WINTER NAVIGATION

2023–2024

SWEDISH MARITIME ADMINISTRATION

Cover Photo: Pancake ice
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Contents

1. General information

1.1 Ice-breaking service

The Government Ice-breaking service is managed by the Swedish Maritime Administration. The functions of ICE INFO and the Local Office of the Government Icebreaking Service are, within the operating district, to obtain and pass information, requests and instructions concerning the icebreaking service between the Board of the Service, interesting parties and perform any task imposed by the Board of the Icebreaking Service.

The state icebreakers are the **ALE**, **ATLE**, **FREJ**, **ODEN** and **YMER**. The buoytender vessel **BALTICA** and **SCANDICA**, other suitable vessels and municipal and private tug-boats are chartered when necessary. The main function of the State icebreaking is to break ice between open waters and water protected from sea ice, pack ice and similar ice obstacles (sea icebreaking).

1.2 The Executive Boards of Ice-breaking Services and Icebreakers

Sweden

Postal address: Swedish Maritime Administration, Ice-breaking Department
601 78 Norrköping

Telephone:
Operating centre ..... **+46-(0)771 63 25 25**
Receptionist (08.00-16.40) ..... +46-(0)771 63 00 00
Operations manager ..... +46-(0)10 478 62 58

During icebreaking season a 24 hour duty system is in operation at the operating centre.

Fax: +46-(0)11-10 31 00
E-mail: opc@sjofartsverket.se
Internet: www.sjofartsverket.se
www.sjofartsverket.se/winternavigation

Current information: The unit will provide a brief account of the ice situation for the day, the operating areas of the icebreakers together with instructions for shipping and an updated ice chart at Swedish Maritime Administration homepage: www.sjofartsverket.se/winternavigation also on Baltic common www.baltice.org

Contact information to the Swedish icebreakers

Icebreaker	Callsign	VHF [1]	e-mail	Telephone	Satellite phone
Ale	SBQP	06	bridge@ale.sjofartsverket.se	+46 10 - 478 63 95	+46 31 - 33 44 952
Atle	SBPR	68	bridge@atle.sjofartsverket.se	+46 10 - 478 63 75	+46 31 - 33 44 948
Frej	SBPT	77	bridge@frej.sjofartsverket.se	+46 10 - 478 63 65	+46 31 - 33 44 940
Oden	SMLQ	9	bridge@oden.sjofartsverket.se	+46 10 - 478 63 55	+46 31 - 33 45 511
Ymer	SDIA	69	bridge@ymer.sjofartsverket.se	+46 10 - 478 63 85	+46 31 - 33 44 944
Baltica	SJOY		baltica@sjofartsverket.se	+46 10 - 478 57 00	
Scandica	SKFZ		scandica@sjofartsverket.se	+46 10 - 478 57 71	

All icebreakers Channel 16, 73 and 2332 kHz

1 Exception's from the given frequency may occur due to the area of operation

Finland (authority)

Postal address:	Finnish Transport Infrastructure Agency Maritime Unit P.O. Box 33 00521 HELSINKI, FINLAND	
Telephone:	Switchboard (08.00-16.15)	.....+358-(0)295 34 30 00
	Operational number	.....+358-(0)504 71 48 50
	Senior Maritime Officer (traffic restrictions)	...+358-(0)295 34 33 28
E-mail:	winternavigation@ftia.fi	
Internet:	www.vayla.fi/en/winternavigation	

Contact information to the Finnish icebreakers

Isbrytare	Callsign	VHF	e-mail	Telefon
Urho	OHMS		urho.bridge@arctia.fi	+358(0)306 20 75 00
Sisu	OHMW		sisu.bridge@arctia.fi	+358(0)306 20 74 00
Voima	OHLW		voima.bridge@arctia.fi	+358(0)306 20 76 50
Fennica	OJAD		fennica.bridge@arctia.fi	+358(0)306 20 77 00
Nordica	OJAE		nordica.bridge@arctia.fi	+358(0)306 20 78 00
Otso	OIRT		otso.bridge@arctia.fi	+358(0)306 20 73 00
Kontio	OIRV		kontio.bridge@arctia.fi	+358(0)306 20 72 00
Polaris	OJQT		polaris.bridge@arctia.fi	+358(0)942 45 04 59
Zeus of Finland	5BSP4		tug.zeus@alfonshakans.fi	+358(0)400 18 40 31

All icebreakers Channel 16 and 2332 kHz

Finland (icebreaker operations)

Postal address:	Arctia Ab Maringatan 9 00160 Helsinki, Finland	
Telephone:	Operational management (24 h):	.....+358 46 876 7050
E-mail:	icebreakers@arctia.fi	

Denmark

Postal address:	Søværnskommandoen Herningvej 30 DK-7470 Karup J, DENMARK
Telephone:	+45 72 85 00 00 +45 72 81 20 80
E-mail:	mas@sok.dk
Internet:	https://forsvaret.dk/istjenesten

Norway

Postal address:	Kystverket Rederi Fyr og Sjømerking Postboks 1502 NO-6025 ÅLESUND
Telephone:	+47 417 65 255
E-mail:	steinar.hansen@kystverket.no
Internet:	www.kystverket.no

Estonia

Postal address:	Estonian Transpotr Administration Icebreaking coordinator Martin Kaarjärv (icebreaking coordinator) Valge 3, EE 10413 TALLINN, ESTONIA
Telephone:	+372 52 43 842
E-mail:	winternavigation@transpordiamet.ee
Internet:	www.transpordiamet.ee

Latvia

Postal address:	Free Port of Riga Authority Arnis Smits Meldru Street 5a, LV-1015 RIGA, LATVIA
Telefon:	+371 670 82 001 +371 292 46 774
E-mail:	info@rop.lv captain@rop.lv
Internet:	www.rop.lv

Poland

Postal address:	Harbour Master Port of Gdynia Jacek Kaszube (Head of ice-breaking)) 10 Chrzanowskiego, 81-339 GDYNIA, POLAND
Telephone:	+48 (0)58 620 28 53
Fax:	+48 (0)58 661 60 51
E-mail:	kpgdynia@umgdy.gov.pl

Germany

	Jörg Kuchta, Federal Waterways and Shipping Agency/Shipping Department
Telephone:	+49 228 7090 4372
E-mail:	joerg.kuchta@wsv.bund.de
Postal address:	Authority Waterways and Shipping Kiellinie 247 D-241 06 KIEL, DEUTSCHLAND
Internet:	www.gdws@wsv.bund.de

1.3 Local Offices

Luleå

Emma Hellström
Bay of Bothnia pilotage area
Strömörvägen 9
974 37 LULEÅ
Phone: +46 (0)10 - 478 60 57
Cell: +46 (0)727 - 24 60 57
E-mail: emma.hellstrom@sjofartsverket.se

Piteå

Clas-Robert Johansson
Piteå Hamn AB
Box 716
941 28 PITEÅ
Phone: +46 (0)911 - 23 21 32
Cell: +46 (0)705 - 93 10 34
E-mail: clas.johansson@piteahamn.se

Skellefteå

Emma Sundelin
Skelleftehamn
Järnvägsleden 81
932 33 SKELLEFTEHAMN
Cell: +46 (0)70 - 630 96 64
E-mail: emma.sundelin@skelleftea.se

Umeå

Markus Franzén
Kvarken Ports
Umeå Hamn
913 32 HOLMSUND
Phone: +46 (0)90 - 16 32 90
Cell: +46 (0)70 - 387 00 29
E-mail: markus.franzen@kvarkenports.com

Örnsköldsvik

Mikael Strindin
Örnsköldsviks Hamn & Logistik AB
Sjögatan 4
891 60 Örnsköldsvik
Cell: +46 (0)76 - 247 34 31 (work)
Cell: +46 (0)70 - 299 34 21 (home)
E-mail: mikael.strindin@ovikshamn.se

Kramfors

Anders Nilsson
Gävle pilotage area
Sundsvalls pilotstation
865 92 ALNÖ
Phone: +46 (0)10 - 478 47 79
Cell: +46 (0)721 - 42 11 49
E-mail: anders.nilsson@sjofartsverket.se

Sundsvall

Mats Lundberg
Sundsvalls Hamn AB
Box 722
851 21 SUNDSVALL
Cell: Cell: +46 (0)703 - 19 35 40
E-mail: mats.lundberg@sundsvallshamn.se

Iggesund

Kenneth Larsson
Iggesunds Bruk
825 80 IGGESUND
Phone: +46 (0)650 - 284 88
Cell: +46 (0)702 - 03 67 61
E-mail: kenneth.larsson@holmen.com

Söderhamn - Gävle

Dag Tedenby
Gävle pilotage area
805 95 GÄVLE
Phone: +46 (0)10 - 478 47 71
Cell: +46 (0)708 - 19 14 36
E-mail: dag.tedenby@sjofartsverket.se

Stockholm

Per Stenhammar
Stockholms pilotage area
Box 27808
115 93 STOCKHOLM
Phone: +46 (0)10 - 478 48 95
Cell: +46 (0)709 - 71 83 01
E-mail: per.stenhammar@sjofartsverket.se

Södertälje - Mälaren

Susann Tolppola
Södertälje pilotage area
Slussgatan 11
151 71 SÖDERTÄLJE
Phone: +46 (0)10 - 478 48 02
Cell: +46 (0)708 - 21 28 78
E-mail: susann.tolppola@sjofartsverket.se

Oxelösund - Norrköping

Jimmy Rosander
Bråviken pilot Area
Sandviksvägen 3
613 31 OXELÖSUND
Phone: +46 (0)10 - 478 48 25
Cell: +46 (0)708 - 19 12 97
E-mail: jimmy.rosander@sjofartsverket.se

Västervik - Simrishamn inklusive Öland och Gotland

Tobias Chroneer
Kalmar pilotage area
Homhällevägen 48
572 40 OSKARSHAMN
Phone: +46 (0)10 - 478 51 55
Cell: +46 (0) 702 - 98 88 63
E-mail: tobias.chroneer@sjofartsverket.se

Ystad - Helsingborg

Anders Alestam
Malmö pilotage area
Box 855
201 80 MALMÖ
Phone: +46 (0)10 - 478 47 83
Cell: +46 (0)708 - 34 85 50
E-mail: anders.alestam@sjofartsverket.se

Halmstad

Jens Madsen
HallandsHamnar Halmstad AB
Box 1
301 02 HALMSTAD
Phone: +46 (0)35 - 15 53 00
Cell: +46 (0)708 - 50 56 35
E-mail: jens.madsen@portofhalland.se

Falkenberg

Fredrik Swenson
Edvin Svenson Skeppsmäkleri AB
311 21 FALKENBERG
Phone: +46 (0)346 - 71 54 42
Cell: +46 (0)705 - 92 96 54
E-mail: fredrik@edvin-svenson.se

Varberg

Johan Börjesson
Hallands Hamnar Varberg AB
Östra Hamnvägen 21, VARBERG
Phone: +46 (0)340 - 880 00
Cell: +46 (0)706 - 57 00 47
E-mail: johan.borjesson@portofhalland.se

Göteborg

Erik Valler
Port of Gothenburg
Amerikaskjulet
Emigrantvägen 2B
414 63 GÖTEBORG
Phone: +46 (0)31 - 368 75 12
Cell: +46(0)722 - 55 76 83
E-mail: erik.valler@portgot.se

Marstrand-Strömstad

Daniel Runsesson
Marstrand/Lysekil pilotage area
Södra Strandgatan 9-11
440 30 MARSTRAND
Phone: +46 (0)10 - 478 53 60
Cell: +46 (0)701 - 44 59 96
E-mail: daniel.runesson@sjofartsverket.se

Göta Älv/Marieholm

Annika Hjelmsten
Icebreaking management
Östra promenaden 7
601 78 NORRKÖPING
Phone: +46 (0)10 - 47 85 308
Cell: +46 (0)702 - 12 01 57
E-mail: annika.hjelmsten@sjofartsverket.se

Göta Älv, Trollhättekanal

Robert Sörling
Trollhättan Canal
Box 949
461 29 TROLLHÄTTAN
Cell: +46 (0)702 - 00 81 83
E-mail: robert.sorling@sjofartsverket.se

Vänern

Susanna Olsson
Trollhättan Canal
Box 949
461 29 TROLLHÄTTAN
Phone: +46 (0)10 - 478 55 70
Cell: +46 (0)708 - 47 22 63
E-mail: susanna.olsson@sjofartsverket.se

2. Information about Winter Navigation
(information for industry, ship owners, shippers and charterers)

2.1 Gereral information

The purpose of these rules is to jointly ensure the efficiency of Swedish merchant shipping and to reduce its total costs in wintertime without lowering the standard of service.

The Swedish Maritime Administration Icebreaking Division follows the development and changes of iceconditions and by providing icebreaking services and apply an apt traffic restriction policy to accomplish safe and efficient traffic to Swedish ports.

2.2 Vessels entitled to icebreaker assistance[1]

Icebreaker assistance can be provided to vessels that meet the port specific assistance restrictions issued by the SMA icebreaking management. In addition, the ship must meet the requirements set for the ship's construction and crew.

- The vessel must be loaded to a draft between the upper and lower ice water line (UIWL and LIWL in the picture below). Vessels that rides too high or too low in the water will be refused assistance.

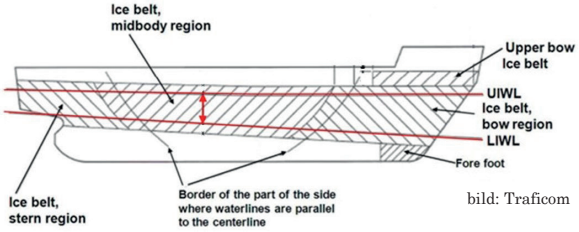


bild: Traficom

- The propeller is completely below the surface of the water and, if possible, completely under the ice.
- The cooling water system must be designed and function in such a way that, when running in ice, the supply of cooling water is secured even when the ship is running at maximum engine power.
- The ship uses the maximum engine power, MCR, if the ice conditions or the icebreaker so require.

2.3 Provide ice class information

In order for the icebreaker service to be able to flow unimpeded, the Swedish Maritime Administration needs to have access to information about the assisted vessels' ice class and ice drafts (UIWL and LIWL). To avoid delays, brokers who charter ships in winter that have not visited Swedish or Finnish ports with ice restrictions during the last two years are therefore asked to ensure that correct information regarding the ship's ice class is registered with the Swedish Maritime Administration. This is done by sending in the technical class papers, or equivalent documentation containing information about the ship's ice class and ice class belt (UIWL and LIWL) to opc@sjofartsverket.se well in advance of the ship's arrival.

If sufficient ice class information is not available in good time before an eventual need for icebreaker assistance, it can lead to delays or denial of icebreaker assistance.

1 Further information on the requriements can be found in Ch. 5.3

2.4 Assistance restrictions

Traffic restrictions are imposed to improve the efficiency of vessel traffic.
Icebreaker assistance is only given to vessels, which meet the requirements set out in the traffic restrictions.

The first restrictions - ice class II and minimum 2 000 dwt - is normally initiated in early December for the ports in the Bay of Bothnia.
The traffic restrictions are then gradually tightened up during normally winters to ice class 1A and minimum 4 000 dwt, see the table mentioned below.
Traffic restrictions can be supplemented by cargo restrictions e.g. 2 000 tonnes loaded and/or unloaded cargo per port.

The Swedish Maritime Administration (SMA) will announce tightening of traffic restrictions if possible six (6) days before their entry into force (Saturdays and holidays included). Abatement of traffic restrictions will come into force on the day it is announced.

Information on traffic directions and existing and notified traffic restrictions is obtained via the icereport and icechart issued by the Swedish Hydrological and Meteorological Institute (SMHI) (see Weather and ice information), on the SMA home page http://www.sjofartsverket.se/winternavigation and also on www.baltice.org

Guiding data for traffic restrictions

The table describes the approximate date and the minimum ice class and minimum dwt during a normal winter in the Bay of Bothnia, the Sea of Bothnia, Lake Mälaren, respectively Lake Vänern. Please note that the tables only describe a fictitious scenario during a normal ice winter and cannot be assumed to be representative of any arbitrary year.

Min. Ice Class/Min. dwt	Bay of Bothnia	Sea of Bothnia
II/2000	1/12	1/1
IC/2000	15/12	15/1
IB/2000	1/1	1/2
IA/3000	15/1	15/2
IA/4000	31/1	-
IA/3000	10/4	-
IB/2000	10/5	1/4
II/2000	15/5	15/4

Mini. Ice Class/Min. dwt	Lake Mälaren	Göta Älv, Lake Vänern
IC/1300, II/2000	5/1	25/12
IC/2000	1/2	10/1
IB/2000	15/2	1/2
IC/2000	25/1	15/2
IC/1300, II/2000	15/3	1/3

Due to variations in winter iceconditions it is not possible to give the corresponding guiding data for shipping in other coastal areas.

Ice class and tonnage size requirements will vary according to the degree of severity of the winter. Small ports and loading wharves may have to be closed, even if winter navigation is in progress within other parts of the same region, if there is a lack of locally owned ice-breakers and due to a limited availability of state icebreaker resources. Directions for an alternate port of call might also be given.

Local icebreakers of sufficient size and with adequate engine power must be available within the various districts.

2.5 Exemptions

If there is available icebreaking capacity or if the weather and ice forecast is favourable (temporary easy ice conditions) exemptions can be granted.
Exemptions are always granted for one voyage only.

The application form can be found at www.sjofartsverket.se/winternavigation.
The exemption application is made by emailing the completed form to opc@sjofartsverket.se, no more than 10 days before the portcall.

Applications recieved before 12:00 Swedish Local Time on weekdays will generally be concidered before 16:00 Swedish Local Time of next weekday.
Incorrectly completed forms will be returned to sender.

Exemptions are generally not granted to vessels more than 20 years of age or to vessels carrying transit goods.

2.6 Prioritization

Vessels in distress are always assisted first.
Afterward vessels going to or coming from Denmark, Finland, Norway, Sweden or Germany are assisted, with priority given to passenger vessels and to vessels carrying goods of special significance. Otherwise there are no prioritization between the vessels. The Captain of the icebreaker can to ensure safe and efficient traffic change the vessel priority.

Tugs with barges (barges connected with cables or hawsers) and so-called river vessels are not suitable for winter navigation and are not assisted by the Swedish Icebreaking Service.

The Icebreaking Division can deny vessel assistance or postpone it, although the vessel formally meets all requirements.
This is based on reports that the vessel is not suitable for winter navigation and such a vessel cause unacceptable delays for other vessels.

2.7 Traffic information

Harbour offices, agents, vessels or ship owners should at least once a week pre-report expected vessels by SSNS. Imposing traffic restrictions starts the obligation to report and is valid until the traffic restrictions are lifted. For icebreaking service to be timely and efficient, ship owners and/or agents should inform ICEINFO +46 (0) 10 492 76 00 about the schedules and changes in the schedules of their vessels.

3. Navigating in Ice

The Swedish Maritime Administration will not assume any liability for delay, damage or any other loss, caused to ship, its personnel, passengers or cargo that occur in connection to icebreaker assistance.

Assistance and advice provided to vessels at its own risk

3.1 Captain obligations

The captain shall control that there are routines and instructions for safe navigation in ice in the ships ISM-manual.

3.2 Notification and Reporting

In order to provide all winter shipping information needed by the Executive Board of the Icebreaking Service and the icebreakers, to minimize delays and to optimize icebreaking recourses etc, ships bound for Swedish and Finnish ports subject to traffic restrictions and situated in the Bay of Bothnia and the Sea of Bothnia, shall report according to following:

3.2.1 Passage reporting for ships destinated to Swedish and Finnish ports with traffic restrictions

	When passing northly throug Sea of Åland at N 60° *
Call signal:	ICE INFO
Channel:	VHF channel 82 (or phone +46 (0) 10 492 76 00)
Contents of report:	- Ship's name - Nationality - Destination and ETA - Speed
Language:	Swedish or English (using IMO Standard Marine Communications Phrases)
E-mail:	ice.info@sjofartsverket.se

ICE INFO communicates advance information from the Executive Board of the Ice-breaking Service.

Ships bound for Finnish or Swedish ports in the Quark or in the Bay of Bothnia should give notification to Bothnia VTS 20 nautical miles south of Nordvalen lighthouse (N 63° 32' E 020° 47') using VHF channel 67. Bothnia VTS will relay instructions (navigational data, waypoints, name , position and VHF working channel of the icebreaker) given to them by the authorities.

*A more southerly line can be given if motivated by the ice situation.

3.2.2 Arrival report for ships in Swedish ports with traffic restrictions

Arrival report:	When ship is moored
Call signal:	ICE INFO
Channel:	VHF 16 or phone +46 (0) 10 492 76 00
Contents of report:	- Ship name - Call sign - ETD and next destination
Language:	Swedish or English (using IMO Standard Marine Communications Phrases)

3.2.3 Departure report for ships in Swedish ports with traffic restrictions or vessels in Swedish ports destinated to ports with traffic restrictions

Arrival report:	- Shall be reported at least 6h before departure. - If anything which affects estimated time of departure occurs a new estimated time of departure shall be reported as soon as possible. - Report shall also be made at departure.
Call signal:	ICE INFO
Channel:	VHF 16 or phone +46 (0) 10 492 76 00
Contents of report:	- Ship name - Call sign - ETD/ATD and destination
Language:	Swedish or English (using IMO Standard Marine Communications Phrases)

In order to get early information regarding ice routes ships can send an e-mail to ice.info@sjofartsverket.se

Stating in the e-mail:
- Position
- Destination
- ETA
- Intended route

3.3 Icebreaker contacts

On board the ships and vessels, constant radio monitoring shall be maintained.
The icebreakers in operation will continuously watch VHF channel 16 and MF 2332 kHz. Call to icebreakers can also be connected through Swedish Coast Radio. Icebreakers can also be contacted by telephone according to the table on page 1.
VHF traffic on recommended communication channels shall be used when giving orders from icebreakers to assisted vessels.

3.4 Instructions for captains on ships receiving icebreaking assistance

3.4.1 All instructions given from icebreakers must be complied with.

3.4.2 Particular attention shall be paid to the following:

- The recommended VHF channel shall be constantly monitored.
- The vessel's propulsion machinery shall be ready for rapid manoeuvres at all time.
- The icebreaker decides if and when the vessel shall be towed.
- If the vessel springs a leak or sustains any other damage that may affect the vessel's ability to follow the icebreaker or otherwise to comply with the directives given from the icebreaker, this must be communicated immediately to the icebreaker.
- To be eligible for icebreaker assistance, vessels navigating in icecovered waters must be equipped with a powerful searchlight. Vessels forming part of a convoy, which has got stuck in the ice, must keep their searchlights switched off.

3.4.3 Instructions are given to assisting vessels via VHF on dedicated assistance channel.

3.4.4 In order to avoid collisions, a vessel in convoy shall inform other vessels without delay on the dedicated assistance channel if it stops or slows down its speed substantially.

3.4.5 During the hours of darkness, the state icebreakers show a blue light at their mastheads, which is visible all around the horizon.

3.4.6 Vessels failing to comply with prescribed restrictions and traffic directions or orders given from icebreakers will be refused assistance.

3.4.7 Finnish icebreakers are equipped with two rotating red warning lights located on top of each other that are lit whenever the icebreaker has to stop unexpectedly or has to make an abrupt reduction in speed. The assisted vessel/vessels will then have to use every possible means to immediately make full astern. It is to be noted that this warning equipment does not exist on the Swedish icebreakers.

3.5 Instructions for vessels on Lake ”Vänern” and ”Göta Älv”

3.5.1 Reporting

When traffic restrictions are in force on the ”Göta Älv” and on Lake ”Vänern” vessels should report to Canal centre in ”Trollhättan” **Tel +46 (0) 771-63 06 95 or on VHF Channel 9, 14 or 16 at the following occasions**

- Before departure from or at passage Gothenburg at the Göta älv bridge
- Passage ”Dalbobron” north- or south bound
- At arrival to and at departure from harbours in Lake ”Vänern”

Arrival

Vessels shall report after mooring. The arrival report shall contain the following: vessels name, nationality, estimated time of departure, Dwt, shaft output, draft, ice class, cargo quantity and next destination.

Departure

The Canal centre in ”Trollhättan” should 6 h. before departure from or at passage Gothenburg or from harbours in Lake ”Vänern” be informed. If the departure will be delayed the Canalcentre should be informed as soon as possible.

3.5.2 Passage in the Canal during ice-conditions

If a vessel get stuck in pack ice the following vessel are not allowed to pass. The following vessel should stop at a distance allowing the vessel who got stuck possibility to go astern and out of the pack ice. According to the ice-conditions special meeting places will be appropriated. When ice obstacles occur in the Canal tug-boats will assist the merchant vessels. If vessels observe pack ice or other obstacles they should immediately report that to the tug-boat or nearest Canal-office.

a) Meeting is not allowed above the lock of ”Brinkebergskulle”.
b) Meeting is not allowed above the lock Nr 2, meeting shall take place north of the pier in ”Åkerssjö”. Vessels on its way down shall wait in ”Åkerssjö” north of the pier until the lock is ready.
c) Meeting above the lock of ”Ströms” shall take place in the river, not between the piers.

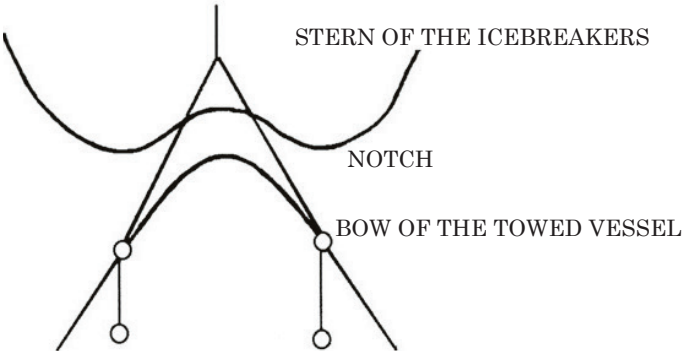
3.6 Towing

In difficult iceconditions such as hard icepressure or passage through heavy iceridges, towing might be the only means for ensuring a safe and effective assistance.

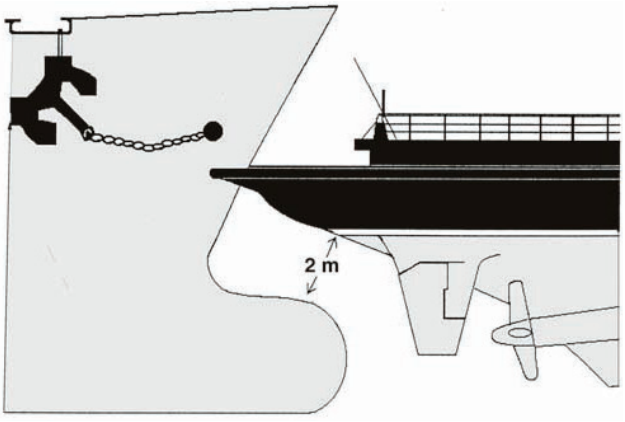
If the below mentioned conditions cannot be fulfilled, towing in the icebreaker's notch is no longer safe, therefore not to be performed.

The master of the icebreaker is then entitled to refuse assistance of the vessel until assistance is possible without towing.
Towing of fully operative vessels by icebreakers is free of charge. The fee for towing in the nature of salvage or some other relief operation is determined by the Swedish Maritime Administration on a year-to-year basis.
Normally, towing will take place by bringing the vessel's bow into the towing notch of the icebreaker. The icebreaker will hand over two or four cables, which are to be fastened to the towing bollards.

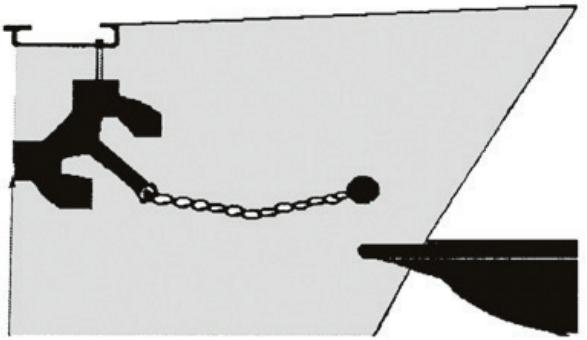
- Icebreaker and the towed vessels are connected as bellow:



- The vessel shall be prepared to make fast or cast off the towing cable at any time.
- For bulb vessels, the distance between the topside of the bulb and the icebreaker hull must be at least two metres (see illustration).

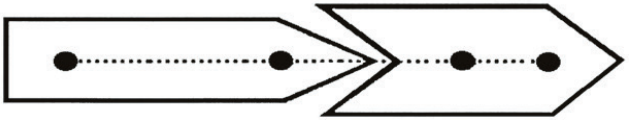


- For vessels with anchors placed on the outside of the vessel in such a manner that the anchors may come into contact with the icebreaker's towing notch, the anchors will have to be catted, i.e. moved astern (see illustration) or placed onto deck before towing operation can begin.

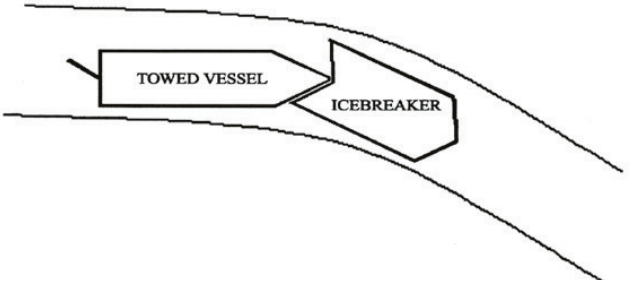


The hull of the towed vessel is always acting as an active rudder of the icebreaker.

- During towing operation the towed vessel shall be steered manually, and the machine must be ready for manoeuvre
- When proceeding straight ahead the vessel should be kept in line with the icebreaker's masts.



- The towed vessels propulsion machinery shall only be used according to given instructions from the icebreaker.
- If the vessel cannot keep the engine output as high as required or it is affected by rudder problems, the icebreaker should be notified immediately.
- If the vessel is asked by the icebreaker to help in changing course, the helm has to be turned according to given instructions from the icebreaker as the towed vessel's hull is acting as the rudder for the hole towing combination.

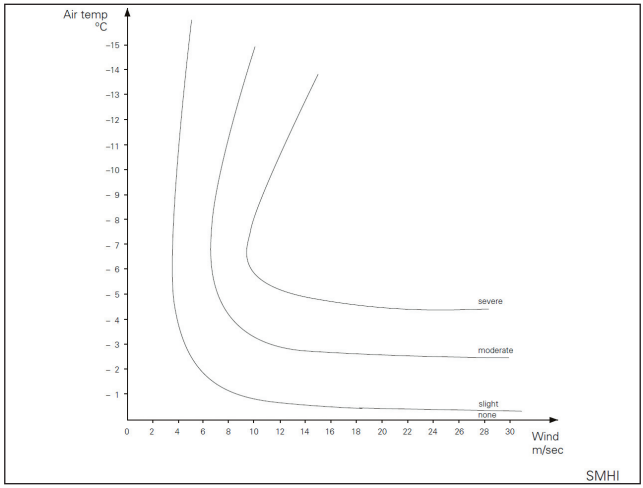


3.7 Danger of icing

Danger can arise under certain conditions for ships and cargoes as a result of icing before the ship has arrived at the icecovered waters or after the ship has left the ice-covered waters. As soon as the temperature of the surface water has dropped to the vicinity of 0° C (+3° C and below) ice can be formed on the deck, superstructure and deck cargo, if any, of the ship in conjunction with water breaking or spraying over the deck.

As the layer of ice grows, a displacement in weight takes place. This displacement reduces the stability of the ship.

If the ice cannot be removed, the point is gradually reached where the metacentric height becomes so low that the ship runs the risk of capsizing. Icing can also take place at higher water temperatures if the air temperature is below 0° C. In this case the air cools down the water breaking over the ship and ice is formed when the water comes in contact with the cold surfaces on board. Consequently, captains on ship which traffic the Baltic area during the winter must be constantly prepared for the occurrence of icing on their ships in severe weather conditions. When keen winds are expected and the weather is such that there is danger of icing, small ships at sea are advised to seek shelter, ships in port should remain where they are until the weather improves. The following diagram shows the connection between the degree of ice formation, wind force and air temperature. Other causes which have an influence on the degree of ice formation is the ships course and speed, the wave height and the temperature of the sea surface.



The diagram is applicable to the conditions in the Baltic and the Bay of Bothnia for ships of more than 500 dwt.

3.8 Sea rescue

As a result of the shipping catastrophes which have occurred in the Baltic due to severe weather conditions and icing, all ship's captains, particularly foreign captains who not have experience of icing, are advised to contact JRCC (call "Sweden Rescue") as soon as difficulties arise for their ships at sea off the Swedish coast and report their difficulties together with their positions, course and other information which may be of importance. In this way their situation will become known to the various parts included in the sea rescue service and these can, if the situation should worsen, prepare to intervene before it is too late. Safety measures of this type are available free of charge for vessels.

3.9 Instruction for shipwrecked persons

Should a marine disaster, in which those in distress are forced to jump into the water or to enter the lifeboats, occur during the winter it is of the greatest importance that those involved be warmly dressed. Wet clothes should be kept on. Above all, gloves or mittens should not be thrown away. Hands must be protected against rapid chilling so that those in distress can hold on to lifelines or suchlike. Tests have been carried out in Sweden with watertight clothing in water with a temperature of 4° C. The tests were carried out both with hands of the test subjects unprotected and protected. In the tests in which hands were not protected, the skin temperature of the hands had dropped to 10° C after 30 minutes, the temperature at the fingertips was 5° C and the pain experienced at the fingertips was so severe that the fingers could not be used. When good-quality mittens protected hands, the hand temperature was still approximately 20°C after 30 minutes.

Skin exposed to cold and wind will suffer local freezing at the air temperatures and wind forces specified below:

- 4° C approx. 20 m/s	- 14° C approx. 5 m/s
- 8° C approx. 10 m/s	- 34° C approx. 1 m/s

3.10 Ice pilot

For vessels which are not used to operating in icy waters or want to strengthen the bridge team, the deep sea ice pilot service is available. Deep sea ice pilots are deep sea pilots who have been further trained in close cooperation with the Swedish icebreaker operations to perform deep sea pilotage in demanding weather conditions such as icy water conditions. A deep sea ice pilot can assist the master with preparation work of the ship, navigation, communication and execution of voyages in icy waters.

The service is delivered by the Swedish Maritime Administration and can be ordered via southcoastpilot via southcoastpilot@sjofartsverket.se or telephone +46(0)-771-63 06 80.

For more information see www.sjofartsverket.se/en/services/pilotage/deep-sea-pilot/ or via the QR code

4. Ice Classes and Requirements

4.1 Finnish-Swedish Ice Classes

Defining ice strengthening requirements, the Swedish Maritime Administration uses the Finnish-Swedish Ice Class Designations valid from 2003. The maximum ice class draught amidships shall normally be taken as the summertime fresh-water load line draught according to Finnish-Swedish Ice Classes TSFS 2011:96.

Vessels that according to the rules in TSFS 2011:96 (Finnish-Swedish ice class rules) are existing vessels of ice class IA Super and IA shall comply with earlier require-ments (SJÖFS 1986:14) regarding engine output no longer than January 1 2005 or January 1 in the year when 20 years has elapsed since the year the vessel was delivered, whichever occurs latest.

The vessel's engine power is considered to be the total propulsion machinery power for which the vessel and machinery are designed.
If technical means are used to prevent the machinery from being driven with full power, or if this is prohibited according to regulations being followed on board, then the power limited in this manner is considered to be the vessel's engine power.

The tables below, provide a comparison between the Finnish-Swedish Ice Class Designations and the class designations used by selected classification societies, including ice-strengthening codes.

Equivalence of a ship's ice class is subject to approval of the Swedish Maritime Administration. If a ship has an ice class not mentioned in the tables of one of the classification societies mentioned below or an ice class of another classification society not mentioned in the tables below.

Finnish-Swedish Ice Class Designations

Ice-Class	*For navigation in*	
IA Super	Extremely difficult ice conditions	> 100 cm
IA	Difficult ice conditions	> 50 cm
IB	Moderately difficult ice conditions	30 – 50 cm
IC	Easy ice conditions	15 – 30cm
II	Very easy ice conditions	10 – 15 cm

4.2 Equivalence between Ice Class notations

4.2.1 American Bureau of Shipping

	Ice class notation	Equivalent Finish-Swedish ice class
2.1.1	A1 (E)	II
2.1.2	Ships the classification drawings of which have been approved before 1 May 1971:	
	A1 (E) "Ice Strengthening" Class A	IA
	A1 (E) "Ice Strengthening" Class B	IB
	A1 (E) "Ice Strengthening" Class C	IC
2.1.3	Ships the classification drawings of which have been approved on or after 1 May 1971(1972 ABS Rules):	
	A1 (E) "Ice strengthening" Class IAA	IA Super
	A1 (E) "Ice strengthening" Class IA	IA
	A1 (E) "Ice strengthening" Class IB	IB
	A1 (E) "Ice strengthening" Class IC	IC
2.1.4	A1 (E) "Ice strenghtening" Class IAA	IA Super
	A1 (E) "Ice strenghtening" Class IA	IA
	A1 (E) "Ice strenghtening" Class IB	IB
	A1 (E) "Ice strenghtening" Class IC	IC
2.1.5	Ice Class I AA	IA Super
	Ice Class I A	IA
	Ice Class I B	IB
	Ice Class I C	IC

4.2.2 Bureau Veritas

	Ice class notation	Equivalent Finish-Swedish ice class
2.2.1	I 3/3 E	II
2.2.2	Ships the classification drawings of which have been approved before 1 May 1971:	
	I 3/3 E glace I-Super	IA Super
	I 3/3 E glace I	IA
	I 3/3 E glace II	IB
	I 3/3 E glace III	IC
2.2.3	Ships the classification drawings of which have been approved on or after 1 May 1971:	
	Notations mentioned in 2.2.2	II
	I 3/3 E Ice Class IA Super	IA Super
	I 3/3 E Ice Class IA	IA
	I 3/3 E Ice Class IB	IB
	I 3/3 E Ice Class IC	IC
2.2.4	ICE CLASS IA SUPER	IA Super
	ICE CLASS IA	IA
	ICE CLASS IB	IB
	ICE CLASS IC	IC

4.2.3 China Classification Society

	Ice class notation	Equivalent Finish-Swedish ice class
2.3.1	Ice class B1*	IA Super
	Ice class B1	IA
	Ice class B2	IB
	Ice class B3	IC
	Ice class B	II

4.2.4 Croatian Register of Shipping

	Ice class notation	Equivalent Finish-Swedish ice class
2.4.1	1 AS	IA Super
	1 A	IA
	1 B	IB
	1 C	IC
	1 D	II

4.2.5 Det Norske Veritas

	Ice class notation	Equivalent Finish-Swedish ice class
2.5.1	1A1	II
2.5.2	Ships the classification drawings of which have been approved before 1 May 1971:	
	1A1 Ice A	IA
	1A1 Ice B	IB
	1A1 Ice C	IC
2.5.3	Ships the classification drawings of which have been approved on or after 1 May 1971:	
	Notations mentioned in 2.5.2	II
	1A1 Ice 1A*	IA Super
	1A1 Ice 1A	IA
	1A1 Ice 1B	IB
	1A1 Ice 1C	IC
2.5.4	ICE-1A*F	IA Super
	ICE-1A*	IA Super
	ICE-1A	IA
	ICE-1B	IB
	ICE-1C	IC

4.2.6 Germanischer Lloyd

	Ice class notation	Equivalent Finish-Swedish ice class
2.6.1	100 A5	II
2.6.2	100 A5 E4	IA Super
	100 A5 E3	IA
	100 A5 E2	IB
	100 A5 E1	IC
2.6.3	100 A5 EO4, EO3, EO2, EO1	II
2.6.4	E4	IA Super
	E3	IA
	E2	IB
	E1	IC

4.2.7 IACS Polar Rules

	Ice class notation	Equivalent Finish-Swedish ice class
2.7.1	PC6 1)	IA Super
	PC7 1)	IA

1) The equivalence may be granted provided that the engine output of the ship complies with the requirements of chapter 3 in TSFS 2009:111.

4.2.8 Korean Register of Shipping

	Ice class notation	Equivalent Finish-Swedish ice class
2.8.1	IA Super	IA Super
	IA	IA
	IB	IB
	IC	IC
	ID	II

4.2.9 Lloyd's Register

	Ice class notation	Equivalent Finish-Swedish ice class
2.9.1	100 A1	II
2.9.2	Ships the classification drawings of which have been approved before 1 May 1971:	
	100 A1 Ice Class 1*	IA Super
	100 A1 Ice Class 1	IA
	100 A1 Ice Class 2	IB
	100 A1 Ice Class 3	IC
	100 A1 "Strengthened for Navigation in Ice"	IC
2.9.3	Ships the classification drawings of which have been approved on or after 1 May 1971:	
	Notations mentioned in 2.9.2	II
	100 A1 Ice Class 1AS	IA Super
	100 A1 Ice Class 1A	IA
	100 A1 Ice Class 1B	IB
	100 A1 Ice Class 1C	IC
	100 A1 Ice Class 1D	II
2.9.4	100 A1 Ice Class 1AS FS(+)	IA Super
	100 A1 Ice Class 1A FS(+)	IA
	100 A1 Ice Class 1B FS(+)	IB
	100 A1 Ice Class 1C FS(+)	IC
	100 A1 Ice Class 1AS FS	IA Super
	100 A1 Ice Class 1A FS	IA
	100 A1 Ice Class 1B FS	IB
	100 A1 Ice Class 1C FS	IC
	100 A1 Ice Class 1D	II
	100 A1 Ice Class 1E	II

4.2.10 Nippon Kaiji Kyokai

	Ice class notation	Equivalent Finish-Swedish ice class
2.10.1	NS*	II
	NS	II
2.10.2	NS* Class IA Super Ice Strengthening	IA Super
	NS Class IA Super Ice Strengthening	IA Super
	NS* Class IA Ice Strengthening	IA
	NS Class IA Ice Strengthening	IA
	NS* Class IB Ice Strengthening	IB
	NS Class IB Ice Strengthening	IB
	NS* Class IC Ice Strengthening	IC
	NS Class IC Ice Strengthening	IC
	NS* Class ID Ice Strengthening	II
	NS Class ID Ice Strengthening	II

4.2.11 Polski Rejestr Statków

	Ice class notation	Equivalent Finish-Swedish ice class
2.11.1	KM	II
2.11.2	KM L1A, YL 1)	IA Super
	KM L1 1)	IA
	KM L2 1)	IB
	KM L3 1)	IC
	KM L4	II
2.11.3	L1A	IA Super
	L1	IA
	L2	IB
	L3	IC
	L4	II

1) The equivalence may be granted provided that the engine output of the ship complies with the requirements of the Finnish-Swedish Ice Class Rules, as applicable, see chapter 3 in TSFS 2011:96.

4.2.11 Registro Italiano Navale

	Ice class notation	Equivalent Finish-Swedish ice class
2.11.1	Ships the Midship Section of which has been approved before 1 June 2000:	
	100A – 1.1	II
	Ships contracted for construction on or after 1 June 2000:	
	C✠	II
2.11.2	Ships the Midship Section of which has been approved before 1 March 1989:	
	100A – 1.1 RG1*	IA Super
	100A – 1.1 RG1	IA
	100A – 1.1 RG2	IB
	100A – 1.1 RG3	IC
2.11.3	Ships the Midship Section of which has been approved on or after 1 March 1989 but before 1 June 2000:	
	IAS	IA Super
	IA	IA
	IB	IB
	IC	IC
2.11.4	Ships contracted for construction on or after 1 June 2000:	
	ICE CLASS IA SUPER	IA Super
	ICE CLASS IA	IA
	ICE CLASS IB	IB
	ICE CLASS IC	IC

4.3 Swedish Ice Class for traffic on Lake ”Vänern” (TSFS 2009:23)

These regulations are applicable to traffic on Lake ”Vänern” for ships, the keel of wich have been laid down or building has started on January 1, 2004 or later, and wich do not have ice class in accordance with the regulations of the Swedish Transport Agency (TSFS 2011:96 Finnish - Swedish Ice Class Rules) shall have one of the following ice classes:

	Ice class notation	Equivalent Finish-Swedish ice class
3.1.1	IBV ICV	IC II

5. Ordinance and Regulations for Winter Navigation

5.1 General

The ordinance and regulations for winter navigation consists of: (Swedish Statute-Book)

SFS 2000:1149 Isbrytarförordningen (Ice-breaking Service Ordinance)
1961 n:o 45 Sveriges överenskommelse med främmande makter: Agreement between Sweden, Denmark, Finland and Norway on collaboration in icebreaking.
SJÖFS 2021:2 Sjöfartsverkets föreskrifter om statens isbrytningsverksamhet (Regulations for the State Ice-Breaking Activities)
SJÖFS 2021:3 Taxa för isbrytning på beställning och mot ersättning (Taxes for ice-breaking)
TSFS 2011:96 Finsk-svensk isklass (Finnish-Swedish Ice Classes)
TSFS 2009:23 Svensk isklass för trafik på Vänern (Swedish Ice Class for traffic on Lake Vänern)

5.2 Ordinance

The Icebreaking Service Ordinance (SFS 2000:1149) prescribes that vessels suitable for winter navigation may obtain icebreaker assistance in Swedish coastal waters and in sea-routes to Sweden between open sea and waters which are sheltered from seaice, driftice, packice or similar ice obstacles.

On Lake ”Vänern”, Lake ”Mälaren” and the river ”Ångermanälven”, government resources may break difficult ice to the extent determined by the Swedish Maritime Administration.

No charge is levied on towing or any other icebreaker assistance performed by icebreakers in connection with ice-breaking at sea.
The Swedish Maritime Administration fixes the charges for towing in the nature of salvage and for other assistance work on a year-to-year basis.

The Swedish Maritime Administration will not assume any liability for delay, damage or any other loss, caused to ship, its personnel, passengers or load that occur in connection to icebreaker assistance.

Assistance and advice provided to vessels at its own risk

5.3 Which vessels can count on State Icebreaker Assistance?

For a vessel to obtain state icebreaker assistance it must as a minimum have the Finnish-Swedish ice class (or equivalent) and the minimum deadweight (dwt) that are applicable to a specific ice region in accordance with ice restrictions imposed by the Swedish Maritime Administration.

The Swedish Maritime Administration may refuse to give state icebreaker assistance to vessels whose assistance devices are out of order, or if hull, engine power, equipment or crew is such that navigation in ice may jeopardize the safety of the vessel, or if there is reason to suspect that the vessel's capability for navigating in ice is inferior to what is generally assumed for vessels belonging to the same ice class (see also 2.6 Prioritization and 3.6 Towing).

In light of the above, the Executive Boards of the Finnish and Swedish Icebreaking Services have jointly decided **that tugs with barges (barges connected with cables or hawsers) and so-called river vessels are not suitable for winter navigation and cannot count on state icebreakerassistance**, even if they have a relevant ice class granted by their classification society

For winter navigation in areas where no specific ice restrictions are issued, the following requirements should be imposed on ships and vessels:

a) The ship should possess the highest ice class of a classification society approved by the state in question, or should have an equivalent design and strength as proved in an inspection of seaworthiness;
b) The ship should have propulsion machinery with sufficient power to enable it to move in easy ice and in a broken channel inside the archipelago without icebreaker assistance;
c) The ship should be of minimum 500 dwt;
d) The ship's stability should be such that it will withstand some degree of icing even when carrying deck cargo without running the risk of capsizing.

6. Weather and ice information

6.1 General information

The Swedish Meteorological and Hydrological Institute (SMHI) daily issues a number of reports, directly or indirectly used for shipping and navigation. The reports may contain weather forecasts (including observations, warnings for storm, gale, icing, high or low water levels) or reports on the current sea ice situation. Wind speed is issued in meters per second (m/s). Weather forecast transmission means: radio telephony, NAVTEX and radio broadcast. Current ice chart can be received by radiofacsimile transmitted by Hamburg/ Pinneberg, on request also via e-mail.

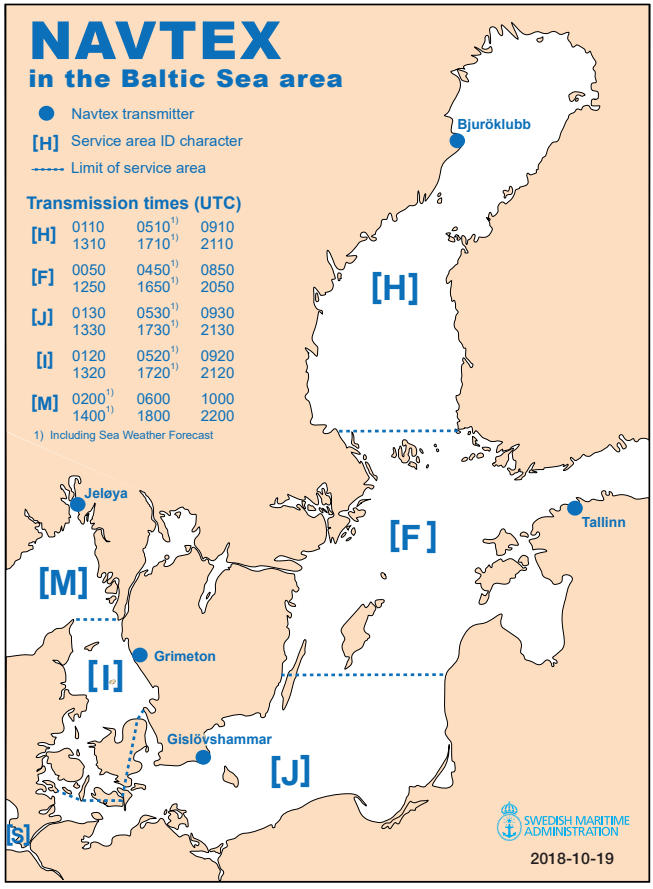
6.2 Radio telephony

Weather report are provided by MSI Sweden at times and channels as shown on the map Swedish coast radio.

Urgent navigational warnings are transmitted immediately after dissemination on VHF and MF in both English and Swedish. All warnings are subsequently retransmittted as shown on the map Swedich coast radio.

6.3 NAVTEX

Coastal navigational warnings, ice information, storm/gale warnings and weather reports are transmitted on NAVTEX according to this map. Urgent navigational warnings are transmitted as soon as possible after dissemination and repeated on regular transmission times according to the map.



Svensk kustradio
Swedish Coast Radio

SWEDEN TRAFFIC MMSI: 002653500

Utsändning av MSI på VHF och MF
Transmissions of MSI on VHF and MF

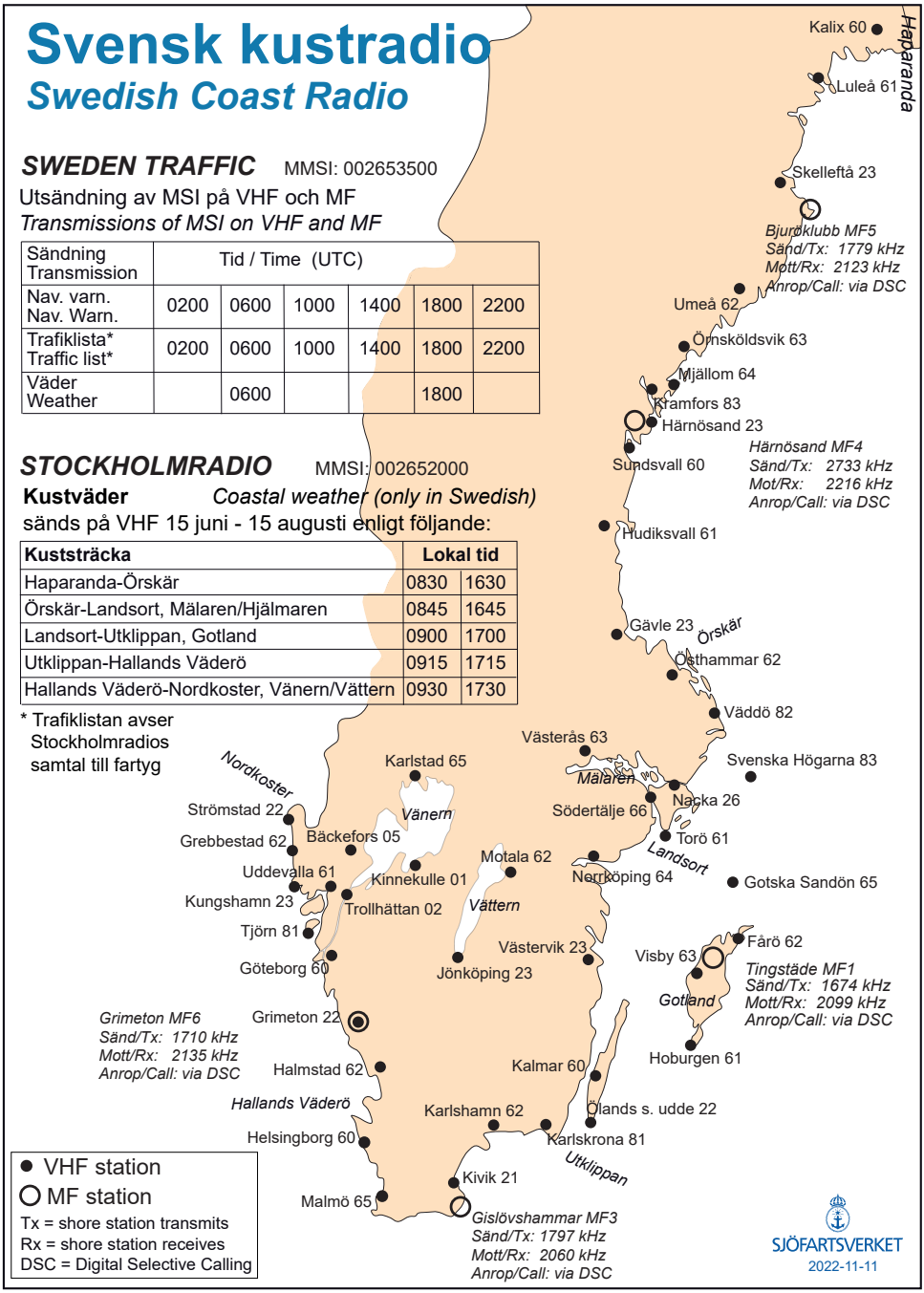
Sändning Transmission	Tid / Time (UTC)					
Nav. varn. Nav. Warn.	0200	0600	1000	1400	1800	2200
Trafiklista* Traffic list*	0200	0600	1000	1400	1800	2200
Väder Weather		0600			1800	

STOCKHOLMRADIO MMSI: 002652000

Kustväder *Coastal weather (only in Swedish)*
sänds på VHF 15 juni - 15 augusti enligt följande:

Kuststräcka	**Lokal tid**	
Haparanda-Örskär	0830	1630
Örskär-Landsort, Mälaren/Hjälmaren	0845	1645
Landsort-Utklippan, Gotland	0900	1700
Utklippan-Hallands Väderö	0915	1715
Hallands Väderö-Nordkoster, Vänern/Vättern	0930	1730

* Trafiklistan avser Stockholmradios samtal till fartyg



6.4 Radio broadcast

Forecasts in plain Swedish, valid 24 hours. Storm and gale warnings are included when necessary, as well as icing warnings during the winter season.

Time of broadcast (Swedish local time)	*Content of broadcast*	*Swedish Broadcasting Company*
05.55–06.00	All areas (see map page 30). Coastal wind observations.	Program 1 (P1)
08.55–09.00 1)	B-areas, short report (see map) (Week days)	Program 1 (P1)
07.55 - 08.00 1)	B-areas (see map) (Sat-Sun)	Program 1 (P1)
12.55–13.00 Work days 1)	B-areas (see map)	Program 1 (P1)
12.50–12.55 Sat/Sun/ 1)	All areas (see map). Coastal wind observations.	Program 1 (P1)
21.50–22.00 1)	All areas (see map). Selected wind observations, 2 day forecast	Program 1 (P1)

1) After a report for land districts.

6.5 Transmission via e-mail and radiofacsimile

E-mail

Current ice chart in A4-format covering the Baltic, Kattegat and Skagerrak can, on request, be transmitted by e-mail from the Swedish Ice Service.

Radiofacsimile

SWEDISH ICE CHART is re-transmitted by Hamburg/ Pinneberg (DDH/DDK) according to following table:

Time UTC	*Area*
10:07	Western Baltic
15.20	The Baltic
15.40	Arctic Sea
21.15	The Baltic

WEATHER CHARTS covering the Baltic area are transmitted by Hamburg/ Pinneberg (DDH/DDK) and Offenbach/Mainflingen (DCF54) according to following table:

Time UTC		*Ref. time*	*Chart*
DDH/DDK	*DCF54*	*UTC*	
04.30	04.30	00	Weather analysis, North Atlantic
05.12	05.12	00	Europe Forecast H+30h
07.17	—	00	Repetition from 05.12
07.30	08.08	00	Forecast H +48h
08.04	08.21	00	Forecast H +84h
08.17	—	00	Forecast H +108h

Time UTC		*Ref. time*	*Chart*
DDH/DDK	*DCF54*	*UTC*	
10.50	11.00	06	Weather analysis
18.34	18.32	12	Forecast H+ 36h
18.47	—	12	Forecast H+ 48h
19.00		00	Forecast H+ 84h

Note: Drumspeed/index of cooperation: 120/576

Frekvens:	3855 kHz	Hamburg/Pinneberg(DDH/DDK)
	7880 kHz	”-
	13882,5 kHz	”-

Broadcast schedule for Hamburg/Pinneberg
www.dwd.de/EN/specialusers/shipping/broadcast_en/_node.html or
www.dwd.de/EN/specialusers/shipping/broadcast_en/broadcast_fax_102020.pdf;jsessionid=AE79E20D23E717BB9C47452FB01F3CCA.live11043?__blob=publicationFile&v=1

Met Office EXETER (ENGLAND) is transmitting weather charts covering the Baltic area and the North Sea. Frequencies: 3289,5 kHz, 8040 kHz and 11 086,5 kHz.

SMHI marine and coastal weather
www.smhi.se/en/weather/forecasts/marine-coastal-weather

6.6 Requests for ice charts or detailed, customized weather or ice forecasts

- Currrent ice chart can be transmitted to vessels free of charge via e-mail.
Please contact Swedish Ice Service (please see below)
- Tailor-made wind, wave, water level or ice forecasts can, subject to a small fee, be ordered via the Swedish Ice Service, SMHI.

Swedish Ice Service, SMHI, Norrköping
Phone: +46(0)11-495 80 00, (08.00–16.30 local time)
E-mail: ice@smhi.se
Internet:

www.smhi.se/istjanst	Swedish Ice Service web site (Swedish)
www.smhi.se/iceservice	Swedish Ice Service web site (English)
www.smhi.se/icechart	Daily icechart (pdf)

6.7 Wind table

Comparisons between *-wind force in Beaufort, -wind speed in m/s and –description in plain language*. In the sea report broadcast by the Swedish Broadcasting Corporation, m/s is used for wind speed in connection with an abridged Beaufort description (calm, breeze, gale, storm or hurricane).

Description	*Wind force in Beaufort*	*Wind speed in m/s*	*Sea Conditions*
Calm	0	0,0 – 0,2	Sea smooth and mirror-like.
Light air	1	0,3 – 1,5	Scale-like ripples without foam crests.
Light breeze	2	1,6 – 3,3	Small, short wavelets, which do not break.
Gentle breeze	3	3,4 – 5,4	Large wavelets, single breaking crests, foam of glassy appearance.
Moderate breeze	4	5,5 – 7,9	Small waves, becoming longer, fairly frequent white foam crests.
Fresh breeze	5	8,0 – 10,7	Moderate waves, taking a more pronounced long form, many white foam crests.
Strong breeze	6	10,8 – 13,8	Large waves begin to form, frequent white foam crests.
Near gale	7	13,9 – 17,1	Sea heaps up and white foam from breaking waves begin to be blown in streaks along the direction of the wind.
Gale	8	17,2 – 20,7	Waves of considerable height and length. Foam is blown in streaks along the direction of the wind.
Strong gale	9	20,8 – 24,4	High waves, dense streaks of foam along the direction of the wind, crests of waves begin to topple, tumble and roll over. Spray may reduce visibility.
Storm	10	24,5 – 28,4	Very high waves with long overhanging crests. The resulting foam in great patches is blown in dense white streaks along the direction of the wind. The surface of the sea appears white and visibility is reduced.
Violent storm	11	28,5 – 32,6	Exceptionally high waves that may obscure small and medium-sized ships. The sea is completely covered with long white patches of foam along the direction of the wind. Visibility significantly reduced.
Hurricane	12	32,7 – 36,9	The air is filled with foam and spray. Sea completely white with driving spray. Visibility very much reduced.

A booklet on ice codes, ice chart symbols and ice nomenclature can be provided, free of charge, from the Swedish Ice Service at SMHI.

Prognosområden / *Forecast areas*

- Station för vilken vind- och siktuppgifter utläses i den svenska sjörapporten
- *Station for which observations on wind and visibility are broadcast in the Swedish broadcasting report*

B1 Bottenviken / *Bay of Bothnia*
B2 Norra Kvarken / *The Quark*
B3 Bottenhavet / *Sea of Bothnia*
B4 Ålands hav och Skärgårdshavet / *Sea of Åland and Archipelago Sea*
B5 Finska Viken / *Gulf of Finland*
B6 Rigabukten / *Gulf of Riga*
B7 Norra Östersjön / *Northern Baltic*
B8 Mellersta Östersjön / *Central Baltic*
B9 Sydöstra Östersjön / *South-eastern Baltic*
B10 Södra Östersjön / *Southern Baltic*
B11 Sydvästra Östersjön / *South-western Baltic*
B12 Öresund och Bälten / *The Sound and the Belts*
B13 Kattegatt / *Kattegat*
B14 Skagerrak / *Skagerrak*
B15 Vänern / *Lake Vänern*

N3 Syd Utsira / *Southern Utsire*
N4 Fladen / *Forties*
N8 Dogger / *Dogger*
N9 Fiskebankarna / *Fisher*
N10 Tyska bukten / *German Bight*

N4 och N8 ingår ej i den svenska rapporten.
N4 and N8 are not included in the Swedish report.