



JHC NAVIGATING LIMITS SUB-COMMITTEE

NORTHERN SEA ROUTE NOTES

1. General

The Northern Sea Route (NSR) is one of the most remote areas that any ship can navigate and this must be the basis for any risk assessment. Press interest remains high in the potential of the NSR but commercial take-up is limited by practicalities.

These notes concern the coastal route across the top of Russia, and do not consider any potential trans-polar route, nor the northwest passage across the top of Canada.

Enhanced hull risks along the NSR are ice contact, propeller, rudder and associated machinery damage from ice, grounding on uncharted rocks, icing, fog, collision, delay/lack of salvage exacerbated by remoteness, and lack of information about safe ports.

Enhanced secondary risk factors – poor maps, poor hydrographic and meteorological data, poor satellite navigation information and communication problems.

Basic Weather Window – The NSR has a short summer season and the transit route is effectively limited to the period between July and September. Ice conditions during the summer season in the NSR will fluctuate but there will probably be 50cm to 1.2m of ice present. Ice conditions across the three main sea areas (Kara Sea, Laptev Sea and East Siberian Sea) can also be very different. These areas are not particularly well charted so good charts are not readily available. The summer transit season in 2011 was a record 20 weeks but this should not be seen as typical.

2. Transits

Transits are possible with caution but they cannot be considered routine. In 2011 there were 34 transits of which 15 were carrying either gas condensate or iron ore, all with Russian icebreaker escort, as per current Russian requirements. The remainder were in ballast or domestic trades. Most voyages were west to east from Murmansk through the Bering Strait to ports in Asia.

Whilst there is co-operation between the ice pilot and the vessel there is no data to say whether vessels are required to or do provide an approved voyage plan and who approves it. There is a lack of commercial infrastructure along the NSR including drydock and search and rescue facilities and this is unlikely to change in the foreseeable future.

Transits usually hugged the coastline which necessarily restricts drafts to 15m or less, but because of a lack of hydrographic data it is impossible to be specific about water depths. There is a deeper water route to the north of the New Siberian Islands but exact draft restrictions are not known and accessibility is also dependent on the prevailing ice conditions.

3. The Northern Sea Route Administration (NSRA) and its regulations:

The NSRA was set up by the Russians to promulgate safe navigation and has published:

- 1991 "Regulations for navigation on the seaways of the Northern Sea Route (NSR) were officially published on 13.07.1991 in the Notices to Mariners No.29", which became operational on June 1, 1991.

The Head of the Administration of the Northern Sea Route has noted that three other texts adopted in 1996 regulate the present-day legal regime of this sea route, namely:

- 1996 Guide to Navigating Through the Northern Sea Route (Part II.B.)
- 1996 Regulations for Icebreaker and Pilot Guiding of Vessels through the Northern Sea Route (Part II.C.)
- 1996 Requirements for the Design, Equipment, and Supplies of Vessels Navigating the Northern Sea Route, (Part II.D.)

Any vessel hoping to transit must notify the NSR Administration (NSRA).

- The NSRA, (HQ in Moscow) would send a surveyor to inspect the ship, and may grant permission to navigate
- CNIIMF (Central Marine Research and Design Centre) issue the ice certificates which double as an operational manual. Included in the certificates are minimum power requirements, and required spacing distances for supporting icebreakers.
- Rosatomflot – provides icebreaker services on the NSR

Translations of the 1996 regulations are available but the main contents are outlined below:

NSRA Rules for Navigation include these headings:

Request for guiding through the route
Requirements to vessels and their commanding personnel
Due security of liability
Check (*inspections*)
Order of navigation
Control of navigation
Suspension of navigation
Removal of vessels off the route
Liability
Notification (*pollutants*)

Permission to pass through the NSR could be issued by NSRA upon completion of a satisfactory survey of the ship and her compliance with the 1996 Requirements, such to be conducted at any suitable port at owner's expense.

NSRA Regulations for Icebreaker and Pilot Guiding require advice of:

- 1 Name of vessel, flag, owner
- 2 Gross and net register tonnage
- 3 Total displacement
- 4 Principal dimensions, engine output, draft, speed, year of construction
- 5 Ice class, classification society, date of the last attesting
- 6 List of deviations from the 1996 Requirements on design
- 7 Approximate date of the voyage
- 8 Certification of insurance of liability *iro* pollution
- 9 Purpose of the voyage (cargo transport, tourism, scientific research)

NSRA Requirements for the design, equipment and supplies cover:

- General provisions
- Hull of vessel
- Machinery plants
- Systems and devices
- Stability and unsinkability
- Navigation and communications equipment
- Provisions and emergency facilities
- Crew of vessel

4. Icebreakers and Ice Pilots

The Russian authorities can provide a number of nuclear powered icebreakers for use along the NSR and these can break up to 2.8m of level ice whilst also having the capability to ram and break larger ice ridges. Russia is reported to be planning three new icebreakers to supplement its aging fleet of seven nuclear powered and 20-30 diesel-electric icebreakers that operate in the Baltic in the winter months.

Even during the summer season, the Russian authorities insist on one or even two ice breakers as escorts but the costs are not publically available. The number of icebreakers required is dependent on the size of the vessel being escorted and the prevailing ice conditions.

In addition, at least one Russian ice pilot is required and usually two but it is not clear what level of experience or training they would have and this also applies to the crew of the escorted vessel.

5. Owner responsibilities

Owners should contact their class society to see what spares would be expected in terms of fuel, fresh water, and supplies.

Vessels should have the latest updated maps, and suitable radar and navigation limits.

Owners should be aware of IMO Circular (399) 1056 (2002) Arctic Guidelines and IMO 1024(26) Guidelines for ships operating in polar waters dated 2 December 2009.

Owners should also be aware of any relevant classification society Ice Class rules, Winterization requirements and guidelines for ships operating in cold climates.

The following stocks should be on board:

- Double stock of fuel oil and oil
- Minimum 60 days supply of fresh water, food, and other ship's supplies
- Vessel should be able to sail without discharging waste for 30 days
- Ballast tank heating system should be connected to external hull above the load-line
- Vessel's sea chest(s) shall be fitted with heating and blasting facilities

6. Risk Assessment Considerations

The NSR is mostly in Area 2 as designated by the International Navigating Conditions 1/11/03 (CL 367). Given its extent, climate and sea conditions will inevitably vary. See accompanying map of Russian ports.

Salvage support is so unlikely that it should be discounted. It is almost impossible to guarantee that an independent surveyor can attend on behalf of underwriters, so warranting such is impractical. Initial factors for consideration are:

- Voyage feasibility study including ports of refuge
- Classification and suitability of vessel for the intended voyage
- Stability of vessel in icing
- Anchoring and towing arrangements
- Backup systems
- Proposed route, voyage dates and timing
- Crewing arrangements
- Experience of officers engineers and crew in Arctic navigation
- Ice breaker and/or escort arrangements
- Ice certificate should be on board and be suitable for the planned voyage
- Surveyors
- Access to up-to-date weather/ice information during the voyage
- Assessment of chart accuracy
- Whether the vessel has a Russian speaking deck officer on board
- Whether transshipments may be required
- Whether an ice pilot will be on board
- Bunkering arrangements
- JH2011/002 breach of navigation requirements

Winterisation costs could be anything between \$20,000 and \$100,000. As these are voluntary, adoption of such precautions is likely to be at minimum levels.

7. Environmental Considerations in Cold Climates

- Ice conditions
- Low temperatures
- Sea states
- Wind
- Fog - visibility
- Currents
- Tide
- Snow
- Hail
- Rain
- 24 hour daylight or darkness
- Conditions for icing – icing can occur if the air temperature <-2C, water temp <5C, wind >20knots.

This table shows compiled data from a number of sources to illustrate typical meteorological conditions along the NSR:

	Kara Sea	Laptev Sea	East Siberian Sea
Winter Season	Oct-May	Oct-June	Oct-May/June
Temp typical	-26°C	-30°C	-21°C
Temp extreme	-48°C	-50°C	-48°C
Ice thickness	1.8m-2.5m	1.6m-2.5m	1.2m-2.m
Fog	100 days	75 days	80 days
Summer Season	June-Sept	July-Sept	Mid June-Sept
Temp typical	7°C	8°C	15°C
Temp extreme	20°C	26°C	30°C

8. Casualties in ice areas

On average, there are 8 casualties every year in ice areas and a list is on the JH Navigating Limits webpage.

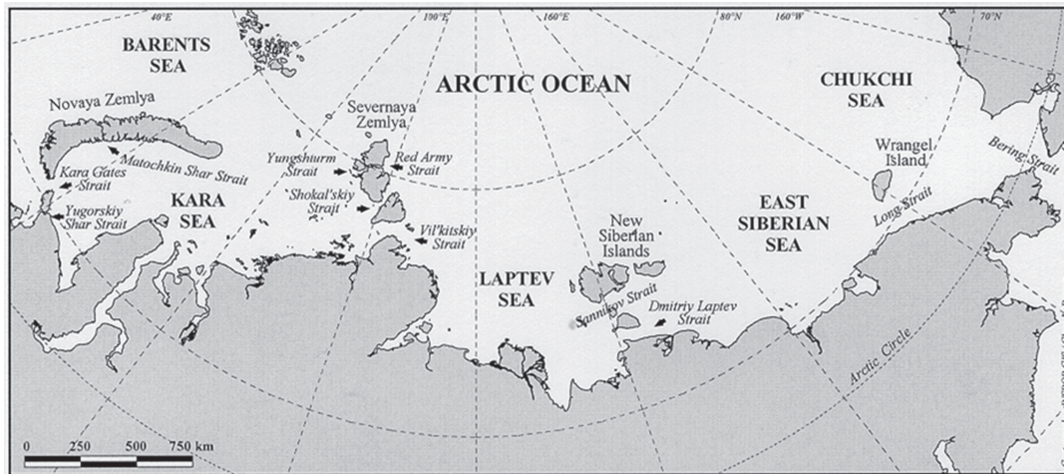
The *Magdalena Oldendorff* was stuck in ice for 5 months.

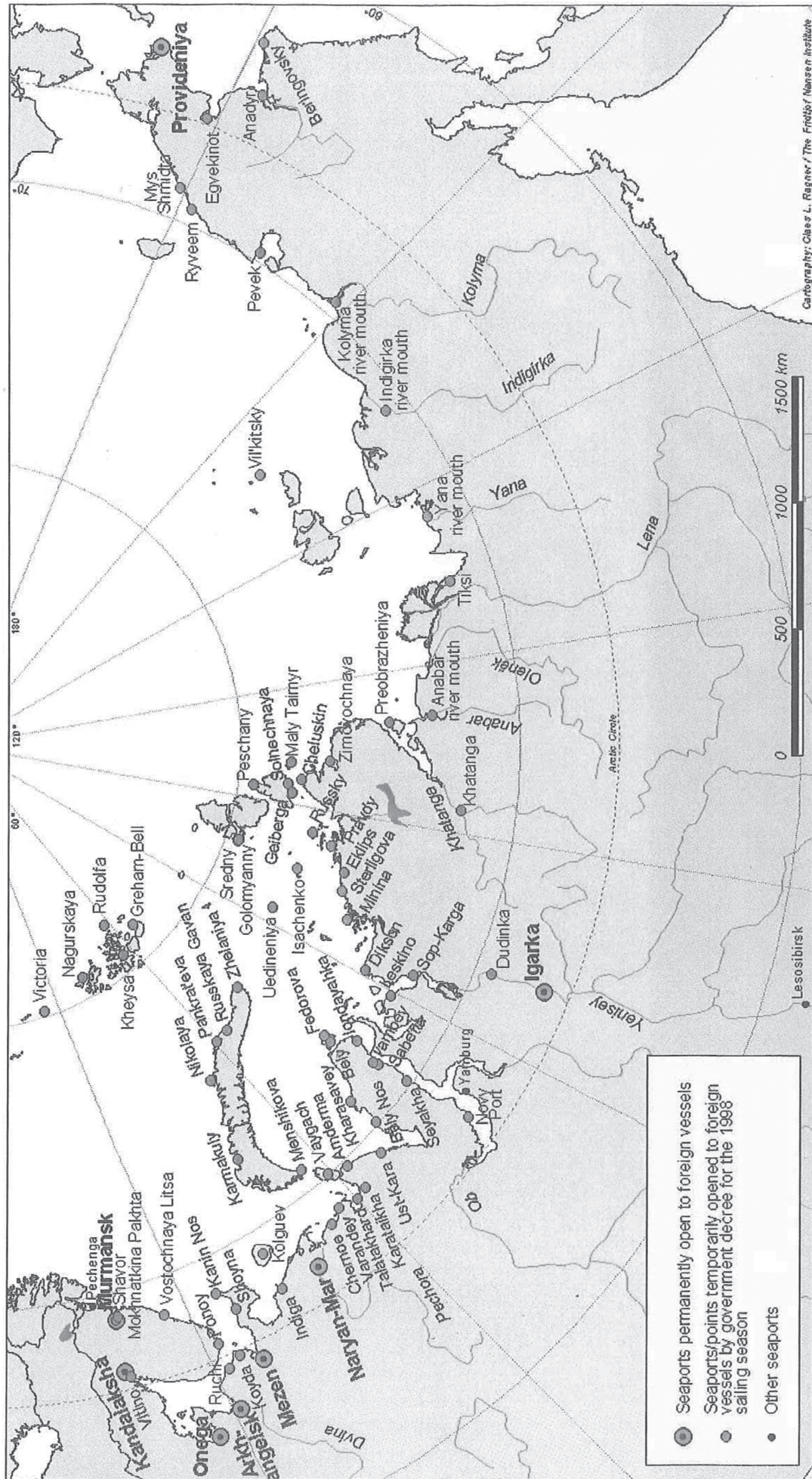
Casualties can attract considerable media interest as when the cruiseship *MS Explorer* sank in 2007 after reportedly striking ice in benign conditions. In that case, it was notable that no lives were lost. Cruiseships regularly visit northern waters, and to cite only one example, the waters around Spitzbergen are less than adequately mapped.

Although safety manuals recommend passengers staying on board, it is easy to envisage a scenario where a cruise ship offloads its passengers for a day ashore in Greenland, and the weather changes, stranding them ashore without shelter. There are only 5 helicopters in Greenland.

Whilst every effort has been made to verify the statements in this paper, underwriters should satisfy themselves on the specifics of each risk.

Illustrative Maps of the North Russian Region





JH. 004. Sold by Witherby & Co. Ltd., London. – © Copyright – The Institute of London Underwriters