired by Canada and Sweden and included representatives from all Arctic States and most Permanent Participants. Arctic Council observers (including China, Germany, Japan, Republic of Korea, the European Union, the United Kingdom and the United Nations Environmental Program) also participated in various meetings of the Task Force, and relevant experts provided guidance, as required. The Task Force’s outcome builds on previous technical work undertaken in the Arctic Council by an earlier Task Force on Short Lived Climate Forcers, the Arctic Monitoring Assessment Programme (AMAP), and the Arctic Contaminants Action Program (ACAP).

The Task Force, during the course of its six meetings, successfully delivered on its mandate and developed an Arctic Council Framework for Action on Enhanced Black Carbon and Methane emissions reductions.⁴⁰⁵ As short-lived climate pollutants disproportionately impact the Arctic, their reduction will lead to benefits for the climate with important co-benefits for human health and air quality in the Arctic. This Framework represents a high level commitment of Arctic States to take mitigation action, but is not legally binding. It is an action-oriented document and includes work at the national, regional and global levels to reduce emissions of black carbon and methane.

The Framework lays out a common vision with enhanced, ambitious, national and collective action to accelerate the decline in overall black carbon emissions and to significantly reduce overall methane emissions. The work of the Task Force also resulted in the creation of an Expert Group with specific terms of reference to support progress on the implementation of the Framework and to continuously drive ambition. It includes a further commitment to provide black carbon inventories starting in 2015 and provides guidance to report on national actions; to establish an aggregate summary of black carbon and methane emissions; and to adopt an ambitious, aspirational and quantitative collective goal on black carbon, and to consider additional goals, by the next Arctic Council Ministerial meeting in 2017. Recognising that black carbon and methane emitted beyond the borders of Arctic States have a substantial impact on the Arctic, the Framework notes that Arctic States look forward to Arctic Council Observer states taking similar action.

The Framework also acknowledges that reducing anthropogenic carbon dioxide emissions remains the most important challenge to address global and Arctic climate change.

⁴⁰⁵ On the Framework, see Annex 4 to the Iqaluit SAO Report to Ministers, online: https://oaarchive.arctic-council.org/bitstream/handle/11374/494/ACMMCA09_Iqaluit_2015_Iqaluit_SAO_Report_to_Ministers_formatted_v.pdf.pdf?sequence=1&isAllowed=y.

Arctic States view the Framework as supporting and complementing the goals of the United Nations Framework Convention on Climate Change (UNFCCC).

Russia considers the expert group to be a working organ of the Arctic Council and to be a part of the Arctic Council structure. The participating states submit any national reports related to black carbon and methane emissions on their own initiative and within the framework of their participation in the work of the expert group. These reports are voluntary exchanges of information in accordance with international law and the national legislation of the respective participating state. In this context, “high level political commitments” mean general guidelines for the further cooperation between the states on the issue of the regulation of the black carbon and methane emissions. The document of the Arctic Council “Enhanced Black Carbon and Methane Reductions: An Arctic Council Framework for Action” will be implemented by the Russian Federation in the context of this understanding.⁴⁰⁶

At the 2015 Ministerial, the Ministers decided to implement the Framework for Action on Enhanced Black Carbon and Methane Emissions Reductions and established an expert group to report on progress to the SAO.⁴⁰⁷

Separately, the IMO has been considering the impact on the Arctic of emissions of Black Carbon from international shipping. At MEPC 68, May 2015, the Committee agreed on a definition of Black Carbon for international shipping and noted the need for Black Carbon measurement studies so as to gain experience with the application of the definition and measurement methods. The Committee agreed on the need for a protocol for any voluntary measurement studies to collect data to identify the most appropriate measurement method(s) of Black Carbon emissions from international shipping. Finally the Committee noted that it was not possible at this stage to consider possible control measures to reduce the impact on the Arctic of emissions of Black Carbon from international shipping.⁴⁰⁸

A study done for the World Wildlife Fund of Canada suggests that switching to liquid natural gas for Arctic shipping could greatly reduce the risks associate with the use of heavy (diesel) fuel oil, the major source of black carbon.⁴⁰⁹

⁴⁰⁶ Iqaluit SAO Report to Ministers, *supra* note 414.

⁴⁰⁷ Iqaluit Ministerial Declaration, *supra* note 382, para 24.

⁴⁰⁸ MEPC 68/21, *supra* note 251, at 19-21 paras 3.24-3.30. PPR 3 (February 2016) developed a draft protocol for any voluntary measurement studies to collect data. IMO, *Report to MEPC*, PPR 3/22, para. 8.10 and PPR 3/WP.4 Annex 1 (14 March 2016), and invited submission of data derived from its application to PPR 4. PPR 3/22, para 22.2.6. MEPC 70 noted these developments. MEPC 70/18, p. 21 para 5.4. For further information on black carbon, see Fathom, ‘Fathom Spotlight: 8 Things You Need to Know about Black Carbon and the Shipping Industry’ (3 August 2015), Ship & Bunker online: <http://shipandbunker.com/news/features/fathom-spotlight/767141-fathom-spotlight-8-things-you-need-to-know-about-black-carbon-and-the-shipping-industry>.

⁴⁰⁹ Vard Marine Inc., ‘Fuel Alternatives for Arctic Shipping’ rev. 1 (20 April 2015) online: http://awsassets.wwf.ca/downloads/vard_313_000_01_fuel_alternatives_letter_final.pdf. See further *supra* note 294 and accompanying text.

Task Force on Arctic Marine Oil Pollution Prevention (TFOPP)

The TFOPP was established at the Kiruna Ministerial in 2013 and was mandated to ‘identify how best the Arctic Council can contribute to marine oil pollution prevention in the Arctic, recommend a concrete plan of action, and, as appropriate, develop cooperative arrangements to implement the Action Plan’.

The Kiruna Declaration provided that the Ministers decided ‘to establish a Task Force to develop an Arctic Council action plan or other arrangement on oil pollution prevention, and to present the outcomes of its work and any recommendations for further action at the next Ministerial meeting in 2015’.

The TFOPP was co-chaired by Norway and the Russian Federation, represented in each case by the Senior Arctic Official. Participants in Task Force meetings included representatives from all Arctic States, as well as from two Permanent Participants the Inuit Circumpolar Council and the Aleut International Association. Working Groups EPPR and PAME participated in the meetings, as well as Observers to the Arctic Council took part a, including China, France, Germany, Italy, India, Japan, the United Kingdom, the Republic of Korea, Singapore, the Circumpolar Conservation Union (CCU), the Nordic Council of Ministers, the Standing Committee of the Parliamentarians of the Arctic Region (SCPAR), the World Wide Fund for Nature (WWF), the European Union and UArctic. The co-chairs invited additional expert input from the Association of Oil and Gas Producers and the International Association of Drilling Contractors.

The work of the TFOPP was conducted during five meetings and associated inter-sessional work. The first meeting took place in the autumn of 2013, the third meeting in June 2014, the fourth meeting in September 2014, and the fifth meeting 24-25 November 2014. Through this intensive process, consensus developed on a non-binding document.

The Framework Plan—although not a legally-binding document—fulfils the Task Force’s mandate by offering a route forward for cooperation among the eight Arctic states on the prevention of oil pollution in the marine areas of the Arctic connected to both the petroleum sector and the shipping sector. The plan focuses on enhancing the exchange of information among participants in the Framework Plan.

The Framework Plan addresses themes such as:

- Development of an overview of measures for improved safety in petroleum activity;
- Promotion of standardisation initiatives within the sphere the petroleum sector;
- Strengthening of cooperation between national regulators of petroleum activity;
- Strengthening of maritime traffic monitoring and management;

- Improvement of maritime services, including navigational charts and met-ocean forecasts; and
- Reduction of risks associated with the use and transport of heavy fuel oil.⁴¹⁰

Implementation of the Framework Plan is left in the hands of the appropriate and competent national authorities in each State, and the Framework Plan includes explicit acknowledgement that the implementation of the Framework Plan may be discussed during the meetings of relevant bodies of the Arctic Council.

As part of the Framework Plan, the Arctic States intend to promote cooperation between their competent national authorities on issues concerning the prevention of Arctic marine oil pollution connected to the petroleum sector. Dialogue has already begun between the relevant Arctic regulators with the purpose of formalising future cooperation.⁴¹¹

At the 2015 Ministerial, the Ministers welcomed the Framework Plan, and decided to begin implementing the Framework Plan through Working Groups, expert-level dialogues, and further actions to prevent marine oil pollution, including regular exchanges of knowledge and experience among Arctic offshore petroleum regulators.⁴¹²

Task Force on Enhancing Scientific Cooperation in the Arctic (SCTF)

The SCTF was also established in 2013 with the objective of working towards an arrangement on improved scientific research cooperation among the eight Arctic States, reporting to the next Arctic Council Ministerial Meeting in 2015.

Under the co-chairmanship of representatives from Sweden, the Russian Federation and the United States, the Scientific Cooperation Task Force met five times, with participation from all Arctic States, Permanent Participants, and some observers. Delegations confirmed the importance of scientific research in the Arctic, the role of traditional knowledge and, given the elevated cost of performing research in the Arctic, the importance of efficiency and collaboration to further research in areas of common interest. Delegations then focused on the need to remove obstacles to collaboration and to support efficiency in collaborative Arctic research. The Task Force identified several key areas where shared efforts could improve scientific cooperation including sharing of data and metadata, facilitating the movement of people, samples and equipment across borders for the purposes of conducting research, facilitating logistics and access to research areas, and facilitating access to research facilities.

⁴¹⁰ The text of the Framework Plan can be found in annex 3 of the Iqaluit SAO Report to Ministers, 2015, online: https://oaarchive.arctic-council.org/bitstream/handle/11374/494/ACMMCA09_Iqaluit_2015_Iqaluit_SAO_Report_to_Ministers_formatted_v.pdf.pdf?sequence=1&isAllowed=y.

⁴¹¹ Iqaluit SAO Report to Ministers, *supra* note 414.

⁴¹² Iqaluit Ministerial Declaration, *supra* note 382, para 32.

The Task Force concluded that a high-level agreement was the best mechanism to advance the objectives set by the Ministers in Kiruna, and the text of a draft Memorandum of Understanding was initially discussed. In the course of these discussions, it became clear that addressing issues such as the movement of people and equipment across borders and access to research areas may require significant involvement from a wide range of government agencies and stakeholders that do not have a science mandate. It was agreed that resolution on these issues may benefit from the force of a legally binding agreement.

The Task Force recommended to SAOs, for inclusion in the Iqaluit Declaration, that the Task Force work towards a legally binding Agreement on scientific cooperation with a view to completing its work during the US Chairmanship.

Through a series of meetings held in Stockholm, Helsinki, Reykjavik, Tromsø and Oslo, the Task Force identified the importance of improving data sharing and simplifying the logistics and regulations involved with research clearances and cross-border movements of researchers and their equipment. Arctic States presented their lists of national research priorities, which were then compiled into a list of many shared priorities. These priorities are also shared by international science planning bodies.

The International Arctic Science Committee made a presentation emphasising how cross-border logistics has been made easier during the International Polar Year of 2007/2008, as a possible model for more permanent improvements. The text of a non-binding Memorandum of Understanding was developed as a basis for further discussions. Because several delegations felt that it would be preferable to present a legally binding agreement to Ministers, all delegations agreed to identify domestic jurisdictional implications.

Using the draft MOU as a starting point, delegations discussed the scope of the agreement, underlying issues related to customs and border regulations and the role of non-parties in relation to the agreement, and elements that could be included. It was recognised that as the next meeting would involve negotiation of a legally binding agreement, that the meeting would only go forward if all Arctic State delegations were ready to proceed at that point. At the last Task Force meeting, delegations discussed the text of a legally binding agreement. It was understood that this work would not be considered formal negotiations on a legally binding agreement, but would focus on clarifying objectives, terms of reference and other parameters of the possible agreement.⁴¹³

At the 2015 Ministerial, the Ministers acknowledged the importance of scientific cooperation to the circumpolar region, noted the work on Enhancing Scientific Cooperation in the Arctic, and decided to extend the Task Force mandate, including to work towards a legally-

⁴¹³ Iqaluit SAO Report to Ministers, *supra* note 414.

binding agreement on scientific cooperation, with a view to completing its work no later than the next Ministerial meeting in 2017.⁴¹⁴ See further Chapter 13 on MSR.

Task Force on Arctic Marine Cooperation (TFAMC)

The TFAMC was formed by the Ministers in 2015 to consider future needs for strengthened cooperation on Arctic marine areas, as well as mechanisms to meet these needs, and to make recommendations on the nature and scope of any such mechanisms. It is to complete its mandate no later than the 2017 ministerial meeting. Its first meeting took place in Oslo 21-22 September 2015.⁴¹⁵

Task Force on Telecommunications Infrastructure in the Arctic (TFTIA)

The TFTIA was established by the Ministers in 2015 to coordinate a circumpolar assessment of telecommunications infrastructure and networks, and deliver a completed assessment to include, among other things, recommendations for public-private partnerships to enhance telecommunications access and service in the Arctic. The first meeting of the TFTIA took place in Chicago 23-24 September 2015; the third meeting in Copenhagen 2-8 September 2016; the fourth meeting is scheduled for Helsinki 7-8 December 2016. The Task Force is to report to Ministers in 2017.

Expert Groups

The Expert Group on Enhanced Black Carbon and Methane Emissions Reductions was established in 2015 reporting to Senior Arctic Officials to report on collective progress. The Ministers called on Observers to join in these actions given the global nature of the challenge. Its first meeting was expected in **early 2016**. The Expert Group is tasked to prepare, on a once every two-year cycle of the Arctic Council chairmanship, a high level “Summary of Progress and Recommendations” report, with appropriate conclusions and recommendations.⁴¹⁶

Arctic Economic Council (AEC)

Task Force to Facilitate the Creation of a Circumpolar Business Forum

This task force was established in 2013. Its main objective was to advance circumpolar business development by creating a Circumpolar Business Forum (CBF) to bring circumpolar

⁴¹⁴ Iqaluit Ministerial Declaration, *supra* note 382, at para 44. See further Chapter 13 on marine scientific research in the Arctic.

⁴¹⁵ *Id.* The SAO Report to Ministers, *supra* note 382, at 77, had recommended the establishment of a Task Force on Arctic Marine Cooperation to consider future needs for strengthened cooperation in Arctic marine areas as well as a mechanism such as a regional seas program. However, the Iqaluit Declaration 2015, para 50, adopted the SAO Report, ‘including its working group deliverables and work plans’ and instructed the SAO ‘to review and adjust the mandates and work plans of the Arctic Council working groups and other subsidiary bodies as necessary’.

⁴¹⁶ The terms of reference for this expert group are contained in Annex C to the Framework Plan, online: https://oaarchive.arctic-council.org/bitstream/handle/11374/494/ACMMCA09_Iqaluit_2015_Iqaluit_SAO_Report_to_Ministers_formatted_v.pdf.pdf?sequence=1&isAllowed=y. See further the expert group’s webpage: <https://oaarchive.arctic-council.org/handle/11374/1167>.

business perspectives to the work of the Arctic Council, providing value to Arctic States and Permanent Participants. The CBF will focus initially on responsible resource development, and would provide a venue for industries, and indigenous businesses operating in the Arctic to advance Arctic-oriented business interests, share best practices, forge partnerships, and engage in deeper cooperation.⁴¹⁷

The Task Force met shortly after the Arctic Council Ministerial meeting in May 2013 and a report related to the CBF was submitted to SAOs in December 2013, proposing a new name for the CBF, which the SAO approved in January 2014. The forum is now called the ‘Arctic Economic Council’ (AEC).⁴¹⁸ The Task Force was then dissolved. At the March 2014 SAO meeting in Yellowknife, the SAO approved a document on facilitating the creation of the AEC:

OVERALL AIM

Fostering sustainable development, including economic growth, environmental protection and social development in the Arctic region.

OBJECTIVES

The Member States and Permanent Participants of the Arctic Council support the establishment of an independent body of business representatives, the Arctic Economic Council (AEC), to:

- i. Strengthen the Arctic Council by enhancing regional economic cooperation.*
- ii. Inform through the views of business the work of the Arctic Council.*
- iii. Facilitate and foster business opportunities, while advancing sustainable development of the Arctic.*
- iv. Contribute to a stable, predictable and transparent business climate.*
- v. Facilitate trade and investment in the Arctic.*
- vi. Maximize the potential for Arctic economic activities to take into account environmental protection and to positively impact the communities, lives and culture of Arctic indigenous peoples.*

IMPLEMENTATION

The AEC will support these objectives by:

- i. Supporting high standards of business operations and sustainable business activities in the Arctic through the sharing of information, including best practices and technological solutions.*
- ii. Advancing efforts to protect the environment.*

⁴¹⁷ *Ibid* at 39. See the task force’s report to the SAO March 2014 meeting (10 December 2013) online: www.arctic-council.org/index.php/en/task-forces/75-tfcbf.

⁴¹⁸ ‘Arctic Economic Council’ (28 January 2014) online: <http://www.arctic-council.org/index.php/en/arctic-economic-council>.

iii. *Facilitating business and economic development of indigenous peoples and small and medium enterprises in the Arctic.*

PROCEDURES

- i. *By following the program and work of the Arctic Council, the AEC may interact with the Arctic Council on all relevant levels pursuant to Rules 39 and 40 of the Arctic Council Rules of Procedure.*
- ii. *The AEC may put forward proposals and reports to the Arctic Council to realize the aforementioned objectives.*
- iii. *Consistent with national laws, procedures, practices and traditions, each Arctic State and Permanent Participant may, within two months of approval of these recommendations by Senior Arctic Officials, provide the names of up to three representatives to attend the AEC's founding meeting.*
- iv. *In the future, the membership of the AEC will not be limited to such nominations and may accept self-nominations from the Arctic business community. The AEC shall determine the maximum size of its membership, governance, structure and activities, while ensuring strong participation from indigenous businesses.*
- v. *The Chair of the Arctic Council may assist in arranging an initial meeting of the AEC.*
- vi. *The Arctic Council may propose areas of focus for the AEC to consider, beginning with responsible resource development.*⁴¹⁹

The founding meeting of the AEC took place on 2 and 3 September 2014 in Iqaluit, Nunavit, Canada. As an independent body, the AEC will decide on its membership, role and responsibilities, governance, structure, and activities, while ensuring strong participation from indigenous businesses. It may inform the work of the Arctic Council through the views of business.⁴²⁰ A year after its founding meeting, the AEC opened its permanent office in Tromsø, home of the Arctic Council secretariat.⁴²¹

On 23 April 2015, at its second meeting the AEC adopted the following Terms of Reference:

Introduction

1. *The Arctic Economic Council (AEC) is created to:*

⁴¹⁹ 'Facilitating the Creation of the Arctic Economic Council', Annex to the Final Report of the SAO meeting (Yellowknife, Canada, 26-27 March 2014) at 15-16 (2 June 2014) online: <https://oaarchive.arctic-council.org/handle/11374/1290> [reformatted for clarity].

⁴²⁰ ahnationtalk, 'Founding Meeting of the Arctic Economic Council Scheduled' *NationTalk* (27 August 2014) online: <http://nationtalk.ca/story/founding-meeting-of-the-arctic-economic-council-scheduled/>. This document also lists the representatives to the AEC to attend the founding meeting.

⁴²¹ Kevin McGwin, 'Open for Business,' *The Arctic Journal* (10 September 2015) online: www.arcticjournal.com/business/1820/open-business.

- a. Serve as a primary forum for interaction between the Arctic Council and the circumpolar business community;*
- b. Provide advice and a business perspective on specific areas of cooperation in the circumpolar region and the activities of the Arctic Council; and*
- c. Facilitate Arctic business-to-business and economic development, as well as sharing of best practices, technological solutions, standards, and other pertinent information.*

Objectives

- 2. The objectives of the AEC are to:*
 - a. Strengthen the Arctic Council by enhancing regional economic cooperation;*
 - b. Inform the work of the Arctic Council through the view of business;*
 - c. Facilitate and foster business opportunities in a manner that advances sustainable development of the Arctic;*
 - d. Facilitate responsible trade and investment in the Arctic;*
 - e. Maximize the potential for Arctic economic activities to take into account environmental protection;*
 - f. Contribute to a stable, predictable and transparent business climate;*
 - g. Positively impact the communities, lives and culture of Arctic Indigenous peoples; and*
 - h. Include in its activities those with an interest in and activities concerning circumpolar business and economic development.*
- 3. These objectives are to be elaborated in an AEC strategic framework and accompanying work plan that will be regularly updated and approved by AEC representatives.*

Activities

- 4. The AEC will carry out activities that support high standards of business operations and sustainable business activities in the Arctic through the sharing of information, including best practices and technological solutions.*
- 5. AEC activities will be undertaken with a view to advancing sustainable economic development, including responsible resource development, in a manner consistent with ongoing efforts to protect the environment.*
- 6. In doing so, the AEC will decide on thematic areas to advance its work, such as:*
 - a. Establishing strong market connections between the Arctic states;*
 - b. Encouraging public-private partnerships for infrastructure investments;*
 - c. Creating stable and predictable regulatory frameworks;*
 - d. Facilitating knowledge and data exchange between industry and academia; and*
 - e. Ensuring the incorporation of indigenous business, stewardship and traditional knowledge.*
- 7. Concrete activities will be pursued in specific sectors, such as:*

- a. *Infrastructure and related matters including*
 - *maritime transportation;*
 - *communications and IT;*
 - *aviation;*
 - b. *Energy and natural resources;*
 - c. *Tourism;*
 - d. *Fishing and marine resources;*
 - e. *Human resources investments and capacity building;*
 - f. *Traditional Arctic livelihoods.*
8. *Working groups will be established to develop and implement AEC activities.*
Working groups will be responsible for:
- a. *Conceptualizing and developing a project, including securing funding and administrative support;*
 - b. *Implementing a project;*
 - c. *Reporting to the AEC during meetings on the progress of a project.*

Governance

9. *The AEC is an independent, self-funding body of business representatives, established in accordance with recommendations accepted by the Arctic Council's Senior Arctic Officials.*
10. *By following the program and work of the Arctic Council, the AEC may interact with the Arctic Council on all relevant levels pursuant to Rules 39 and 40 of the Arctic Council Rules of Procedure.*
11. *The AEC shall select a Chair and Vice-Chair(s) - based on discussions amongst AEC representatives followed by general acclamation - at the biennial AEC meetings that are scheduled to take place at the time as the Arctic Council Ministerial meetings (ref art. 19).*
12. *The nationality of the Chair shall, for the next two terms covering 2015-2019, mirror that of the Arctic Council state holding the Arctic Council chairmanship.*
13. *The Chair and Vice-Chair(s) form an Executive Committee with the following understanding:*
- a. *An indigenous organization representative shall always be selected as a member of the Executive Committee;*
 - b. *The outgoing Chair shall remain a member of the Executive Committee for the executive term immediately following their term as Chair;*
 - c. *One of the incoming Vice-Chairs will be designated as Chair in waiting, and will be expected to resume the Chair role at the start of the following Executive term.*
14. *The duties of the AEC Chair in coordination with the Vice-Chair(s) include:*
- a. *Oversee the strategy and implementation of AEC activities;*
 - b. *Convene and preside over AEC meetings.*

Representatives

15. *Each Arctic state and Permanent Participant organization of the Arctic Council may name up to three business representatives to the AEC. One business representative from each of the Arctic states and Arctic Council permanent participant organizations form the governing Board of the AEC.*
16. *Recognizing that Arctic business actors extend beyond those representing the Arctic Council states and Permanent Participant organizations, the AEC will create mechanisms for involving the broader Arctic business community, for instance through the working groups. This will further enrich AEC discussions, and will have the potential to expand the scope of AEC activities.*
17. *The AEC will ensure and encourage strong participation from indigenous businesses in its on-going work.*

Meetings

18. *The AEC will meet at least once a year. Intersessional consultations will take place through video/teleconference and other appropriate means.*
19. *The AEC may consider options for organizing biennial meetings at the same time and place as the meeting of the Arctic Council Ministers.*

Administrative Support

20. *The nature of administrative support and funding for this support will be decided by the AEC Chair and the representatives.*

Amendments

21. *These Terms of Reference may be amended at any meeting of the AEC.*⁴²²

At its 2016 Annual Meeting the AEC adopted and released its Rules of Procedure,⁴²³ Strategic Plan,⁴²⁴ Membership Application Process,⁴²⁵ and Membership Dues Structure.⁴²⁶

As noted in Chapter 5, the AEC Telecommunications Infrastructure Working Group issued on 10 January 2017 its recommendations for an interconnected Arctic.

⁴²² http://arcticjournal.com/sites/default/files/enclosure-iii_terms-of-reference.pdf.

⁴²³ <http://arcticeconomiccouncil.com/wp-content/uploads/2016/04/AEC-Rules-of-Procedure-1.pdf>.

⁴²⁴ <http://arcticeconomiccouncil.com/wp-content/uploads/2016/04/AEC-Strategic-Plan-1.pdf>.

⁴²⁵ <http://arcticeconomiccouncil.com/wp-content/uploads/2016/04/AEC-Membership-Application-Process-1.pdf>.

⁴²⁶ <http://arcticeconomiccouncil.com/wp-content/uploads/2016/04/AEC-Membership-Dues-Structure-1.pdf>.

On 10 February 2017 the AEC Governance Committee approved the first application as a Northern Partner, the Arctic Slope Regional Corporation.⁴²⁷

Conference of Parliamentarians of the Arctic Region (CPAR)

CPAR is a biennial conference for parliamentarians representing the eight Arctic countries and the European Parliament. The first Parliamentary Conference concerning Arctic cooperation was held in Reykjavik, Iceland in 1993. The twelfth conference was held in the Ulan-Ude, Russia, 14-17 June 2016. Singapore was represented by Patrick Tay (MP) and Daniel Lee (MFA).

The 2104 conference was held in the Whitehorse, Canada, 9-11 September 2014. Minister of State in the Prime Minister's Office and the Ministry of Culture, Community and Youth, Mr. Sam Tan attended the CPAR as Singapore's Observer of the Arctic Council.⁴²⁸

The biennial conference is attended by representatives from the national parliaments of the Arctic States and the European Parliament. The Arctic indigenous peoples are also permanent participants to the cooperation. Observers participate from governments and inter-parliamentary organisations as well as from observer states and relevant international organisations.

The Standing Committee of Parliamentarians of the Arctic Region, which is responsible for the work between conferences, started its activities in September 1994. The Standing Committee meets 3-4 times a year in the different Arctic countries to discuss current Arctic issues and the follow-up of the Conference Statement from the latest conference.

One of the main priorities of the Standing Committee was originally to support the establishment of the Arctic Council. Since then, the Standing Committee has worked actively to promote the work of the Council and participates in the meetings of the Arctic Council as an observer. Today, the Committee is engaged in topics like: shipping possibilities, education and research, human development and climate change.⁴²⁹

The Conference Statement from the 12th Conference asked the governments and the parliaments in the Arctic Region, the Arctic Council and the institutions of the European Union, where appropriate:

⁴²⁷ AEC Press Release, 'Arctic Economic Council Brings on First Northern Partner' (10 Feb 2017) online: www.preeeswire.com/news-releases/arctic-economic-council-brings-on-first-northern-partner-300405672.html.

⁴²⁸ Ministry of Foreign Affairs Singapore, Press Release (8 September 2014) online: http://www.mfa.gov.sg/content/mfa/media_centre/press_room/pr/2014/201409/press_20140908.html. The '11th CPAR Conference Statement' (11 September 2014) is online: <http://www.arcticparl.org/files/conference-statement.pdf>. See further the Standing Committee letter to the Honourable Leona Aglukkaq and Secretary Kerry, 10 March 2015, online: <http://www.arcticparl.org/files/letter%2C-kerry-and-aglukkaq.pdf>.

⁴²⁹ Adapted from CPAR website, online: <http://www.arcticparl.org/about.aspx>.

Regarding Arctic Cooperation in Light of COP 21 in Paris to:

- 1. Organize an Arctic Council meeting between the ministers responsible for climate to take new initiatives to reduce emissions of CO₂ and short-lived climate forcers;*
- 2. Explore new ways to involve the observers to the Arctic Council in the work to combat climate change by reducing emissions of CO₂ and black carbon;*
- 3. Continue the work in the International Maritime Organization with guidelines regarding the use of heavy fuel oil in the Arctic, and continue to support the development of renewable energy suitable for the Arctic to drastically reduce black carbon emissions;*
- 4. Intensify collaborative work towards sustainability and adaptation to climate change in the Arctic;*
- 5. Emphasize the importance of scientific work between Arctic countries and other relevant stakeholders to ensure the continuation of the research cooperation, including appropriate funding;*
- 6. Intensify multidisciplinary research concerning the role of the Arctic in the global climate system and ensure that research outcome and results are openly shared internationally;*
- 7. Raise a strong Arctic message to communicate the consequences of climate change in the Arctic at all relevant international meetings;*
- 8. Promote the development of national, regional and local climate change adaptation plans in the Arctic, including the work on building resilience.*

Regarding Inhabitants in a Developing Arctic to:

- 9. Maintain strong international cooperation to further peace and stability in the Arctic region where more than 4 million people live;*
- 10. Create an Arctic Circumpolar Mobility Program to encourage the mobility of students as well as scientists among the Arctic Council member states and observers with a focus on mutual understanding, collaboration, innovation and sustainable economic development;*
- 11. Support relevant capacity building, particularly through education and training, to ensure that local communities will continue to benefit from economic development;*
- 12. Strengthen the work to improve and monitor Arctic living-conditions and work actively towards finding real solutions to issues concerning human health and well-being in the Arctic, especially mental health;*

13. *Continue the work on adaptation and resilience in a changing Arctic, including climate change mitigation, focusing on new possibilities for the people and the region;*
14. *Acknowledge the importance of creating future socio-economic possibilities to entice youth, particularly young women to stay or return and fully participate in their local communities;*
15. *Promote, protect and further develop the languages of indigenous peoples in the Arctic;*
16. *Investigate solutions to the issues of food security in the Arctic;*
17. *Take note of the negative consequences which (seal) bans of products of living resources from indigenous communities have;*
18. *Acknowledge that sustainable harvest of living marine resources in the Arctic is fundamental to the current and future welfare of the inhabitants in the Arctic.*

Regarding New Possibilities in the Arctic to:

19. *Strengthen environmental safety and sustainable economic cooperation between the Arctic states, regions and local communities to increase employment, prosperity and quality of life while applying the highest environmental standards;*
20. *Continue the work to assess the large fresh water resources in the Arctic, including management and local, regional and global implications;*
21. *Establish an Arctic innovation system which links the scientific community, the business sector, political society, local populations and Arctic research data, for instance through an Arctic mentorship and mobility program;*
22. *Promote the work of the Arctic Economic Council as an independent organization that facilitates Arctic business-to-business activities and responsible economic development;*
23. *Exchange experiences and best practices about how industrial projects and traditional practices and industries can coexist and benefit from one another;*
24. *Promote cooperation in order to develop new technological solutions and the highest technical standards for a more sustainable mining industry in challenging Arctic conditions and respecting the Arctic environment;*
25. *Find mechanisms to incorporate Corporate Social Responsibility – CSR – for companies doing business in the Arctic Region through cooperation with representatives of the business sector, such as the Arctic Economic Council;*

26. *Explore the potential of voluntary mechanisms to encourage high industry standards in social and environmental performance, such as highlighting 'best performances' in an Arctic Corporate Responsibility Index based on for instance the Arctic Business Investment Protocol and UN Global Compact Initiative;*
27. *While developing new industries in the Arctic region, remembering a continuous focus on a sustainable use of our living resources, especially a close international collaboration regarding the Arctic fish stocks;*
28. *Further develop close collaborations across the Arctic concerning experiences and best practices within the sector of sustainable tourism in the Arctic region;*
29. *Together stimulate new innovative solutions, research and local competence building which address the needs of future Arctic communities;*
30. *Develop further access and improve safety for the people working, visiting or living in the Arctic using the highest standards with a continuous focus on the development of new infrastructure and communication solutions with technology and satellites.*

Regarding the 20th anniversary of the Arctic Council to:

31. *Secure the role and participation of the Permanent Participants in the Arctic Council and provide mechanisms to increase their financial and human resources to participate fully in all the activities of the Arctic Council;*
32. *Address the issue of the Observers in the Arctic Council, and the possibility for these observers to speak and interact directly with states and Permanent Participants at Arctic Council meetings and its Working Groups, without diminishing the leading role of Arctic States and Permanent Participants;*
33. *Ensure that observers that represent Arctic peoples and organizations maintain the possibility to speak and be directly involved in the Arctic Council work;*
34. *Establish an adequate and stable budget to support the work and future goals of the Arctic Council;*
35. *Include more voices from the peoples living in the Arctic, such as regional organizations, into the work of the Arctic Council to make sure that they can influence the direction of the Arctic cooperation;*
36. *Reinforce links and cooperation with other international bodies and policy frameworks which focus their activities on cross-border cooperation in the Arctic region, like the Barents Euro-Arctic Council / Barents Regional Council and the Northern Dimension;*

37. Exchange best practices and explore new ways on how to nationally involve regional and local governments in decision-making processes in the Arctic Council;

38. Hold an Arctic Summit involving heads of state and governments of the Arctic Council member states, as well as the heads of the Permanent Participants;

39. Follow-up on the conclusions from the international audit about the work in the Arctic Council.

Furthermore the Conference:

40. Acknowledges the importance of, and supports, the active participation of indigenous peoples throughout all ongoing and future activities and processes in the Arctic Region;

41. Acknowledges the interest and presence of parliamentary observers and representatives from governments and non-governmental agencies at this Conference, and recognizes their important role in relaying the messages and supporting the actions herein discussed;

42. Welcomes the forthcoming Finnish Chairmanship of the Arctic Council and looks forward to continued cooperation with the Arctic Council;

43. Welcomes and accepts the invitation of the Parliament of Finland to host the thirteenth Conference in 2018.⁴³⁰

⁴³⁰ <http://www.arcticparl.org/conferences.aspx?id=6776>.

Chapter 13 Marine Scientific Research in the Arctic Ocean

Marine scientific research (MSR) in the Arctic Ocean is governed by Part XIII of the Law of the Sea Convention. However, MSR is not defined in the Convention. MSR is generally understood to be the general term most often used to describe those activities undertaken in the ocean and coastal waters to expand scientific knowledge of the marine environment and its processes.⁴³¹ MSR includes physical oceanography, marine chemistry, marine biology, scientific ocean drilling and coring, geological/geophysical research, as well as other activities with a scientific purpose. Part XIII does not distinguish between pure and applied MSR.

The general principles governing MSR are set out in article 240:

In the conduct of marine scientific research the following principles shall apply:

- (a) marine scientific research shall be conducted exclusively for peaceful purposes;*
- (b) marine scientific research shall be conducted with appropriate scientific methods and means compatible with this Convention;*
- (c) marine scientific research shall not unjustifiably interfere with other legitimate uses of the sea compatible with this Convention and shall be duly respected in the course of such uses;*
- (d) marine scientific research shall be conducted in compliance with all relevant regulations adopted in conformity with this Convention including those for the protection and preservation of the marine environment.*

Article 242(2) provides for the dissemination of the results of MSR, as follows:

... States, both individually and in cooperation with other States and with competent international organizations, shall actively promote the flow of scientific data and information and the transfer of knowledge resulting from marine scientific research, especially to developing States, as well as the strengthening of the autonomous marine scientific research capabilities of developing States through, inter alia, programmes to provide adequate education and training of their technical and scientific personnel.

⁴³¹ Accord, G K Walker, General Editor, *Definitions for the Law of the Sea: Terms Not Defined by the 1982 Convention* (Leiden/Boston, Nijhoff, 2012) at 241 (recounting the unsuccessful attempts to define MSR during the Third UN Conference on the Law of the Sea (UNCLOS III)). Compare LOS Convention, Articles 243 ('scientists ... studying the essence of phenomena and processes occurring in the marine environment and the interrelations between them' and 246(3) 'to increase scientific knowledge of the marine environment for the benefit of all mankind'). Accord, AHA Soons, *Marine Scientific Research and the Law of the Sea* (Deventer/Boston, Kluwer, 1982) at 124 [hereinafter, Soons]. See generally M Gorina-Ysern, *An International Regime for Marine Scientific Research* (Ardsley NY, Transnational Publishers, 2003). Japanese law does not define MSR. See Takada, 'Marine Scientific Research in the Exclusive Economic Zone and Japan-China Agreement for Prior Notification (1995-2001),' *Japanese Digest of International Law* JD(III)3, in 44 *Japanese Annual Of International Law* 2001 (Tokyo, The International Law Association of Japan, 2002) at 134.

MSR in the Territorial Sea

Persons proposing to conduct MSR in the territorial sea must obtain prior express consent from the coastal State before commencing the MSR. Article 245 provides:

Coastal States, in the exercise of their sovereignty, have the exclusive right to regulate, authorize and conduct marine scientific research in their territorial sea. Marine scientific research therein shall be conducted only with the express consent of and under the conditions set forth by the coastal State.

MSR in the EEZ and on the Continental Shelf

Persons proposing to conduct MSR in the EEZ or on the continental shelf must obtain prior consent from the coastal State before doing so. Article 252 provides that consent may be presumed if a response has not been received within four months to the application submitted six months before the proposed start date. In practice no researcher has relied on that presumption.

Most coastal States require applications to conduct MSR in their EEZ comply with the requirements of Part XIII (article 246). The United States is unique in generally not requiring researchers to request consent to conduct MSR in the US EEZ, although they ask for the results of the research as provided for in article 249.⁴³² The United States does require US researchers desiring to conduct MSR in foreign EEZs to make application through the US Department of State (OES/OPA) as required in article 250.⁴³³

Article 246(5) provides that the coastal State may deny a request to conduct MSR in its EEZ if the project

- (a) is of direct significance for the exploration and exploitation of natural resources, whether living or non-living;*
- (b) involves drilling into the continental shelf, the use of explosives or the introduction of harmful substances into the marine environment;*
- (c) involves the construction, operation or use of artificial islands, installations and structures referred to in articles 60 and 80;*
- (d) contains information communicated pursuant to article 248 regarding the nature and objectives of the project which is inaccurate or if the researching State or competent*

⁴³² That policy was fostered by the US decision not to claim jurisdiction over MSR in its EEZ, first stated in the President's Oceans Policy Statement of 10 March 1983, online: http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/USA_1983_Statement.pdf, and reaffirmed in October 1994 in the documents transmitting the LOS Convention to the US Senate, Commentary on LOS Convention, Sen. Treaty Doc 103-39, at 80, online: www.foreign.senate.gov/imo/media/doc/treaty_103-39.pdf. The United States declined to assert jurisdiction in its EEZ over MSR because of its interest in encouraging MSR and promoting its maximum freedom while avoiding unnecessary burdens.

⁴³³ US Dep't of State Office of Oceans and Polar Affairs, 'Marine Science Research Authorizations,' online: <http://www.state.gov/e/oes/ocns/opa/rvc/index.htm>.

international organization has outstanding obligations to the coastal State from a prior research project.

On the other hand, Russia routinely refuses to grant all requests to conduct MSR in its Arctic EEZ.

MSR on the High Seas

Article 87(1)(f) provides that the right to conduct MSR on the high seas is one of the freedoms of the seas subject to Parts VI and XIII. Article 257 provides

All States, irrespective of their geographical location, and competent international organizations have the right, in conformity with this Convention, to conduct marine scientific research in the water column beyond the limits of the exclusive economic zone.

MSR in the Area

Article 256 provides:

All States, irrespective of their geographical location, and competent international organizations have the right, in conformity with the provisions of Part XI, to conduct marine scientific research in the Area.

Article 143 provides:

1. Marine scientific research in the Area shall be carried out exclusively for peaceful purposes and for the benefit of mankind as a whole, in accordance with Part XIII.

2. The Authority may carry out marine scientific research concerning the Area and its resources, and may enter into contracts for that purpose. The Authority shall promote and encourage the conduct of marine scientific research in the Area, and shall coordinate and disseminate the results of such research and analysis when available.

3. States Parties may carry out marine scientific research in the Area. States Parties shall promote international cooperation in marine scientific research in the Area by:

- (a) participating in international programmes and encouraging cooperation in marine scientific research by personnel of different countries and of the Authority;*
- (b) ensuring that programmes are developed through the Authority or other international organizations as appropriate for the benefit of developing States and technologically less developed States with a view to:*
 - (i) strengthening their research capabilities;*
 - (ii) training their personnel and the personnel of the Authority in the techniques and applications of research;*

- (iii) *fostering the employment of their qualified personnel in research in the Area;*
- (c) *effectively disseminating the results of research and analysis when available, through the Authority or other international channels when appropriate.*

Promotion of International Cooperation

Article 242 provides:

- 1. States and competent international organizations shall, in accordance with the principle of respect for sovereignty and jurisdiction and on the basis of mutual benefit, promote international cooperation in marine scientific research for peaceful purposes.*
- 2. In this context, without prejudice to the rights and duties of States under this Convention, a State, in the application of this Part, shall provide, as appropriate, other States with a reasonable opportunity to obtain from it, or with its cooperation, information necessary to prevent and control damage to the health and safety of persons and to the marine environment.*

The Arctic Council has a task force on enhancing scientific cooperation in the Arctic. The 2015 SAO Report to Ministers noted that the 2013 Kiruna Declaration:

Agree[d] that cooperation in scientific research across the circumpolar Arctic is of great importance to the work of the Arctic Council, and establish[ed] a Task Force to work towards an arrangement on improved scientific research cooperation among the eight Arctic States.

The report summarised the work of this task force:

Under the co-chairmanship of representatives from Sweden, the Russian Federation and the United States, the Scientific Cooperation Task Force met five times, with participation from all Arctic States, Permanent Participants, and some observers. Delegations confirmed the importance of scientific research in the Arctic, the role of traditional knowledge and, given the elevated cost of performing research in the Arctic, the importance of efficiency and collaboration to further research in areas of common interest. Delegations then focused on the need to remove obstacles to collaboration and to support efficiency in collaborative Arctic research. The Task Force identified several key areas where shared efforts could improve scientific cooperation including sharing of data and metadata, facilitating the movement of people, samples and equipment across borders for the purposes of conducting research, facilitating logistics and access to research areas, and facilitating access to research facilities. The Task Force concluded that a high-level agreement was the best mechanism to advance the objectives set by the Ministers in Kiruna, and the text of a draft Memorandum of Understanding was initially discussed. In the course of these discussions, it became clear that addressing issues such as the movement of people and equipment across borders and access to research areas may require significant involvement from a wide range of government agencies and stakeholders that do not

have a science mandate. It was agreed that resolution on these issues may benefit from the force of a legally binding agreement.

*The Task Force recommends to SAOs, for inclusion in the Iqaluit Declaration, that the Task Force work towards a legally binding Agreement on scientific cooperation with a view to completing its work during the US Chairmanship.*⁴³⁴

The 2015 ministerial declaration acknowledged

*the importance of scientific cooperation to the circumpolar region, note[d] the work on Enhancing Scientific Cooperation in the Arctic, and decide[d] to extend the Task Force mandate, including to work towards a legally-binding agreement on scientific cooperation, with a view to completing its work no later than the next Ministerial meeting.*⁴³⁵

The SCTF held its sixth meeting 19-20 August 2015 in Copenhagen. That meeting was the first after the renewal of its mandate. The US Chair Balton said at the Arctic Council SAO Observer session and after SAO meetings 4-6 October 2016 in Portland Maine, he expects the agreement to be signed at the May 2017 Ministerial.⁴³⁶ He is quoted as saying ‘We are trying to allow Arctic science to be science without borders. Not all science proceeds as smoothly in the Arctic as we might like yet. There are restrictions, particularly in Russia, about entry and exist of scientists from other nations, and their material and data. With this, all the nations in the Arctic will allow much more freedom to conduct science.’⁴³⁷

⁴³⁴ SAO Report to Ministers, *supra* note 414, at 10-11.

⁴³⁵ Iqaluit Declaration, *supra* note 382, para 44.

⁴³⁶ Kevin McGwin, ‘US to end chairmanship on science note (8 October 2016),’ The Arctic Journal (14 October 2016), online: <http://www.arcticjournal.com/politics/2611/us-end-chairmanship-science-note>.

⁴³⁷ Penelope Overton, ‘Scientific treaty emerges from Arctic Council,’ The Portland Press (updated 8 October 2018) online: <http://www.pressherald.com/2016/10/07/scientific-treaty-emerges-from-arctic-council>.

Chapter 14 Role of Singapore

This chapter discusses the role Singapore plays as an Observer State to the Arctic Council, and suggests the development of a national ocean policy and an Arctic policy.

Arctic Council

Singapore applied for Observer status in December 2011 and was admitted as an Observer to the Arctic Council in May 2013. Its obligations as an Observer are described in Chapter 12. The role of Observers is (i) to provide scientific and other expertise, information and financial resources, primarily in working group meetings and projects; (ii) to enhance and complement the Arctic Council's work; and (iii) to support the work of the Permanent Participants.

Singapore is already participating in the work of CAFF (particularly in the Arctic Migratory Bird Initiative study of the Asian-Australasian flyway when the birds stop to feed and roost during the Arctic winter in the Sungei Buloh Wetland Reserve and Pulau Ubin),⁴³⁸ EPPR and the TFOPP (sharing its experience in oil pollution preparedness, prevention and response), and on the Task Force on Arctic Marine Cooperation (TFAMC) (sharing Singapore's experience in regional cooperative framework such as the Tripartite Technical Expert's Group (TTEG) and the Cooperative Mechanism on Safety of Navigation and Environmental Protection in the Straits of Malacca and Singapore. As noted above in Chapter 7, the Arctic oil pollution agreement permits non-parties to 'contribute to activities envisaged' in the agreement at the request of any Party to the agreement.

Through the Singapore-Arctic Council Permanent Participants Cooperation Package, a customized technical cooperation package designed to enhance the human resource development and governance capabilities of the Permanent Participants, Singapore welcomed and sponsored many representatives from the Permanent Participants and the Indigenous Peoples' Secretariat in courses in Singapore.⁴³⁹

Singapore was represented at the SAO meetings in

- Whitehorse 22-23 October 2013 (by Simon Wong and Ambassador Siddique)
- Yellowknife 26-27 March 2014 (by Simon Wong)
- Yellowknife 22-23 October 2014 (by Ambassador Siddique)
- Whitehouse 4-5 March 2015 (no list online)

⁴³⁸ See the Arctic Migratory Birds Initiative Work Plan 2015-2019, *supra* note 405, at 23, 61.

⁴³⁹ Singapore, 'Observer Report,' (30 November 2016) online: <https://oaarchive.arctic-council.org/handle/11374/1863>. Other information in Singapore's 2016 report describes its future plans for contributing to the work of the Arctic Council and contributions to other aspects of the Arctic Council and its goals.

- Anchorage 21-22 October 2015 (by Kamal Vaswani)
- Fairbanks 16-17 March 2016 (by Kamal Vaswani)⁴⁴⁰
- Portland 4 October 2016 Observer Special Session on opportunities for observer engagement in AC working group activities and the SAO meeting 5-6 October (by Peter Tan).⁴⁴¹

Ambassador Siddique also attended the GLACIER meeting in Anchorage, Alaska 30-31 August 2015.⁴⁴²

Possibilities for Singapore's further participation in the work of the Arctic Council also includes understanding the situation in the Arctic in all its aspects — by appreciating the challenges and opportunities in the Arctic Region, and deciding what else Singapore can offer, particularly to the Working Groups by reviewing the Arctic Council documents, especially the work plans of the various working and expert groups.⁴⁴³

The Arctic Ocean Review Project Final Report Phase II 2011-2013 identified the following opportunities for cooperative activities:

- Coordination across institutions;
- Cooperation on knowledge;
- Amending existing, or developing new, instruments; and
- Investing in infrastructure.⁴⁴⁴

*Singapore's Arctic Interests*⁴⁴⁵

⁴⁴⁰ See https://oaarchive.arctic-council.org/bitstream/handle/11374/1289/Participant_List_Plenary_AC_SAO_CA02.pdf?sequence=1&isAllowed=y; https://oaarchive.arctic-council.org/bitstream/handle/11374/1575/EDOCS-%232860-v1-ACSAOUS201_Anchorage_2015_List_of_participants.pdf?sequence=1&isAllowed=y; https://oaarchive.arctic-council.org/bitstream/handle/11374/1754/ACSAOUS202_Fairbanks_2016_Final_Participant_List.pdf?sequence=1&isAllowed=y.

⁴⁴¹ 'Opportunities for Observer Engagement in AC Working Group Activities' (September 2016) online: <https://oaarchive.arctic-council.org/handle/11374/1831>.

⁴⁴² US Department of State, 'GLACIER Heads of Delegation' (29 August 2015) online: <http://www.state.gov/e/oes/glacier/docs/246443.htm>.

⁴⁴³ The Arctic Council Working Groups Work Plans for 2015-2017 are contained in section 1 of Part B of the Iqaluit SAO Report to Ministers, *supra* note 409. The Work Plans for 2013-2015 are online: <https://oaarchive.arctic-council.org/discover>. This document was adopted as an Annex to the Kiruna SAO Report to Ministers, *supra* note 348. See further the Opportunities document referred to in note 452 *supra*.

⁴⁴⁴ Arctic Ocean Review Project Final Report Phase II 2011-2013 (AOR II), Kiruna 15 May 2013, online: <https://oaarchive.arctic-council.org/bitstream/handle/11374/67/AOR%20Final%20report%202013.pdf?sequence=1&isAllowed=y>.

⁴⁴⁵ Singapore's interests in the Arctic were reflected in its December 2011 application for observer status in the Arctic Council. They are recounted in Ian Storey, 'The Arctic Novice: Singapore and the High North,' National Bureau of Asian Research, [Asia Policy Number 18, July 2014](https://www.nbr.org/publications/asia-policy-number-18-july-2014) pp. 66-72 | 10.1353/asp.2014.0034, online: <https://muse.jhu.edu/article/551539/pdf>; <http://www.nbr.org/publications/asia-policy-number-18-july-2014>; and Stewart Watters and Aki Tonami, 'Singapore: An Emerging Arctic Actor,' *Arctic Yearbook 2012*, 104-113, online: <http://arcticyearbook.com/articles/20-singapore-an-emerging-arctic-actor>.

Singapore engagement in the Arctic revolves around the science, technology, education and management (STEM) framework. A number of Arctic indigenous peoples visited Singapore for study visits under the Singapore Cooperation Programme in November 2014 and September 2015. NUS has signed a MOU with the University of Alaska Fairbanks⁴⁴⁶ in areas such as cold regions engineering and oil spill research.⁴⁴⁷

In a speech by Minister of State in the Prime Minister's Office and Ministry of Manpower Sam Tan at the session of the White House Arctic Ministerial on 'Empowering Citizens through Science, Technology, Engineering and Mathematics (STEM) Education Leveraging Arctic Science' on 29 September 2016, Mr Tan said in part:

1 Singapore was admitted to the Arctic Council as an observer state in 2013. Even though Singapore is a tropical island just one degree north of the Equator, we recognise that changes in the Arctic can also affect us. We are keen to better understand challenges and concerns facing the Arctic, and the implications for the world and Singapore. It is also important to educate our own citizens about the changes that are in store for our children and grandchildren. Hence, our Arctic research focuses on three areas.

2 First, climate change is a global challenge that requires a global response. In Singapore, we have seen increasing changes in our weather and climate. Our annual mean temperature has risen from 26.6 degrees Celsius in 1972, to 28.3 degrees Celsius in 2015. We also experienced our longest dry spell in early 2014 since record-keeping began in 1869. Our meteorological agencies are thus interested to study how changes in the Arctic could have an effect on the weather and climate in Southeast Asia.

Second, our researchers are developing applied solutions that will create safer and environmentally sustainable options for businesses operating in the Arctic. Over the years, our maritime industry has built up strong credentials in shipbuilding and repair, offshore engineering, and marine support services. In particular, the National University of Singapore and Keppel Offshore and Marine are working together to create the world's first Arctic "green rig".

3 Third, we have hosted, and will continue to host Arctic events to raise public awareness of Arctic issues in Singapore and Southeast Asia. Most recently, the National University of Singapore Energy Studies Institute (ESI) and the US Office of Naval Research – Global, Singapore had jointly organised a conference last month on "Energy Transitions in a Globalised Arctic". This conference brought renewable energy and policy experts from Arctic and Southeast

⁴⁴⁶ Remarks by Minister of State in the Prime Minister's Office and Ministry of Manpower Sam Tan at the dinner dialog of the Article Circle Singapore Forum on 'Advancing Global Cooperation in the Arctic', 12 November 2015, online: http://www.mfa.gov.sg/content/mfa/media_centre/press_room/pr/2015/201511/Press_201511121.html.

⁴⁴⁷ Rachel Au-Yong, 'S'pore can play a part in the Arctic: DPM Teo', *The Straits Times* (13 November 2015) online: http://www.mfa.gov.sg/content/mfa/media_centre/singapore_headlines/2015/201511/headlines_20151113.html.

Asian states to Singapore. The conference which was supported by the Singapore Government was open to the public, and served to create awareness of microgrid energy solutions for similarly remote communities in the Arctic and Southeast Asia. We also convened the Arctic Circle Singapore Forum [on 12 November 2015],⁴⁴⁸ where our Deputy Prime Minister Teo Chee Hean, and my good friend, the former President of Iceland Ólafur Ragnar Grímsson delivered keynote speeches, highlighting the challenges in the Arctic Circle and encouraging countries, NGOs and research communities to work together to address them.

4 A little known fact is that Singapore also plays a role in the Arctic ecosystem as a stopover site for Arctic migratory birds in winter. Over 100 species of such birds stopover in Singapore along the East Asian-Australasian flyway every year. They rest, feed and recharge in our Wetland Reserve before making the long and arduous journey back to their habitats. Although we are a city-state with a dense urban environment, biodiversity conservation is of great importance to us. Hence I am pleased to announce that we will be hosting an Arctic Migratory Birds Initiative (AMBI) workshop on the conservation of migratory birds along the East Asian-Australasian Flyway, in conjunction with the 9th East Asian-Australasian Flyway Partnership Meeting of Partners in January 2017. This workshop will serve to educate the public about the importance of conservation efforts of Arctic birds.

5 Regionally, we will continue to advance dialogue on issues that matter to the Arctic in Southeast Asia. Internationally, we welcome dialogues such as the White House Arctic Science Ministerial to better understand Arctic issues, share data on Arctic observations with each other, and establish constructive collaborations and partnerships to tackle the challenge of climate change and the melting of ice caps in the Arctic.⁴⁴⁹

At the Arctic Circle Forum in Singapore on 12 November 2015, Mr Tan said in part:

Our Engagement of the Arctic Indigenous Peoples

3 So how did the cold Arctic come to be such a hot topic today? As all of us present here are aware, rapid changes are taking place in the Arctic, spurred by climate change. Temperatures in the Arctic, as mentioned by many speakers, show that the region is warming twice as fast as the rest of the world. A new minimum record for sea ice in the Arctic was reached in September 2012 when the ice extent was only half of what it was a mere 30 years ago. Already during a few months in a year we see ships using the Northern Sea Route to transport cargo and goods – just ten ships used the Route in 2010, compared to 71 in 2013. This global warming has created new opportunities for shipping, infrastructure and development, which have led to increased interest in Arctic affairs. The first Arctic Circle forum in Asia, right here in Singapore, is a visible demonstration of this interest. Conversations on the Arctic have grown exponentially in a short

⁴⁴⁸ See <http://www.arcticcircle.org/forums/singapore>.

⁴⁴⁹ MFA Press Statement, ‘Visit of Minister of State in the Prime Minister’s Office and Ministry of Manpower Sam Tan to Washington DC for the White House Arctic Science Ministerial, 27 to 28 September 2016 (29 September 2016) online: https://www.mfa.gov.sg/content/mfa/media_centre/press_room/pr/2016/201609/press_201609291.html.

three years, with this year's Arctic Circle Assembly in Reykjavik drawing 2,000 delegates from 50 countries. Why such a great interest in the Arctic, especially from Singapore? I remember in my first speech at the Arctic Circle Assembly in 2013, I said quite anecdotally that Singapore's future Prime Minister in a hundred years' time might have to conduct Cabinet meetings in a scuba suit, as Singapore would be completely submerged underwater by then if nothing was done about climate change! Climate change has created further economic opportunities, but it also has an impact on indigenous peoples of the North and others around the world.

4 I am probably the only one in my government who has travelled to all the Arctic Council Member States for Arctic engagement. I can personally bear witness to the Arctic's beauty and unique majesty, with the region featuring breathtaking landscapes, great ecological diversity, and rich cultures and heritage of the indigenous peoples. As President Grimsson mentioned this morning, the Arctic has been the home to its indigenous peoples for hundreds, if not thousands of years. I fully understand what he means after having many opportunities to interact with many indigenous peoples in the last few years.

5 Most recently in January, I was invited by Norway to speak at the Arctic Frontiers Conference in Tromsø, where I shared Singapore's perspective on the "state of the Arctic". Indeed, I am very happy to have made these new friends in the Arctic, some of whom visited Singapore for study visits under the Singapore Cooperation Programme in November 2014 and in September this year. I welcome our indigenous friends to visit Singapore so that we can exchange ideas and views on the Arctic, and deepen Singapore's understanding of the Arctic.

Singapore's Framework to Engage the Arctic

6 In my view, our engagement in the Arctic revolves around what can be referred to as the science, technology, education and management framework, or STEM As Deputy Prime Minister Teo Chee Hean mentioned this morning, Singapore is still new to the Arctic and we are a small country with limited resources. But where possible, we have tried to work constructively with our friends and partners in the Arctic, and our universities are actually exploring the many possibilities of cooperating in the Arctic. You heard earlier this morning that the National University of Singapore will be signing a memorandum of understanding with the University of Alaska Fairbanks. Our establishment of a corporate lab between NUS and Keppel on Arctic studies is another example of our keenness to understand the Arctic and what is going on there. We are also interested to raise scientific and technological awareness of Arctic issues in our domestic context.

7 In the Arctic Council, which remains the premier intergovernmental forum for Arctic cooperation, Singapore works through the Council's various working groups, including the Conservation of Arctic Flora and Fauna (CAFF). Our National Parks Board (NParks) works with CAFF to track Arctic migratory birds which stop in Singapore to feed and roost during the Arctic winter, contributing to efforts to conserve threatened shorebird populations while they fly from the Arctic to Singapore. We are also developing our Sungei Buloh Wetland Reserve as a capacity development centre ... Our efforts at science and technology flow seamlessly with our expertise in

engineering, especially in our maritime industry where Singapore companies have developed good capabilities.

8 It is important that states and governments come together to manage their differences and work together constructively in an inter-governmental context. The Arctic Council's two agreements on search and rescue and marine oil pollution in 2011 and 2013 respectively are positive signs of this intergovernmental collaboration regardless of political differences. Our Maritime and Port Authority attended a marine oil pollution workshop at the US Coast Guard Headquarters in Washington DC in September this year, and they shared that it was helpful to discuss and learn from their counterparts and experts gathered there.

What's Next?

9 So what's next for cooperation in the Arctic? We are happy to learn from everyone, be it our longstanding friends like the eight Arctic Council Member States, or our newfound friends among the indigenous peoples whom we have met in the Arctic, some of whom have made the effort to come all the way here. We have hosted, and will continue to host several Arctic activities and events to raise public awareness, not just in Singapore but also in the region. While Singapore believes that the eight Arctic Council Member States and its indigenous communities are the primary stewards of the Arctic, we welcome and also encourage the growth of forums like this one in Singapore as the Arctic grows in importance. It is only through dialogue and conversation that we can continue to understand each other, build lasting relationships, and make constructive contributions for future generations.⁴⁵⁰

In his opening remarks at the 2015 Arctic Circle Singapore Forum, Deputy Prime Minister Teo Chee Hean said regarding Singapore's interests in the Arctic:

Global Importance of the Arctic Region

4 There are several reasons why the Arctic has gained global prominence in recent years. I will outline a few of them today. First, the Arctic is a bellwether of global climate change. Not only is the region warming twice as fast as the rest of the planet, physical changes in the North are affecting the global climate in ways which we are only beginning to understand. For example, the seasonal loss of Arctic sea ice has lowered the reflectivity of the earth's surface, contributing to further warming. In addition, the release of carbon dioxide and methane from thawing permafrost in the Arctic could further exacerbate warming caused by man-made greenhouse gases from permafrost carbon feedback. It is important to deepen our understanding of how changes in the Arctic could affect climate in other parts of the world.

⁴⁵⁰ MFA Press Release, 'Remarks by Minister of State in the Prime Minister's Office and Ministry Of Manpower Sam Tan Chin Siong at the dinner dialogue of the Arctic Circle Singapore Forum on "Advancing Global Cooperation in the Arctic", 12 November 2015,' online: https://www.mfa.gov.sg/content/mfa/media_centre/press_room/pr/2015/201511/Press_201511121.html.

5 Second, the effects of a warmer Arctic will also have far-reaching economic impacts. A recent study by the University of Cambridge and the National Snow and Ice Data Center estimated that temperature rises from greenhouse gases released by melting permafrost in the Arctic could contribute further to agricultural losses, and the need for additional responses to climate change, especially for small countries and countries that are not doing so well economically. However, the Arctic also has considerable economic potential. According to a Lloyd's of London report, companies could invest as much as USD 100 billion in the Arctic over the next decade. However, we all want to ensure that resource development in the Arctic is carried out with due respect for the environment, and to the benefit of the peoples and communities of the North.

6 Third, changes in the Arctic will invariably change the future of maritime transport. This is an issue of importance to Singapore as a maritime nation. In particular, the Northern Sea Route, traversing the waters north of Russia and Norway and other countries of the Arctic, could reduce travel time between Northeast Asia and Europe by a third, or up to two or three weeks. In the near term, the reality is that the Arctic sea routes are likely to remain challenging given the harsh and difficult conditions – freezing temperatures, limited visibility due to fog, and floating sea ice. However, they can be a seasonal complement to traditional trade routes like the Suez Canal. As the Arctic sea routes open, care will have to be taken to ensure the survival of the vulnerable marine ecosystem. Infrastructure will also have to be further developed to ensure safe shipping in the region.

Frameworks for Arctic Governance

7 As economic activity in the Arctic grows, it is important that there is a robust legal and institutional framework. Foremost among this is the UN Convention on the Law of the Sea, or UNCLOS.

8 Signed in 1982, UNCLOS has stood the test of time as a comprehensive legal regime governing the oceans and seas, including in the Arctic. Singapore's long-standing commitment to UNCLOS is well-known. Our diplomats were involved in the negotiations, and even chaired sessions. As a small island state that has always depended on sea-borne trade as our economic lifeline, we believe it is in the interest of all states to preserve the freedom of navigation and rights to safe passage through the Straits of Malacca and Singapore and other waters, as provided for by UNCLOS. In September 2015, Singapore and the International Tribunal for the Law of the Sea signed a joint declaration allowing Singapore to be a neutral venue in Asia for the peaceful settlement of disputes relating to the Law of the Sea. We hope that will also make a contribution.

9 A second important element of this framework is the Polar Code, adopted at the International Maritime Organisation (IMO) in May 2015 just a few months ago. As a long-time member of the IMO, and a member of the IMO Council since 1993, Singapore has participated actively in the development of this Polar Code. The formal adoption of the Polar Code is a positive step toward safe and sustainable shipping in the vicinity of the poles. Among other things, the Code imposes stringent design and operation requirements on ships operating in polar

waters. As a responsible flag state with a sizeable ship registry, Singapore recognises the importance of high standards for shipping activities in polar waters. Ships flagged under the Singapore Registry of Ships have to undergo regular inspections by reputable classification societies to certify that they comply with the requirements of IMO Conventions and regulations, including the Polar Code.

10 A third piece of this framework is the Arctic Council's efforts for emergency preparedness and response within the Arctic region. The work of the Arctic Council has yielded two binding agreements among the Arctic states – in 2011, the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, and in 2013, the Agreement on Cooperation on Marine Oil Pollution, Preparedness and Response in the Arctic. These are both very important frameworks for emergency response and coordination in the region.

Singapore's Arctic Engagement

11 Singapore recognises that the eight sovereign Arctic states and their inhabitants are the key players and stewards of the region. At the same time, we believe that countries which are geographically remote from the Arctic can contribute too, and indeed should contribute. We all live in one inter-connected world. Since our admission as an observer at the Arctic Council in 2013, we have been striving to contribute actively to the Council's work, and engage like-minded parties as a serious and constructive player on Arctic affairs.

Climate Change

12 First, on climate change. As a responsible member of the international community, Singapore is committed to taking action to slow the pace of global warming and guard against its effects. We are working with other countries to conclude a new global climate agreement at the end of this year; and our officials will be in Paris with other officials to work towards the goal. This will help to alleviate the effects of global warming in the Arctic.

13 Singapore contributes 0.11% of global emissions, but we are taking action to contain our greenhouse gas emissions nevertheless. In July 2015, Singapore submitted our Intended Nationally Determined Contribution for the post-2020 global climate agreement. We have been an early adopter of green development strategies, and our emissions intensity is currently among the best 20% of countries in the world. Emissions intensity being emissions per GDP. We intend to improve our emissions intensity further, by 36% from 2005 levels by 2030, and to stabilise emissions with the aim of peaking around 2030. This is not an easy target for a small country with very limited alternative energy options.

14 As a low-lying island nation, Singapore is also very vulnerable to the effects of climate change. Since 2011, to pre-empt the projected rise in sea levels, we have raised the minimum level of newly reclaimed land by an additional metre, to 2.25 metres above the highest ever recorded tide levels. So by President Grímsson's calculations, we have 0.25 metres to play around

with. We also have shore protection works covering more than 70% of our coastline to guard against erosion.

Pooling Relevant Expertise

15 Second, pooling relevant expertise to support responsible development and good governance of the Arctic region. Although weather and sea conditions in Singapore are quite different from those in the Arctic, Singapore has shared some of our practices on emergency preparedness and response with the Arctic states through the Arctic Council's Emergency Prevention, Preparedness and Response (EPPR) Working Group. These include our approach to inter-agency coordination when managing oil spills in our region, and our trials of using drones in combatting oil spills.

16 We have also initiated meaningful exchanges on issues such as adapting to change, with the Arctic Council Permanent Participants, representing the Arctic indigenous peoples. Leaders of the Permanent Participants visited Singapore last November and had exchanges with our officials on various aspects of public policy, from sustainable development to cultural preservation. In September this year, we welcomed leaders from the Arctic Athabaskan Council who participated in a short course on climate change adaptation strategies, conducted under the Singapore Cooperation Programme.

Developing Industry Capabilities

17 Third, Singapore companies are also developing Arctic capabilities to see how they can contribute to sustainable resource development in the Arctic. Over the years, our maritime industry has built up strong credentials in shipbuilding and repair, offshore engineering, and marine support services. Our companies may be able to provide enabling technology to help the Arctic tap its growth potential. For instance, in 2008, Keppel Singmarine completed its first two icebreakers, and has since delivered a total of 10 ice-class vessels. Keppel Offshore and Marine is currently collaborating with oil majors and drilling contractors to develop the world's first Arctic-grade, environmentally-friendly "green" rig.

18 We continue to develop such capabilities through partnerships between academia and industry. One example is Keppel's collaboration with the National University of Singapore to set up a Corporate Lab, which I opened in 2013. The Lab is studying the interaction between ice and man-made structures, a critical factor in Arctic engineering. Our universities are also developing new links with their counterparts in the Arctic region: NUS and the University of Alaska Fairbanks have just finalised a Memorandum of Understanding to collaborate in areas of mutual interest including Arctic climate change, sustainable development, oil spill research, and cold regions engineering. NUS' Centre for International Law and the University of Tromsø's Jebsen Centre for the Law of the Sea, in Norway, are also jointly organising a conference in Singapore next month for international law experts to discuss the governance of Arctic shipping.

Conclusion

19 So ladies and gentlemen, as a small country, it is in Singapore's interest to remain plugged into the world and to understand how environmental and economic developments, even in a seemingly distant region like the Arctic, can impact Singapore – perhaps not immediately, but 20, 50, or even 100 years, later. We also seek to make friends and work together with like-minded countries....

20 Singapore is still learning when it comes to Arctic issues. We are committed to deepening our understanding of the region and its people, and exploring how we can make useful contributions. We hope that this Arctic Circle Forum here in Singapore provides a good platform for knowledge-sharing about the Arctic by and with participants from beyond the immediate Arctic region.⁴⁵¹

⁴⁵¹ MFA Press Statement, 'State Visit of His Excellency Ólafur Ragnar Grímsson, President of the Republic of Iceland to Singapore, 11 to 13 November 2015' (12 November 2015) (Mr Teo's address is appended to this press statement; footnotes omitted), online: https://www.mfa.gov.sg/content/mfa/media_centre/press_room/pr/2015/201511/Press_20151112.html.