

7A Voyage Planning for Vessels Intending to Navigate in Canada's Northern Waters

1 Purpose

This notice is intended to assist mariners, owners and operators of vessels intending on navigating in Canada's northern waters in preparing for, and executing, a safe voyage.

The recommendations and information provided in this notice are complementary to any other legal obligation of the owner, operator, master and all who have an interest in the vessel, and to the exercise of due diligence and good seamanship practices that are required from the master of a vessel.

2 Background

The Canadian Arctic is full of challenges to maritime navigation due to its climatic conditions, low temperatures, hazardous and variable ice conditions and geography. The region is remote and vast, making repairs, rescue or clean-up operations difficult. Roads, airstrips, and ports are few and far between and search and rescue resources are limited. Emergencies can draw resources from other needed services such as icebreaking and community re-supply. In addition, the Canadian Arctic is environmentally sensitive and slow to recover from damage, so the impact of a pollution incident could have heavy consequences. The mariner must also keep in mind that most of Canada's Arctic waters have not been surveyed to modern standards.

Consequently, Arctic navigation requires vessel crews with specialized knowledge. A safe voyage starts with a detailed voyage plan that considers the Canadian Arctic's unique conditions, navigational challenges and hazards along with the vessel's capabilities and operational limitations.

3 Voyage Planning

International Maritime Organization (IMO) voyage planning guidelines and IMO's *International Code for Ships Operating in Polar Waters (Polar Code)* provisions must be considered when planning a voyage to Canadian Arctic waters. [Chapter 11 of the Polar Code](#) refers to voyage planning and provides information on conducting a safe voyage.

The *Navigation Safety Regulations 2020 (NSR 2020)* requires the master of a vessel, before the vessel embarks on a voyage, to plan the voyage considering the Annex to [IMO resolution A.893\(21\)](#), *Guidelines for Voyage Planning*. If charts, documents and publications are required to be kept on board under section 142 of [NSR 2020](#), the master is to use those charts, documents, and publications to the extent that they relate to voyage planning.

Particularly relevant to Canadian Arctic navigation, the voyage plan shall, among other things, anticipate all known navigational hazards and adverse weather conditions; and avoid, as far as possible, actions and activities that could cause damage to the environment. Passenger vessels should also consider [IMO Resolution A.999 \(25\)](#) *Guidelines on Voyage Planning for Passenger Ships Operating in Remote Areas* and Transport Canada's *Guidelines for the Operation of Passenger Vessels in Canadian Arctic Waters.*" ([TP 13670](#))"

Transport Canada has developed *Guidelines for Assessing Ice Operational Risk* (TP 15383). The information is intended for planning and operational purposes and is written for a diverse audience, including vessel designers, recognized organizations, vessel owners and operators, vessel **management** companies, communication and ice information agencies, the public at large and most importantly the bridge team. This publication can be ordered by contacting: marinesafety-securitemaritime@tc.gc.ca.

4 Charts and Notices

At present, less than 15% of Canadian Arctic waters are surveyed to modern standards. In addition, the mariner must be aware of the horizontal datum used for the chart. Global Navigation Satellite System (GNSS) positions can only be plotted directly on NAD 83 (equivalent to WGS 84) charts. For charts with other datums, the appropriate correction must be applied. Some Arctic charts do not have a reference datum and therefore there are no corrections available for these charts. In such cases, alternative sources of positional information should be used such as radar and visual lines of position when possible. It is always recommended that more than one means is used to fix a position.

As always, mariners must use up-to-date nautical charts and nautical publications to plan each voyage. This includes making use of annual and monthly [Notices to Mariners](#) and [Northern Canada Sailing Directions](#). Of note, given the challenges in charting Canada's northern waters, confirming chart anomalies, and servicing aids to navigation, mariners must ensure that all [Navigational Warnings](#) (broadcast and written) and [NAVAREA warnings](#) that are in force in the area are considered. Further information can be obtained from the Canadian Coast Guard (CCG).

For a list of charts and publications required onboard the vessel, please refer to [NSR 2020](#), Part 1, Division 6. The master of a vessel must ensure that the charts, documents and publications required under this Division, before being used to plan and execute a voyage, are correct and up-to-date, and based on information that is contained in [Notices to Mariners](#) or a [Navigational Warning](#).

Attention is also drawn to section 7 of the [Collision Regulations](#) related to *Notices to Mariners and Notices to Shipping*.

5 Ice Advisory Service, NORDREG Reporting, and Sails Plans

The CCG operates an ice advisory service for the support of vessels navigating in Canada's northern waters during the navigation season. Vessels can obtain up-to-date information on ice conditions, advice on routes, aids to navigation and icebreaker support, when available and considered necessary, by contacting Northern Canada Vessel Traffic Services ([NORDREG](#)). Weather, ice advisories, and forecasts are also broadcasted daily. Vessels subject to the [Northern Canada Vessel Traffic Services Zone Regulations](#) must report to NORDREG as required by the regulations.

Vessels not required to report to NORDREG should, as a minimum, file a sail plan with a responsible person. This person should be instructed to call the Joint Rescue Coordination Centre if the vessel becomes overdue. In circumstances where it is not possible to file a sail plan with a responsible person, a Sail Plan may be filed by telephone, radio or in person, with a Marine Communications and Traffic Services ([MCTS](#)) Centre. While at sea, masters and operators who have filed a sail plan are encouraged to file a daily position report during long trips. After completion of the voyage, the vessel must close (or deactivate) their sail plan. Forgetting to do so can result in an unwarranted search.

All vessels to which Part 1 of the *Arctic Shipping Safety and Pollution Prevention Regulations* ([ASSPPR](#)) applies must report, as per section 9 of that regulation. More information on this topic can be found in section 8 of this notice.

The CCG publication [Radio Aids to Marine Navigation](#) should be consulted for further information including details on the NORDREG Zone, reporting, radio frequencies and times for ship/shore communications and broadcasts.

6 Ice Navigation in Canadian Waters

The CCG publication, [Ice Navigation in Canadian Waters](#) indicates the necessary precautions to be taken by vessel navigating in Canadian ice-covered waters. The document provides masters and watch keeping officers with the necessary information to achieve an understanding of the hazards, navigation techniques, and response of the vessel. It includes information on passage planning for routes in ice-covered waters and principles of high latitude navigation. Every vessel of 100 gross tonnage, or over, navigating in Canadian waters in which ice may be encountered, is required to carry and make use of this publication ([NSR 2020](#)).

7 Contingency Planning

Two groundings in the 2010 Canadian Arctic shipping season and one in 2018 serve as a reminder on the importance of contingency planning and risk assessment. As stated in the IMO Guidelines for Voyage Planning ([A.893\(21\)](#)), the detailed voyage plan should include, among other things, “contingency plans for alternative action to place the vessel in deep water or proceed to a port of refuge or safe anchorage in the event of any emergency necessitating abandonment of the plan, taking into account existing shore-based emergency response arrangements and equipment and the nature of the cargo and of the emergency itself.” Access to emergency support services is very limited in Canadian Arctic waters. The shipowner may want to prearrange for emergency support prior to the voyage including towing, salvage support and support for dealing with a spill.

8 Arctic Waters Pollution Prevention Act and the Polar Code

Vessels intending to operate within Canadian Arctic waters are subject to certain unique requirements in addition to those common to vessels operating elsewhere in Canada. The nature of these additional requirements varies from one vessel to another and depends on, among other things, vessel type, vessel size, area of operation, or activity in which the vessel is engaged. The *Arctic Waters Pollution Prevention Act* ([AWPPA](#)) and its associated regulations establish these unique requirements. The primary objectives are to address:

- the unique hazards associated with polar operations,
- the additional demands that polar operations place on vessels, their systems, and operations (including navigation), and
- the vulnerability of coastal Arctic communities and polar ecosystems to vessel operations.

The [Polar Code](#) entered into force on 1 January 2017 and was implemented in Canada with the *Arctic Shipping Safety and Pollution Prevention Regulations*. ([ASSPPR](#)) and communicated out to mariners via [SSB No.: 05/2018](#). The Polar Code is mandatory for vessels operating under the *International Convention for the Safety of Life at Sea* (SOLAS) and the *International Convention for the Prevention of Pollution from Ships* (MARPOL). It regulates the design, construction, equipment, operational, training, search and rescue and environmental protection matters relevant to vessels operating in polar waters.

Details of Canada's requirements and additional guidance for vessels operating in its Arctic waters can be found on Transport Canada's website: <https://tc.canada.ca/en/marine-transportation> and by contacting [Transport Canada's Prairie and Northern Region](#) Marine Safety and Security office.

8.1 Zone Dates, AIRSS, and POLARIS

Arctic waters under Canadian jurisdiction are divided into 16 zones. The *Shipping Safety Control Zones Order* prescribes these zones ([SSCZ](#)). Schedule 1 of the [ASSPPR](#) outlines earliest entry and the latest exit dates for each zone and for each category of vessel. The zones have been organized in such a way that zone 1 has historically had the most severe ice conditions, and zone 16 the least. Higher ice-strengthened vessels can operate for longer periods in higher severity zones.

Vessels intending to operate outside of the dates of this prescriptive system have the option of using either the Arctic Ice Regime Shipping System (AIRSS) or the Polar Operational Limit Assessment Risk Indexing System (POLARIS). Both AIRSS and POLARIS are methodologies for determining ice operational risk that considers a vessel's ice class and the prevailing ice conditions observed from the vessel's bridge. Transport Canada recognizes that the use of either AIRSS or POLARIS by identical vessels in identical ice regimes could produce minor differences in operating outcomes depending upon which system is used. To help address certain situations where this variance could occur, the regulations therefore require that all Polar Class vessels and/or all vessels built after January 1, 2017 must use POLARIS. For vessels built before this date that carry a Polar Ship Certificate, they should use the system stipulated on the certificate. All other vessels are afforded the option of using either AIRSS or POLARIS when operating outside the zone dates.

These vessels are required to submit their AIRSS or POLARIS message upon their first point of entry into each [SSCZ](#) or modification of their voyage. See [ASSPPR](#) for application information.

The details on the AIRSS system are found in the [TP12259 - Arctic Ice Regime Shipping System \(AIRSS\) Standard](#). For additional information on using the Zone Dates, AIRSS and POLARIS see *Guidelines for Assessing Ice Operational Risk* (TP 15383).

8.2 Polar Ship Certificate and Polar Waters Operating Manual

Section 6 of the ASSPPR has the effect of making the safety-related Polar Code requirements applicable to certain vessels operating in polar waters. All vessels to which section 6 of the ASSPPR apply, intending to operate in polar waters, must have a valid Polar Ship Certificate (PSC) onboard. For Canadian vessels the PSC will generally be issued by a Recognized Organization (RO). These vessels will also need to carry a Polar Water Operational Manual ([PWOM](#)). The PWOM will provide the Owner, Operator, Master, and crew with sufficient information regarding the vessel's operational capabilities and limitations to support their decision-making process. All crew members need to know the procedures and equipment described in the PWOM relevant to their assigned duties.

8.3 Pollution Prevention

The [ASSPPR](#) contains a range of safety and pollution prevention requirements that address the unique risks confronted by ships operating in Canada's Arctic. The regulations incorporate certain requirements of the Polar Code, albeit with the addition of Canadian modifications, that help ensure that strict safety measures and discharge requirements of the *Arctic Waters Pollution Prevention Act* are maintained.

Except where otherwise indicated, the pollution prevention sections of the [ASSPPR](#) apply to all Canadian vessels operating in polar waters, and foreign vessels operating within the [SSCZ](#) (including fishing vessels, pleasure craft, and vessels without a mechanical means of propulsion).

9 Certificate of Proficiency and Ice Navigators

Vessels operating in polar waters are required to be crewed by personnel adequately trained, qualified, and experienced for operating in polar conditions. For Canadian Arctic waters the requirements are outlined in the [Arctic Shipping Safety and Pollution Prevention Regulations](#).

Personnel training and qualification requirements per the *Arctic Shipping Safety and Pollution Prevention Regulations*

	Requirements based on ice conditions or Zone Dates**			
	Polar Code			Outside Zone dates in row 14 of the schedule
	Ice Free	Open Waters	Other Waters	
Passenger vessels certified to Chapter 1 of SOLAS		Basic training for master, chief mate, and officers in charge of a navigational watch	Advanced training for master and chief mate	
Tankers 500 gross tonnage or more certified to Chapter 1 of SOLAS			Basic training for officers in charge of a navigational watch	
Other vessels 500 gross tonnage or more				
Vessels 300 gross tonnage or more (including fishing vessels and pleasure craft)*				Must have an ice navigator on board with experience as outlined in

Vessels carrying, or towing/pushing a vessel carrying, pollutants or dangerous goods*				section 10(2)(b)(i) of ASSPPR OR Advanced training for ships operating in polar waters
Vessels towing/pushing another vessel with a combined tonnage of 500 or more*				

*Vessels not certified to Chapter 1 of SOLAS

**Chart is provided as a visual reference. Operators should consult the ASSPPR and Polar Code for further information specific to their vessel

Definitions

1. Ice terminologies such as Ice Free and Open Waters, are defined in the *International Code For Ships Operating In Polar Waters* (Polar Code).
2. Basic training and advanced training for ships operating in polar waters, as required by the ASSPPR and the Polar Code, is defined in Chapter V Regulation V/4 of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).
3. Experience outlined in section 10(2)(b)(i) of the ASSPPR states that the Ice Navigator must:
 - have served on a vessel in the capacity of master or person in charge of the deck watch for at least 50 days, of which 30 days must have been served in international Arctic waters while the vessel was in ice conditions that required the vessel to be assisted by an icebreaker or that required maneuvers to avoid concentrations of ice that might have endangered the vessel.
4. All Ice Navigators on a vessel must have all the qualifications under the [Canada Shipping Act, 2001](#) to act as a master or a person in charge of the deck watch.

Additional Information and Coming Amendments

For additional training and certification requirements see [Ship Safety Bulletin 01/2018](#), which explains the process for masters, officers and other crew members to obtain a Certificate of Proficiency (CoP) for Polar Waters, including details of the phase-in period to 2020. While the ASSPPR and the Polar Code require officers to have certification for vessel operating in polar waters in accordance with the STCW Convention, the requirements to obtain this certification are being addressed in coming amendments to the [Marine Personnel Regulations](#).

Having qualified persons or ice navigators on board does not absolve the master and officers of the navigational watch of their duties and obligations for the safety of the vessel and protection of the environment.

10 Further Considerations

The following section outlines recommended measures to mitigate the impact of shipping on traditional hunting and fishing, environmentally sensitive areas, marine mammals, and caribou migration in the Canadian Arctic. It is strongly recommended that the vessel operator review these measures before undertaking a voyage in the Canadian Arctic.

The master shall plan a route considering Chapter 11 of the Polar Code and the following:

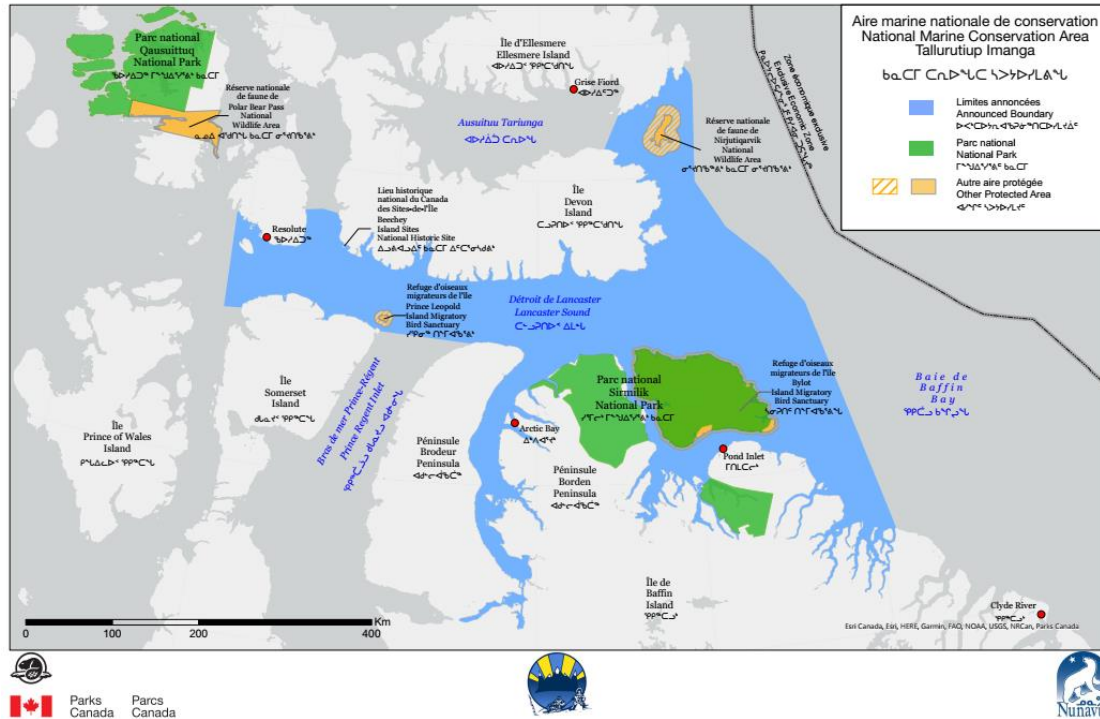
- Current information on relevant vessel's routing systems, speed recommendations and vessel traffic services relating to known areas with densities of marine mammals, including seasonal migration areas.
- National protected areas along the route.

- Section A of Annual Notice to Mariners provides information on Marine Mammals Guidelines and Marine Protected Areas, including the Canadian Arctic and refers to general regulatory requirements for all Oceans Act Marine Protected Areas which should be reviewed regularly for updates.
 - There are regulatory requirements for vessels operating in the Tuvaijuittuq Marine Protected Area.
 - Voluntary measures are in place to minimize risks of vessel collisions, and potential impacts of underwater noise on beluga whales and bowhead whales in the two established Marine Protected Areas (The Tarium Niryutait Marine Protected Areas and The Anguniaqvia niqiqyuam Marine Protected Areas) in Canada's Western Arctic within the Inuvialuit Settlement Region.
 - Vessels navigating in the Kitikmeot Region should also refer to section A of Annual Notice to Mariners. Note that there are measures in place for the protection of hunters and trappers and migrating caribou.
- The vessel should consider maintaining an extra lookout when transiting Canadian Arctic waters.
 - It is recommended that vessels carry individuals with local knowledge of the vessel's area of operations.
 - Vessels could be subjected to land use conformity and impact assessment determinations in the Canadian Arctic. Vessels should contact relevant territorial authorities with details of their planned transit before undertaking a voyage through the Canadian waters (ex: Nunavut Planning Commission and Environmental Impact Screening Committee).
 - When transiting through the Tallurutiup Imanga National Marine Conservation Area (NMCA), notwithstanding emergency situations, vessels must navigate with caution and remain at a safe and practicable distance from sensitive areas. For further information, please contact the Superintendent, Nunavut Central, with Parks Canada's Nunavut Field Unit.

Tallurutiup Imanga National Marine Conservation Area

The Government of Canada and the Qikiqtani Inuit Association recently signed an Inuit Impact and Benefit Agreement (IIBA) required for the establishment of Tallurutiup Imanga National Marine Conservation Area (NMCA). Tallurutiup Imanga NMCA is approximately 108,000 km² in size and includes the waters of Eclipse Sound, Milne Inlet (excluding Milne Port), Navy Board Inlet, and Pond Inlet. Tallurutiup Imanga NMCA includes Lancaster Sound and is the eastern entrance to the Northwest Passage. The area is an important hunting ground and a place where the vibrant culture and well-being of the Inuit are strongly tied to the land and sea. It is also home to a rich variety of marine life, many of which are essential for the maintenance of Inuit lifestyles.

Tallurutiup Imanga NMCA is an area of critical ecological importance to marine mammals, including seals, narwhal, beluga, and bowhead whales, as well as walrus and polar bears, and it is bordered by some of the most important seabird breeding colonies in the Arctic, with populations totaling in the hundreds of thousands.



11 References

Transport Canada

- Arctic Shipping Safety and Pollution Prevention Regulations
<https://laws-lois.justice.gc.ca/eng/regulations/SOR-2017-286/index.html>
- Arctic Waters Pollution Prevention Act
<https://laws-lois.justice.gc.ca/eng/acts/A-12/index.html>
- Canada Shipping Act, 2001
<https://laws-lois.justice.gc.ca/eng/acts/C-10.15/index.html?wbdisable=false>
- Collision Regulations
<https://laws-lois.justice.gc.ca/eng/regulations/C.R.C., c. 1416/index.html>
- Marine Personnel Regulations
<https://laws-lois.justice.gc.ca/eng/regulations/SOR-2007-115/index.html>
- Navigation Safety Regulations 2020
<https://laws-lois.justice.gc.ca/eng/regulations/SOR-2020-216/index.html>
- Northern Canada Vessel Traffic Services Zone Regulations
<https://laws-lois.justice.gc.ca/eng/regulations/SOR-2010-127/FullText.html>
- Shipping Safety Control Zones Order
<https://laws-lois.justice.gc.ca/eng/regulations/C.R.C., c. 356/index.html>
- Transport Canada contacts
<https://tc.canada.ca/en/corporate-services/prairie-northern-region>
<https://tc.canada.ca/en/marine-transportation>

- How to Meet STCW Requirements for Masters, Deck Officers and Other Crew Members of Certain Canadian Ships Operating in Polar Waters - SSB No.: 01/2018
<https://tc.canada.ca/en/marine-transportation/marine-safety/ship-safety-bulletins/how-meet-stcw-requirements-masters-deck-officers-other-crew-members-certain-canadian-ships-operating-polar-waters-ssb-no-01-2018>
- Coming into force: New Arctic Shipping Safety and Pollution Prevention Regulations - SSB No.: 05/2018
<https://tc.canada.ca/en/marine-transportation/marine-safety/ship-safety-bulletins/coming-force-new-arctic-shipping-safety-pollution-prevention-regulations-ssb-no-05-2018>
- TP 12259 Arctic Ice Regime Shipping System (AIRSS) Standard
<https://tc.canada.ca/en/marine-transportation/marine-safety/tp-12259e-arctic-ice-regime-shipping-system-airss-standard>
- TP 13670 Guidelines for the Operation of Passenger Vessels in Canadian Arctic Waters
<https://tc.canada.ca/en/marine-transportation/marine-safety/guidelines-operation-passenger-vessels-canadian-arctic-waters-tp-13670-e>
- TP 15383 Guidelines for Assessing Ice Operational Risk
Available for order from: <https://tc.canada.ca/en/publications/marine-publications-abstracts>

Canadian Coast Guard

- Ice Navigation in Canadian Waters
<https://www.ccg-gcc.gc.ca/publications/icebreaking-deglacage/ice-navigation-glaces/page01-eng.html>
- Marine Communications and Traffic Services – Contacts
<https://www.ccg-gcc.gc.ca/contact/mcts-contact-stcm-eng.html>
- Navigational Warnings (NAVWARN)
<https://nis.ccg-gcc.gc.ca/public/rest/messages/en/search>
- Northern Canada Sailing Directions
<https://www.charts.gc.ca/publications/sailingdirections-instructions-nautiques-eng.html>
- Notices to Mariners (NOTMAR)
<https://www.notmar.gc.ca/index-en.php>
- NAVAREAs
<https://inter-w02.ccg-gcc.gc.ca/e0004476?todo=warning>
- Radio Aids to Marine Navigation
<https://www.ccg-gcc.gc.ca/publications/mcts-sctm/ramn-arnm/index-eng.html>

PAME: Protection of the Arctic Marine Environment

- <https://pame.is/arcticshippingforum>
- Polar Water Operational Manual (PWOM)
<https://pame.is/chapter-2#chapter-2-polar-water-operational-manual-full-polar-code-text>

IMO Resolutions

- A.893(21) Guidelines for Voyage Planning
[https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/AssemblyDocuments/A.893\(21\).pdf](https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/AssemblyDocuments/A.893(21).pdf)
- A.999(25) Guidelines on Voyage Planning for Passenger Ships
[https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/AssemblyDocuments/A.999\(25\).pdf](https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/AssemblyDocuments/A.999(25).pdf)

Authority: Transport Canada