



BALTIC ICEBREAKING MANAGEMENT

Baltic Sea Icebreaking Report 2009-2010



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FOREWORD

Last year's cold winter reminded us about those winters which had been characteristic for the end of the XX-th century.

Last year's winter forced all the Baltic countries' Governments to give a fresh and more attentive look at the safety of navigation in ice conditions on approaching waterways to all their seaports.

Weather conditions also forced us to get into operations all icebreakers available for the winter services in the Baltic countries.

The period from January till March, 2010 was the most difficult for traffic flow assistance and that was the case practically in all freezing winter ports of the Baltic sea.

1. Short history of the Baltic Icebreaking Management

Baltic Icebreaking Management, **BIM** is an organisation with members from all Baltic Sea states. BIM is a development of the annual meeting between Baltic Sea States icebreaking authorities which have assembled for more than 20 years. The member countries of BIM are Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia and Sweden.

After the difficult winter navigation season of 2002/2003 a project was started up within the framework of HELCOM, aiming at improving the safety of winter navigation in the Baltic Sea. **The Helcom – recommendation 25/7 on the safety of Winter Navigation in the Baltic Sea Area was adopted in March 2004.**

Within the EU concept Motorways of the Sea, which is one priority project in the trans-European network, the Baltic Sea countries established a working group with the aim of creating more efficient winter navigation by cooperation between the Baltic Sea countries. The icebreaking authorities around the Baltic Sea decided in Helsinki meeting 2004 that this work shall continue within the framework of BIM, were also non EU-member states are taking part. BIM should function all year round and that its strategy should be to develop safe, reliable and efficient winter navigation between the Baltic Sea countries. The overall objective of BIM is to assure a well functioning maritime transport system in the Baltic Sea all year round by enhancing the strategic and operational cooperation between the Baltic Sea countries within the area of assistance to winter navigation.

January 10th 2007, the Joint Baltic web service on winter navigation www.baltice.org was launched, see appendix 1.

April 11th 2007, the DVD of training in ice navigation for seafarers was launched, see appendix 2.

15th November 2007, Helcom adopted a new recommendation 28/11 Further measures to improve the safety of navigation in ice conditions in the Baltic Sea, BIM was acting an "ice advisor" in this recommendation.

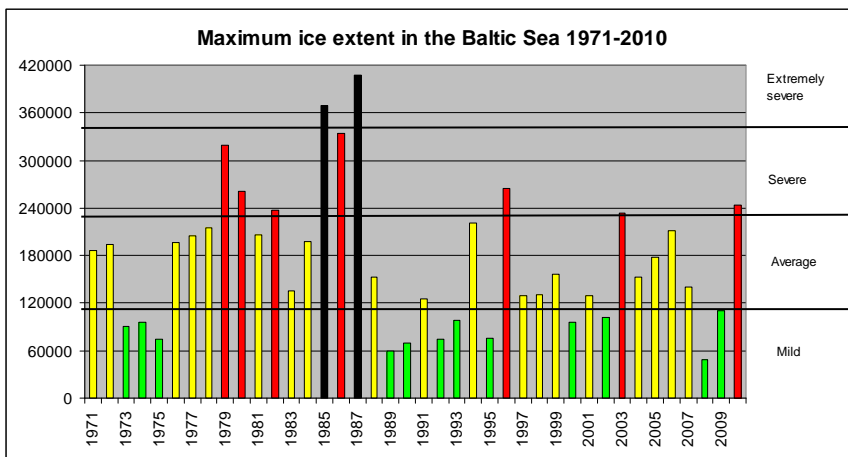
September 2009, The computer based training course, with examination, in ice navigation for seafarers was launched and the first year 132 students were examined.

One important task of BIM is to inform stakeholders in the maritime sector and policy makers about winter navigation and icebreaking. There is a need for information about winter navigation and icebreaking that covers the whole Baltic Sea region. Several Baltic Sea countries prepare information about the winter navigation and icebreaking in their respective national waters. There has been a need to coordinate this country-specific information, improve the information and to distribute it to a wider target group by "Joint Annual Baltic Icebreaking Report" is the second of its kind.

This report gives an overview of the winter navigation season **2009/2010** for the Baltic Sea area. National reports can be found on www.baltice.org. The report will also describe organisational changes in the icebreaking authorities or changes in icebreaking resources and provide a progress report of the Baltic Sea Icebreaking cooperation and the development of BIM.

2. Overview of the icebreaking season (2009-2010) and its effect on the maritime transport system in the Baltic Sea region

According to Finnish Institute of Marine Research the Baltic Sea ice season of 2009-2010 could be classified as normal(high). The maximum ice extent in February 2010.



Traffic restrictions 2009-10

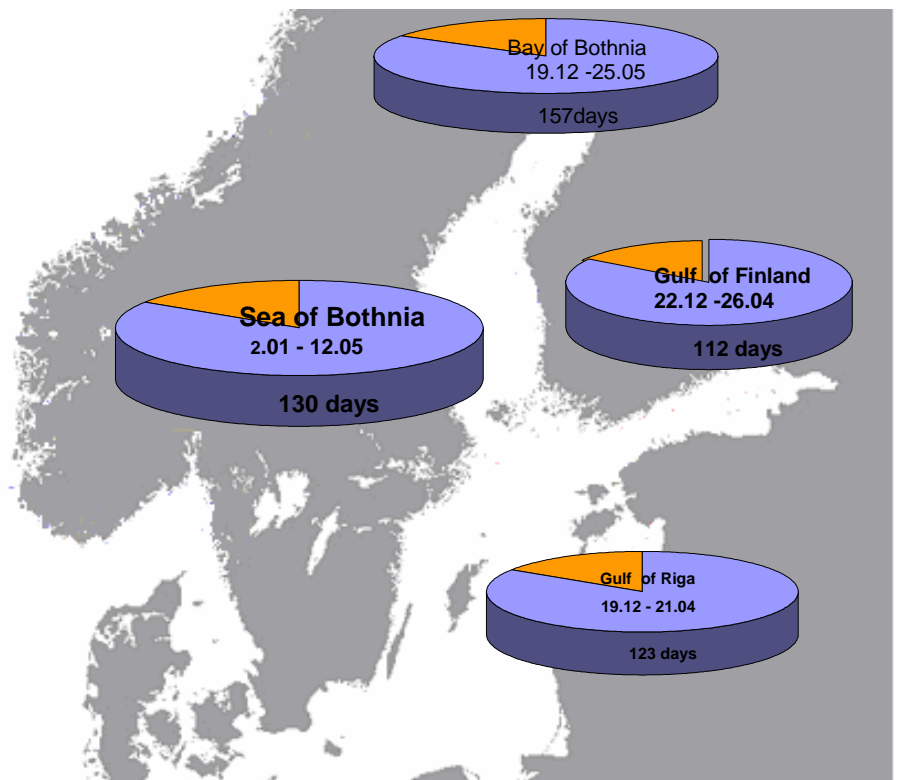


Figure 5. Dates when traffic restrictions were in force in the different areas.

For safety reasons, the Baltic Sea countries have within HELCOM agreed on a joint policy when traffic restrictions shall be issued. For efficiency reasons, the icebreaking authorities can demand a lowest limit on vessels' engine power as well.

The traffic restrictions should be set as follows:

When the thickness of level ice is in the range of 10-15 cm, and the weather forecast predicts continuing low temperature, a minimum ice class LU1 or equivalent should be required for ships entering the ports of a Contracting Party.

When the thickness of level ice is in the range of 15-30 cm, and the weather forecast predicts continuing low temperature, a minimum ice class IC or LU2 or equivalent should be required for ships entering the ports of a Contracting Party.

When the thickness of level ice is in the range of 30-50 cm, a minimum ice class IB or LU3 or equivalent should be required for ships entering the ports of a Contracting Party.

When the thickness of level ice exceeds 50 cm, a minimum ice class IA or LU4 or equivalent should be required for ships entering the ports of a Contracting Party.

Figure 6. HELCOM recommendations for traffic restrictions.

Approximate correspondence between ice classes of Finnish-Swedish ice Classes Rules (Baltic classes) and ice Classes of other Classification Societies

<i>Classification Society</i>	Ice Class				
Finnish-Swedish Ice Class Rules	IA Super	IA	IB	IC	Category II
Russian Maritime Register of Shipping (Rules 2007)	Arc 5	Arc 4	Ice 3	Ice 2	Ice 1
Russian Maritime Register of Shipping (Rules 1995)	UL	L1	L2	L3	L4
Russian Maritime Register of Shipping (Rules 1999)	LU5	LU4	LU3	LU2	LU1
American Bureau of Shipping	IAA A1	IA A0	IB	IC	D0
Bureau Veritas	IA SUPER	IA	IB	IC	ID
CASPPR, 1972	A	B	C	D	E
China Classification Society	Ice Class B1*	Ice Class B1	Ice Class B2	Ice Class B3	Ice Class B
Det Norske Veritas	ICE-1A* ICE-10	ICE-1A ICE-05	ICE-1B	ICE-1C	ICE-C
Germanischer Lloyd	E4	E3	E2	E1	E
Korean Register of Shipping	ISS	IS1	IS2	IS3	IS4
Lloyd's Register of Shipping	1AS	1A	1B	1C	1D
Nippon Kaiji Kyokai	IA Super	IA	IB	IC	ID
Registro Italiano Navale	IAS	IA	IB	IC	ID

Figure 7. Table for corresponding ice classes.

Smaller vessels like buoy tenders and tugs with strong engines and hull are used as port icebreakers and for icebreaking mission in waters protected from drifting sea ice. In open sea areas that are affected by drifting sea ice with ridges and ice pressure, big sea icebreaker are required.

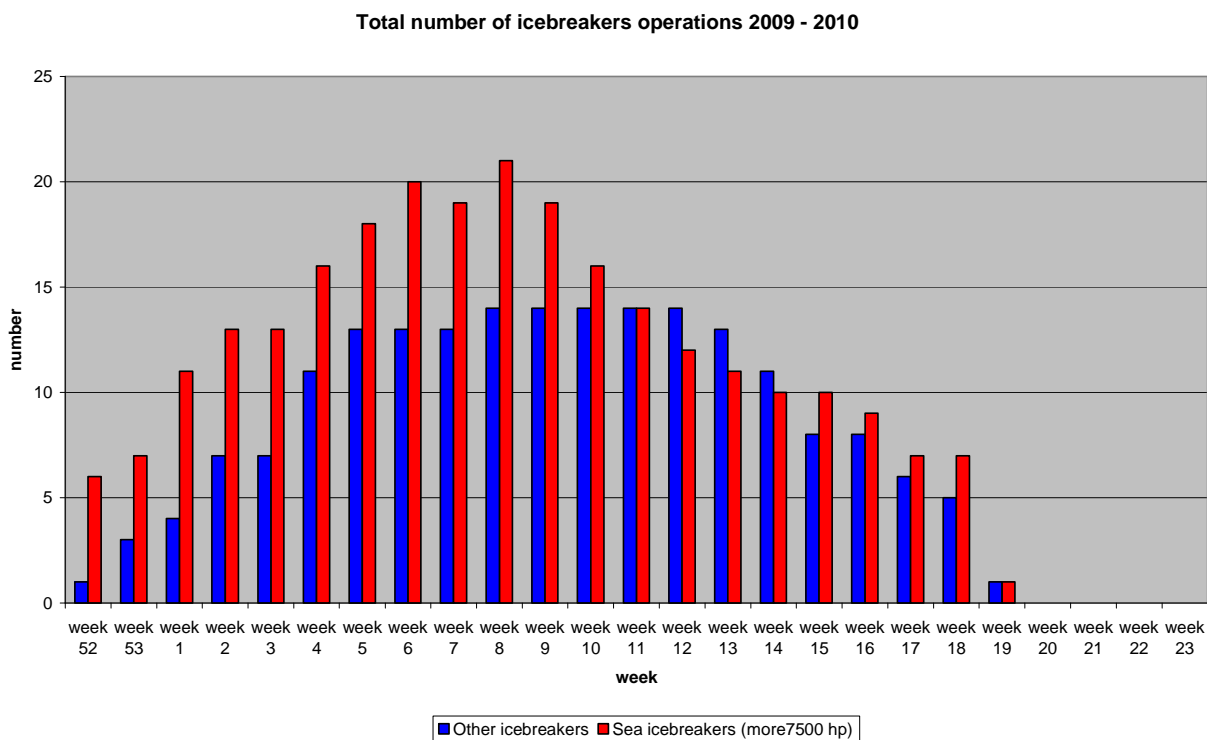


Figure 8 The total number of icebreakers in operation each week in Baltic Sea during the season 2009/2010

According to statistics from the Baltic Sea icebreaking authorities, 7708 vessels received assistance from icebreakers this season.

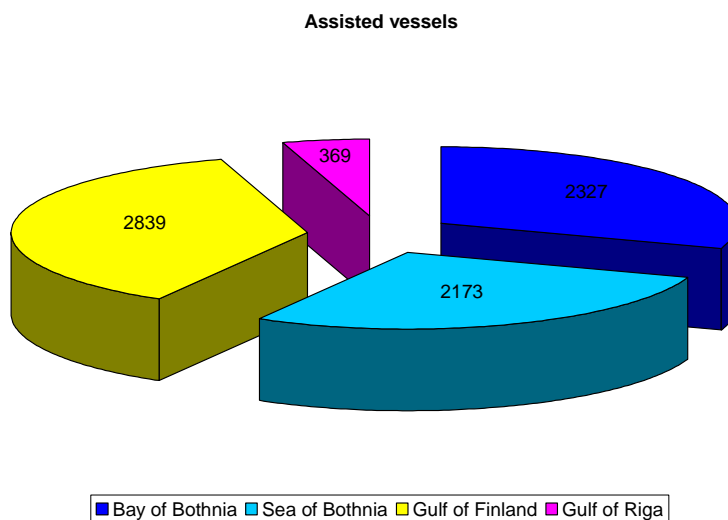


Figure 9. A total of 7708 vessels were assisted by icebreakers during the icebreaking season in the Baltic Sea.

The longest sailing distance in sea ice is to the northernmost ports in the Bay of Bothnia. But due to the big number of vessels in the shorter fairway to the easternmost ports in the Gulf of Finland, the traffic is more affected by sea ice in this area, especially during periods with strong westerly winds when the icebreakers must tow many vessels one by one.

Maximum sailing distance in sea-ice 2009-2010

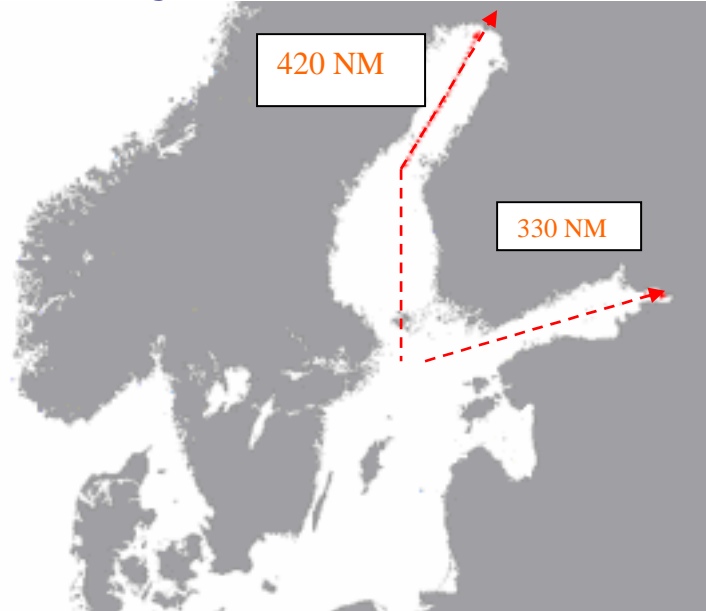


Figure 10. Sailing distance from ice edge during maximum ice extension, March 2010. Kemi 420 nautical miles and St. Petersburg 330 nautical miles.

3. Accidents and incidents in sea ice

The Technical University of Helsinki collects information on accidents related to navigation in ice. Ship owners and others within winter navigation are requested to report accidents, incidents and damages that are ice-related to icedamage@tkk.fi or to:

Ice Damage Database
Helsinki University of Technology
Ship Laboratory
PL 5300
02151 TKK
FINLAND

Only some minor damages occurred to merchant vessels during assistance of the icebreakers. In comparison, about 100 vessels reported damages due to the severe ice conditions in the year 2003. Reports of accidents are difficult to get because often damages won't appear until during the next dry docking.

4. Costs of icebreaking services in the Baltic Sea

Winter conditions cause various costs for vessel traffic in the Baltic Sea. The vessels' fuel costs increase since speed is reduced by even half on average due to ice barriers when proceeding in ice at full effect, and approaching the quay can take hours. The harbour costs also increase, since the basin must be kept open by a harbour tug in order for the vessels to reach the quay.

Moreover, heating to keep equipment in working order despite outdoor temperatures below -20 °C adds to the costs. Since it is difficult to estimate other costs, this report comprises only those related to icebreakers.

4.1 Finland

In Finland the costs of icebreakers stand-by period in 2009-2010 were about 20 million EUR. This winter season was near normal but operation days were more than expected, totally 916 days. Therefore the operational costs were about 9 million EUR and fuel costs 10 million EUR. The Finnish Transport Agency had also contracts with private tugboat companies for minor operations. The costs of the Finnish icebreaking services vary from 22 to 39 million euros depending on winter.

4.2 Sweden

In Sweden the costs for the stand-by period amount to approximately 10 million EUR, additional operational costs to approximately 4 million EUR, and fuel costs to 2.5-9 million EUR. The cost of the Swedish icebreaking services varies from 15 to 34 million euros depending on the winters' degree. The costs this winter are estimated to be 24 million euros.

4.3 Russia

Since January, 01st, 2008 according to the act of Federal Service on Tariffs dd 20.12.07 N^o552-t/1 rates of icebreaking dues in the Russian ports of the Gulf of Finland are established as follows:

Icebreaking dues:

- 1) Icebreaking dues are applied for incoming, outcoming or transiting the port area.
- 2) For the cargo ships engaged in liner services, which are officially declared, to the rates of the icebreaking dues the factor of 0.8 is applied.
- 3) From icebreaking dues are released:
 - vessels of ice class LU7 (according to classification of the Russian Maritime Register of Shipping or classes of other classification societies corresponding to it).
 - passenger vessels.

- 4) Upon the announcement by the Harbour Master of winter (summer) navigation before the target date, and also after the prolongation of its duration, icebreaking dues are paid as per corresponding rates from the date of announcement to a date of completion (inclusive), corresponding to the period of winter navigation.

Rates for ships engaged in an international trade rub/1 GT

	All vessels except Ro-Ro, Ro-Flow, container ships and bulk carriers	Ro-Ro, Ro-Flow and container ships	Tankers
The summer rate from May, 1st till November, 30th	5.5	3.85	6.03
The winter rate from December, 1st till April, 30th	13,70	9,59	15,02

During the period from May, 1st till November, 30th the following vessels are released from payment of icebreaking dues:

- arriving to the port from inland waterways of Russia or from the Saimaa canal and sailing back within current year;
- arriving to the port from other Russian ports situated in the eastern part of the Gulf of Finland.

During the period from December, 1st till April, 30th the vessels with ice class LU5 and LU6 (according to classification of the Russian Maritime Register of Shipping or classes of other classification societies corresponding to it) are subject to icebreaking dues multiplied by factor 0.75.

4.4 Estonia

In Estonia, the total cost of icebreaking in the 2009/2010 season amounted to approximately 1.662 million EUR, with about 930 000 thousand EUR accounting for the costs in the Pärnu Bay and 732 000 thousand EUR for the Gulf of Finland (annual upkeep of the IB TARMO + fuel cost). In the Pärnu Bay, the fuel costs during the icebreaking season of 2009/2010 were about 484 000 thousand EUR.

4.5. Denmark

. In 2009 the cost of the Danish ice service was approximately € 2.9 mill. Which is about the average yearly cost for Danish Iceservice for the last 10 years (€ 2,6 mill.). The extraordinary maintenance costs for the Icebreakers DANBJOERN and ISBJOERN. The cost covers stand by costs for the Danish Icebreakers and the running cost of the other parts of the Ice service. What the cost of the Ice service in an Ice winter will be is not known but the cost of the previous 5 ice winters was approximately € 9 mill. The amount has been extrapolated to 2009 level.

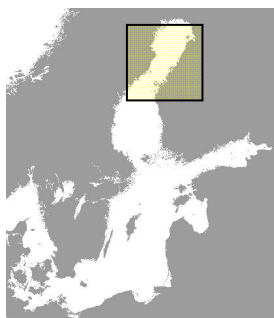
4.6 Norway

In the period 2009 – 2010 the total cost of icebreaking service in Norway was approximately € 1, 0 million. The TB "Bamse Tug" was hired for ice breaking and vessel assisting in the area of Oslofjorden to a total cost of € 0, 6 million. On the south coast of Norway the buoy tender "Hekkingen" was operating as ice breaker to a cost of € 0, 2 million. The balance was used for minor single ice breaking and assisting jobs. The coastguard vessel "Andenes" was patrolling along the south coast through most of January and February for assisting vessels with maneuvering problems in the ice.

4.7 Latvia, Lithuania, Poland, Germany – no information

5. Winter navigation in the different parts of the Baltic Sea

5.1. . Bay of Bothnia



The first traffic restrictions were initiated on the 19th of December and reached their highest level IA 4000 dwt, on the 3rd of February.

The first icebreaker Kontio left Helsinki to start the icebreaking operations on December the 17th.

The ice growth started in the beginning of January and in the middle of February the maximum ice extension appeared.

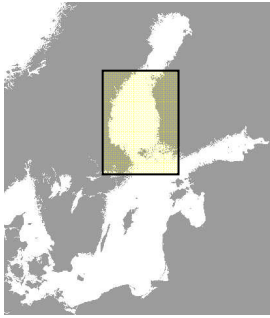
At that time there were 5 icebreakers (4 Finnish and 1 Swedish) engaged in accordance with the joint icebreaking plan.

Assistance has been conducted to following ports:

Karlsborg
Tornio
Luleå
Kemi
Haraholmen
Oulu
Skelleftehamn
Raahe
Kokkola
Pietarsaari

The icebreakers in the Bay of Bothnia assisted 2 327 merchant vessels and 237 towing operations were conducted. The average waiting time was 6 hours and 10 minutes. 56% of all port calls did not have to wait for icebreaker assistance at all, but 17,8% of the port calls had to wait more than 4 hours for icebreaker assistance (so-called long waiting). The icebreaking season in the Bay of Bothnia ended on the 25th of May.

5.2. Sea of Bothnia



The first traffic restrictions in the northern part of Sea of Bothnia were initiated on the 28th of December and in the southern part the restrictions were initiated on 9th of January. The highest level IA 3000 dwt in the North and IA 2000 dwt in the South was in force from the end of February until the beginning of April.

The maximum number of icebreakers engaged in the Sea of Bothnia was 5 large and two tugboats. The icebreaker Frej and Vidar Viking has jointly been used by the Finnish and Swedish Administrations in the Northern Quark and in Southern Sea of Bothnia.

Assistance has been conducted to following ports:

Holmsund

Vaasa

Rundvik

Kaskinen

Husum

Mäntyluoto

Örnsköldsvik

Rauma

Ångermanälven

Uusikaupunki

Härnösand

Naantali

Söråker

Turku

Sundsvall

Iggesund

Söderhamn

Orrskär

Norrsundet

Gävle

Skutskär

Hallstavik/Hargshamn

Kappelskär

The icebreakers in the Sea of Bothnia assisted 2 173 merchant vessels and 150 towing operations were performed. The average waiting time was 8 hours and 40 minutes. 65,21% of all port calls did not have to wait for icebreaker assistance at all, but 15,83% of the port calls had to wait more than 4 hours for icebreaker assistance (so-called long waiting).

The icebreaking activities in the Sea of Bothnia ended in the beginning of May and the traffic restrictions was lifted on the 12th of May.

5.3 Gulf of Finland The Finnish Coast



The winter season started 28.12 2009 when first ice restrictions was given to Hamina, Kotka, Loviisa and icebreaker assistance started. The real winter started to develop at the end of January, the frosty days made a strong icebelt about 10 miles wide along the Finnish coast and the vessels had difficulties outside Helsinki, Sköldvik and Orrengrund. In the beginning of March strong easterly winds cleaned the coast from heavy ice ridges. The highest ice restriction was 1A 2000 dwt. The last ice restriction

ended 21.04.2010. Assistance has been conducted to following ports: Hamina, Kotka, Loviisa, Sköldvik, Helsinki, Kantvik, Inkoo, Koverhar and Hanko. In the lake of Saimen area

winter traffic assistance was given from 15.12- 18.1. 2010 after that the Saimen canal was closed and opened again 15.4.2010

The ice conditions in the Gulf of Finland by the maximum ice spreading area were harsh, and by the ice thickness, the conditions were medium, which makes the winter of 2009/2010 a moderate to harsh one by the type of harshness..

The first traffic restrictions were initiated 22-th of December in St. Petersburg. These were also the strictest restrictions being only requirement 2000 kW in horsepower. The restrictions were cancelled 26 April

All 2839 of the vessels which needed icebreaker assistance were bound for Russian ports. During the largest ice cover the Russians had 4 sea icebreakers and 9 port icebreakers in use. The icebreaking season lasted from 16 December to 30 April in the Russian territorial water.

Ice conditions in the water area of the Gulf of Finland in the winter of 2009/2010

The ice formation processes in the winter of 2009/2010 were of an intermediate type, an average of a moderate and a harsh winter. In the first half of the season, the domination of cold arctic air was causing a very cold weather, which resulted in intensive ice formation. The average monthly air temperatures in the winter season were below normal, namely, by 0.5^o in December, 4.3^o in January, 1.5^o in February, and 0.2^o in March, while in April the temperature was 2.7^o above normal. The sum of degree days of cold amounted to 834^o, which describes the winter as a harsh one. In the winter of 2009-2010, snowfalls were abundant, and in three winter months the monthly precipitation was above normal, namely, 176 % in December, 223 % in February, and 167 % in March.

Due to the rather high temperature background in the fall, the stable transition of the average daily air temperature to negative values occurred on December 5, which was 22 days later than normal. The first ice in the water areas of the Neva Bay and the Gulf of Vyborg was noticed on December 11 – 14, which is in average one month later than the mean annual time. Very cold weather in the second half of the month contributed to continuous and quite intensive ice formation, with a stable ice cover established at once. Fast ice in the water areas of the Neva Bay and the Gulf of Vyborg formed on December 17 – 18, which is just one week later than the mean annual time. Ice formation in the Bjerkesund strait and the bays of Luga and Koporye began on December 17. In the last days of the month, ice formation slowed down. The ice situation at the end of the month was as follows. In the Neva Bay, there was fast ice, and the ice thickness was 12-22 cm. Along the northern coast of the gulf, around Zelenogorsk, a sheet of drifting ice was noticed, and on the Sestroretsk shoal, there was a 5-7 km wide sheet of fast ice, and the

ice thickness was up to 25 cm, while behind the fast ice border there was very solid drifting ice 10-20 cm thick. In the Gulf of Vyborg until the latitude of the Igrivy island there was fast ice, and the ice thickness was 15-25 cm. Then until the latitude of the Krestovy cape there was 10-15 cm thick solid drifting ice. In the Bjerkesund strait, there was very solid drifting ice 10-15 cm thick. The new ice edge went from the Ustinsky cape through the Demanstein banks to the Nerva lighthouse and then to the Finnish skerries. In the bays of Luga and Koporye, there was new ice and ice rind in the coastal area.

In January, ice formation in the gulf was intensive, and the ice edge moved swiftly to the west. The ice situation was now typical for a moderate to harsh winter. The ice thickness was within normal due to a stable snow cover on the ice, which was 10-15 cm. In the Neva Bay till the latitude of the Tolbukhin cape and the Gulf of Vyborg until the latitude of the Krestovy cape there was fast ice, and by the end of the month the ice thickness reached 25-45 cm and 30-45 cm respectively. In the Bjerkesund strait, fast ice formed on January 3, which is a time close to the mean annual, and by the end of the month the ice thickness here reached 25-40 cm. In the bays of Luga and Koporye, fast ice along the coast formed on January 7; by the end of the month the ice thickness reached 15-25 cm. Drifting ice reached the borders of the Seskar island already by January 2 and the Hogland island, by January 11. Such dates are typical for mean annual values. In the last ten days of the month, the drifting ice edge left the gulf and was notice on the border between the Aland islands and the Hiiumaa island. The heaviest ice was noticed till the longitude of the Hogland island; till the longitude of the Moshchny island, there was 20-35 cm thick consolidated ice and then very solid 15-30 cm thick drifting ice. In the end of the month, an ice clearing filled with open pack ice opened along the southern coast of the gulf.

In February, ice formation on the gulf was weak. In the Neva Bay and in the Bjerkesund strait, there was still fast ice. The ice thickness increased gradually, reaching 40-60 cm by the end of the month, which is the mean annual value for this period. Precipitation was 1.5-2 time above normal, and the snow cover of the ice cover was 2 points. In the bays of Luga and Koporye, there was also fast ice, and on February 10, fast ice occupied all of the bay of Luga. Behind the fast ice border till the Hogland Island, there was very solid hummocky drifting ice, 15-35 cm thick in the beginning of the month and 20-45 cm thick in the end of the month. In the western part of the gulf, there was drifting ice, 15-40 cm thick till the longitude of the Parki Peninsula, and 10-25 cm to the west of it. By the end of the month, the ice thickness reached 25-40 cm. The drifting ice edge was still outside the gulf, and on February 19 it reached its maximum position of the season, namely, the latitude of the Almagrunder lighthouse.

During the month, ice clearings filled with slush or open pack ice were formed in the considered area:

- A vast ice clearing (up to 8 miles wide) from the Kotlin Island till the longitude of the Shepelevsky lighthouse, from February 1 to 9. After that, there was 5-15 cm thick fast ice in this area, and on February 15 the ice went into a stage of very solid drifting.

- An ice clearing near the islands of the Seskar and Moshchny was notice from February 1 to 4.

On February 15 to 24, the ice conditions between the islands of Kotlin and Hogland were at their severest, with solid consolidated drifting ice up to 40 cm thick.

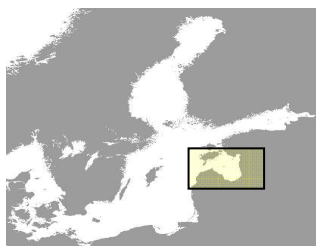
In March, the ice formation in the gulf water area was scattered. The ice situation in the eastern part of the gulf changed insignificantly. Fast ice remained in the Neva Bay and along the northern coast of the gulf, in the Gulf of Vyborg, in the Bjerkesund strait and in the bays of Luga and Koporye. By the middle of the month, the thickness of fast ice reached 45-65 cm, on the Sestroretsk shoal, 55-75 cm, and in the bays of Luga and Koporye, 25-45 cm. The ice thickness in March was normal. Precipitation was 2-3 times above normal, and the snow cover of the ice cover was 2 points. The last week of the month gave rise to ice fracturing process of the spring, with holes and snow puddles formed on the ice. The ice fracturing amounted to 1-2 points all over the water area and 3-4 points in the Neva Bay. The stable transition of the average daily air temperature to positive values occurred on March 26, which was 2 days earlier than the mean annual. In the last days of the month, ice cover fracturing was intensive; the fast ice fractured in Lomonosov and Kronstadt. The solidest ice was observed till the longitude of the Rodsher lighthouse where the ice thickness was 30-50 cm till the longitude of the Moshchny island and 25-40 cm to the west. In the western part of the gulf, there was 15-30 cm thick drifting ice. On March 5 to 8, ice clearings near the islands of Hogland and Moshchny were observed. On March 10 to 13 and on March 22 to 24, an ice clearing near the island of Hogland was observed. On March 1 to 3, on March 14 to 16, and on March 25 there was ice opening on approaches to the islands of Moshchny and Maly as well as between the islands of Hogland and Moshchny.

In April, there was intensive destruction of the ice cover. The thickness of fast and drifting ice went down gradually. The fracturing of ice grew. In the beginning of April, fast ice in Lisiy Nos fractured. The dates of first fracturing of fast ice in the Neva Bay were one week earlier than the mean annual. By April 10, the ice edge went away as far as the longitude of the Hogland Island. By the middle of the month, fast ice in the bays of Neva, Luga and Koporye was fully broken, on April 15, fast ice in the Bjerkesund strait was fractured, and on April 18, in the Gulf of Vyborg. By April 11, the bays of Luga and Koporye were fully cleared of ice. Drifting ice was concentrated in the northern half of the gulf. The main fairway to St. Petersburg was cleared of ice on April 30. Full clearance of the gulf from ice was registered on May 2. The date of clearance of the Gulf of Finland are the same as the mean annual dates.

General conclusions

In the winter navigation, the ice conditions in the Gulf of Finland by the maximum ice spreading area were harsh, and by the ice thickness, the conditions were medium, which makes the winter of 2009/2010 a moderate to harsh one by the type of harshness. A feature of navigation was quite intensive development of the ice cover in the fall through winter season in December and January and relatively weak ice development in February and March. The severest situation was in the eastern part of the gulf where the ice was at its solidest and thickest. In the western part of the gulf, an ice clearing along the southern coast and relatively small ice thickness mitigated the situation. The ice thickness stayed within the mean annual range during the whole season and never exceeded 60-65 cm. Storm winds with strong ice pushes were relatively rare, and most such days occurred in February and March.

Gulf of Riga



Pärnu Harbour

The Estonian Meteorological and Hydrological Institute assessed the winter of 2009/2010 as severe. The traffic restrictions were initiated 21. of December being IC-1600 kW in Pärnu. From 14.02.2010 to 06.04.2010 traffic restrictions were IB-2000 kW and all restrictions were cancelled 21. of April. The icebreaking season lasted from 19

December to 21 April and 102 ships were assisted.

Port of Riga

During the ice navigation operated in the Riga gulf and Irbe strait - icebreaker Varma 10165 kW.

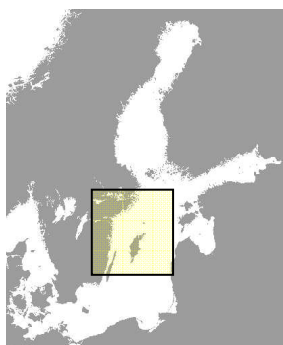
Icebreaker season began 26.01.2010., ended on 07.04.2010.

- ships assisted from Irbe strait to Riga – 150,
- ships assisted from Riga to sea – 117,
- towed – 7.

Restriction to navigation:

- ice class 1c Swedish-Finish or similar classification societies,
- ships power less 1600 hp,
- river-sea ships, barges.

5.5. Central Baltic



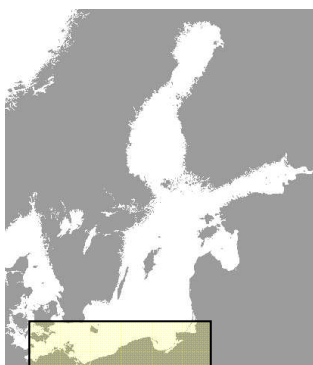
The first traffic restrictions in the Central Baltic were initiated on the 13th of February. The highest level was ice class IC and 1300 dwt or ice class II and 2000 dwt.

All assistance activities were conducted by hired tugboats. The traffic restrictions were lifted on the 26th of March

Assistance has been conducted to following ports:

Stockholm	Västervik
Oskarshamn	Mönsterås
Kalmar	

5.6 South Baltic Coastline



Tugs with ice class were in use for ice breaking service in Poland. Air and sea temperatures were below average through all the winter season caused ice formation to appear on 21 December 2009, at first and continue to the second part of the March 2010.

There was no serious difficulties to navigation on east part of Poland.

On the west part (Szczecin-Swinoujscie) ice formation caused severe difficulties to navigation. Only ice-class vessels were allowed to enter/leave ports of Szczecin - Swinoujscie. Vessels moved in convoys in one-way traffic. Temporary pilot's and tug's exemptions were suspended.

5.7 Western Baltic, Danish waters



The Danish Ice service was ready for action as of December 15th. 1 icebreaker (DANBJOERN) lay in Frederikshavn on 48 hrs notice. The icebreakers ISBJOERN and THORBJOERN lay in Frederikshavn on 5 days materiel notice, while the crews were on 48 hrs notice. During December weather showed signs of developing into an ice winter.

Early January most inshore waters in the Danish sea area had frozen to various degrees.

On January 5th the readiness contract for icebreaking on the Limfjorden held with Nordane Shipping was activated. The icebreaking tug STEVNS was in service on the Limfjorden from January 6th until March 25th. Ice was starting to build in open waters in early January. On January 11th Icebreakers ISBJOERN and THORBJOERN started workup and were ready on 48 hrs notice by January 15th

By the end of January water temperatures at depths of 5 and 10 meters were measured to be approximately minus 1° C. The Icebreakers DANBJOERN and THORBJOERN readiness notice was reduced to 24hrs. More ports in inshore waters needed Icebreaking assistance, with the result that Icebreaking tugs STEVNS ICEBIRD and SONTINJA were chartered and stationed at Hals and Smaalandsfarvandet respectively. Later in February an additional tug STEVNS ICEGUEEN was chartered and stationed of Hals for a period when ice the area was packing and producing hummocks in the area.

By the end of February Ice in Danish waters started to recede. Readiness notice for Icebreakers DANBJOERN and THORBJOERN was again increased to 48 hrs. All 3 Danish Icebreakers remained on 48 hrs notice until March 26th where the Danish Ice service operations for the winter was ended.

Charter of STEVNS ICEBIRD, SONTINJA and STEVNS ICEGUEEN ended by March 6th.

During The winter 2009 to 2010 the Danish icebreaking service assisted shipping on 166 occasions distributed with 53 in the Limfjorden, 38 in the Smaalandsfarvandet, 65 of Hals and Randers fiords and finally 10 in other locations. Apart from the 4 tugs already mentioned the Danish used tugs SUSANNE SAJ, STORESUND, PROTON, BONDEN, BULLER and SIGYN in short term employments.

6. Description of organisations and icebreakers engaged during the season 2009/2010

6.1 Finland

The Finnish Maritime Administration (FMA) was the national authority responsible for the assistance of winter navigation, its coordination, development and management nation-wide. The actual icebreaking services have been contracted out. FMA disestablished 31.12. 2009 and the sea functions transferred to new Finnish Transport Agency (FTA). Finnish Transport Agency is responsible for maintaining and developing the level of service in the transport infrastructure administered by the government.

The FTA develops Finland's icebreaking policy, taking into account the requirements of its clients (mainly the Finnish industry). Essential for the industry are as short waiting times as possible for traffic. The FTA decides on the length of the assistance period, exemptions and traffic restrictions.

The traffic restrictions are normally made more stringent at a faster pace than the minimum HELCOM safety recommendations, as the objective is to assure an efficient maritime traffic flow. Only vessels fulfilling the criteria of daily traffic restrictions are given assistance.

In 2010 the icebreaking services were purchased mainly from Arctia Icebreaking Ltd based on a contract. Arctia Icebreaking Ltd is responsible for the management and daily operation of the icebreaking services to all 23 winter ports. The demands as to the standard of service are included in the freight contract. The main requirement is that vessels should not have to wait for an icebreaker for more than 4 hours on an average. Another goal for the Finnish icebreaker service standard is that 90 % to 95 % of vessels navigating in the ice field could get through without delay.

In Finland no special fee is collected for the icebreaker service. All ships pay fairway fees based on ship size and ice class. The fairway dues are used to cover the costs of fairway maintenance and icebreaking services.

Icebreakers engaged by the Finnish Transport Agency 2009/2010:

Name	Type	Engine power
FENNICA	Multi-Purpose Icebreaker	21 000 KW
NORDICA	Multi-Purpose Icebreaker	21 000 KW
FREJ	Icebreaker	18 400 KW
KONTIO	Icebreaker	21 800 KW
OTSO	Icebreaker	21 800 KW
SISU	Icebreaker	18 400 KW
URHO	Icebreaker	18 400 KW
VOIMA	Icebreaker	12 800 KW
ZEUS	Icebreaker	5 400 KW
VIDAR VIKING	Icebreaker	13 440 KW

Icebreaker Frej was a period of 37 days in joint chartering with SMA and FTA.

Port	21.12.2009	28.12.2009	4.1.2010	9.1.2010	16.1.2010	25.1.2010	30.1.2010	6.2.2010	15.2.2010	22.2.2010	1.3.2010	15.3.2010	24.3.2010	30.3.2010	6.4.2010	12.4.2010	15.4.2010	19.4.2010	22.4.2010	26.4.2010	3.5.2010	11.5.2010	17.5.2010	21.5.2010	24.5.2010		
TOR	I, II 2000	IAJB 2000	IAJB 2000	IA 2000	IA 2000	IA 3000	IA 3000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 2000	IA 2000	IAJB 2000	I, II 2000			
KEM	I, II 2000	IAJB 2000	IAJB 2000	IA 2000	IA 2000	IA 3000	IA 3000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 2000	IA 2000	IAJB 2000	I, II 2000			
OUL	I, II 2000	IAJB 2000	IAJB 2000	IA 2000	IA 2000	IA 3000	IA 3000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 2000	IA 2000	IAJB 2000	I, II 2000			
RAA		I, II 2000	IAJB 2000	IA 2000	IA 2000	IA 3000	IA 3000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 2000	IA 2000	IAJB 2000	I, II 2000			
KOK		I, II 2000	I, II 2000	IAJB 2000	IAJB 2000	IA 2000	IA 2000	IA 3000	IA 3000	IA 3000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 2000	IAJB 2000	IAJB 2000	I, II 2000			
PIE		I, II 2000	I, II 2000	IAJB 2000	IAJB 2000	IA 2000	IA 2000	IA 3000	IA 3000	IA 3000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 4000	IA 2000	IAJB 2000	IAJB 2000	I, II 2000			
VAA		I, II 1300	I, II 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IAJB 2000	I, II 2000			
KAS			IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	IA 2000	I, II 2000				
MÄN				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000			
RAU				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000			
UIUS				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000			
NAA				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000			
TUR				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000			
HAN				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000			
KOV				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000			
INK				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000			
KAN				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000			
HEL				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IA 2000	IA 2000	IAJB 2000	IAJB 2000 / IC 3000	IAJB 2000 / IC 3000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000		
SKÖ				I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IA 2000	IA 2000	IA 2000	IAJB 2000	IAJB 2000 / IC 3000	IAJB 2000 / IC 3000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000		
LÖV		I, II 1300	I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IA 2000	IA 2000	IA 2000	IA 2000	IAJB 2000	IAJB 2000 / IC 3000	IAJB 2000 / IC 3000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000		
KOT		I, II 1300	I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IA 2000	IA 2000	IA 2000	IA 2000	IAJB 2000	IAJB 2000 / IC 3000	IAJB 2000 / IC 3000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000		
HAM		I, II 1300	I, II 1300	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000 / ICJ 3000	IAJB 2000 / IC 3000	IAJB 2000	IA 2000	IA 2000	IA 2000	IA 2000	IAJB 2000	IAJB 2000 / IC 3000	IAJB 2000 / IC 3000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000	IAJB 2000	IAJB 2000	IAJB 1300 / ICJ 2000	IAJB 1300 / ICJ 2000		

6.2 Sweden

Icebreaking operations are managed by the Icebreaking Division of the Swedish Maritime Administration in Gothenburg and are based on the Swedish icebreaking regulation (2000:1149). It allocates icebreakers to work areas, issues traffic restrictions, monitors the operational situation and informs the shipping stakeholders of ice conditions and the traffic situation. Sweden controls eight icebreakers, of which the Swedish Maritime Administration owns five and has three on long-term charter from a private ship owner. All icebreakers are manned by a private shipping management company.

Sweden and Finland use a jointly developed IT based on-line system, IB-Net (IceBreaker Net) for coordination of the joint icebreaking operations. IBNet contains information about the weather, ice conditions and traffic situation, and transmits the information between the different connected units (icebreakers, coordination centres, VTS etc.)

In addition to the icebreakers, ice strengthened buoy tenders of the Swedish Maritime Administration and private tugboats are also engaged in the icebreaking service. Helicopters are chartered and used for ice reconnaissance and personnel transport in order to reduce time expenditure for icebreakers. Cooperation with the tugboats in ports is common around the coastline.

The governmental fairway dues cover the costs for the icebreaking operations and no vessel that receives assistance from icebreaker is charged.

Icebreakers engaged by the Swedish icebreaking service 2009/2010:

Name	Type	Engine power
ALE	Icebreaker	3500 KW
ATLE	Icebreaker	18400 KW
FREJ	Icebreaker	18400 KW
YMER	Icebreaker	18400 KW
TOR VIKING II	Icebreaker	16000 KW
BALDER VIKING	Icebreaker	16000 KW
VIDAR VIKING	Icebreaker	16000 KW
BALTICA	Bouytender	2610 KW
SCANDICA	Bouytender	2610 KW

Traffic restriction 2009-2010

	Date	Min. dwt	Ice class
Karlsborg & Luleå			
	23/12-29/12	2 000	II
	30/12-1/1	2 000	IC
	2/1-12/1	2 000	IB
	13/1-29/1	2 000	IA
	30/1-2/2	3 000	IA

	3/2-25/4	4 000	IA
	26/4-2/5	3 000	IA
	3/5-16/5	2 000	IA
	17/5-20/5	2 000	IB
	21/5-23/5	2 000	II
	24/5	Restrictions cancelled	
Piteå	23/12-29/12	2 000	II
	30/12-1/1	2 000	IC
	2/1-12/1	2 000	IB
	13/1-29/1	2 000	IA
	30/1-2/2	3 000	IA
	3/2-25/4	4 000	IA
	26/4-2/5	3 000	IA
	3/5-16/5	2 000	IB
	17/5-23/5	2 000	II
	24/5	Restrictions cancelled	
Skellefteå	30/12-1/1	2 000	II
	2/1-3/12	000	IC
	4/1-12/1	2 000	IB
	13/1-29/1	2 000	IA
	30/1-2/2	3 000	IA
	3/2-25/4	4 000	IA
	26/4-2/5	3 000	IA
	3/5-16/5	2 000	IB
	17/5-23/5	2 000	II
	24/5	Restrictions cancelled	
Umeå	2/1-11/1	2 000	II
	12/1-16/1	2 000	IC
	17/1-29/1	2 000	IB
	30/1-26/2	2 000	IA
	27/2-14/4	3 000	IA
	15/4-25/4	2 000	IA
	26/4-2/5	2 000	IB
	3/5-11/5	2 000	II
	12/5	Restrictions cancelled	
Rundvik	2/1-11/1	2 000	II
	12/1-16/1	2 000	IC
	17/1-29/1	2 000	IB
	7/2-5/3	2 000	IA
	6/3-14/4	3 000	IA
	15/4-18/4	2 000	IB
	19/4-25/4	2 000	II
	26/4	Restrictions cancelled	
Husum & Örnsköldsvik	2/1-11/1	2 000	II
	12/1-2/2	2 000	IC
	3/2-6/2	2 000	IB
	7/2-5/3	2 000	IA
	6/3-11/4	3 000	IA
	12/4-18/4	2 000	IB
	19/4-25/4	2 000	II
	26/4	Restrictions cancelled	
Ångermanälven	2/1-11/1	2 000	II

12/1-16/1	2 000	IC
17/1-15/2	2 000	IB
16/2-5/3	2 000	IA
6/3-11/4	3 000	IA
12/4-18/4	2 000	IB
19/4-25/4	2 000	II
26/4	Restrictions cancelled	

Härnösand, Söråker & Sundsvall

9/1-16/1	1 300/2 000	IC/II
17/1-6/2	2 000	IC
7/2-22/2	2 000	IB
23/2-5/3	2 000	IA
6/3-11/4	3 000	IA
12/4-18/4	2 000	IB
19/4-25/4	2 000	II
26/4	Restrictions cancelled	

Hudiksvall, Iggesund, Söderhamn, Orrskär Norrsundet, Gävle & Skutskär

9/1-16/1	1 300/2 000	IC/II
17/1-6/2	2 000	IC
7/2-26/2	2 000	IB
27/2-5/4	2 000	IA
6/4-18/4	2 000	IB
19/4-25/4	2 000	II
26/4	Restrictions cancelled	

Hargshamn & Hallstavik

17/1-26/2	1 300/2 000	IC/II
27/2-18/4	2 000	IC
19/4	Restrictions cancelled	

Stockholm, Nynäshamn Södertälje, Oxelösund Norrköping, Västervik Oskarshamn, Mönsterås & Kalmar

13/2-25/3	1 300/2 000	IC/II
26/3	Restrictions cancelled	

Mälaren Västra delen	2/1-22/2	1 300/2 000	IC/II
	23/2-25/3	1 300/2 000	IB/IC
	26/3-13/4	1 300/2 000	IC/II
	14/4	Restrictions cancelled	

Mälaren Östra delen	2/1-11/1	1 300/2 000	IC/II
	12/1-25/3	1 300/2 000	IB/IC
	26/3-8/4	1 300/2 000	IC/II
	9/4	Restrictions cancelled	

Vänerhamnar & Göta Älv

4/1-29/1	1 300/2 000	IC/II
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29/1-2/2	1 300	IC
3/2-18/4	1 300/2 000	IB/IC
19/4	Restrictions cancelled	

6.3 Russia

The icebreaker assistance in the eastern part of the Gulf of Finland is regulated by the Harbour Master of the Port of St. Petersburg (according to Direction of Ministry of Transport BP-113-p, 30.11.2001). The Harbour Master of the Port of "Big port of St. Petersburg" has the power to impose any shipping restrictions in the area for the traffic bound to or from Russian ports, based on actual ice conditions (according to article Nos. 74 & 76, Russian Federal Law No. 81-FZ, Russian Merchant Marine Code, 30.04.1999).

The ice navigation assistance is conducted by the state-owned or state-chartered icebreakers and covers the ports of St. Petersburg, Primorsk, Vyborg, Vysotsk and Ust-Luga. The state-owned icebreakers assist the inland transit navigation via Symens canal both ways.

The ice-breaker fleet consists of the following ice-breakers:

Name	Type	Engine power
CAPTAIN SOROKIN	Icebreaker	18 300 KW
MOSKVA	Icebreaker	16000 KW
SAINT-PERESBURG	Icebreaker	16000 KW
ERMAK	Icebreaker	30 400 KW
SEMION DEZHNEV	Icebreaker	4 000 KW
IVAN KRUZENSTERN	Icebreaker	4 000 KW
CAPITAN M. IZMAILOV	Icebreaker	3 940 KW
CAPTAIN ZARUBIN	Icebreaker	4 650 KW
MUDYUG	Icebreaker	9 100 KW
KARU	Icebreaker	6 450KW
TOR	Icebreaker	10 000KW
YURI LISYANSKY	Icebreaker	4 000 KW
CAPTAIN PLAKHIN	Icebreaker	4 650 KW

The icebreaker assistance, as a rule, is conducted as follows:

1. Individual icebreaker assistance behind an icebreaker;
2. Icebreaker assistance in a convoy;
3. Independent ice navigation following icebreaker recommendations and strictly under her supervision.

Icebreaker assistance is given to the ships which do not fall under the acting restrictions in the ports of their destination. Icebreaker assistance for the traffic coming from the sea is conducted from the point where the convoy is formed to the inner road of the port, and the ships leaving the port are assisted from the inner road to the area next to the convoy forming point (CFP).

All the ships coming from the sea are prohibited from entering the ice east of the convoy forming point (CFP) without permission of the icebreaker. The Masters of the ships sailing independently upon receiving the permission of the icebreaker are to report to the icebreaker while passing the established control points of the recommended route and inform of the ice situation in the area. If such a ship gets stuck, the icebreakers are to release them and correct their recommended route or get them in the convoy for further motion. The Masters of the ships are not recommended to rely on data regarding recommended routes received from other ships and not confirmed by the Master of the icebreaker.

When the ice thickness over the approach fairways leading to Russian ports in the eastern part of the Gulf of Finland becomes considerable, the Harbour Master of St. Petersburg imposes restrictions on ships the ice class and the main engine capacity of which are not sufficient for navigation under prevailing circumstances.

The permission to enter the port or the icebreaker assistance to ships under restrictions due to their ice class is granted in exceptional cases, after detailed study of their ice certificates ("Ice passport" or "Provisional recommendations on ice safety") issued by a recognized institution. The permission to enter the port or icebreaker assistance to a ship under restrictions due to her main engine capacity may be granted in case her ice class meets the requirements. The ships whose age exceeds 20 years, as a rule, are not permitted entry in case they are under restrictions.

In case such permission is granted to a ship falling under one of the restrictions established, a particular icebreaker is allocated for her assistance and the Master of that icebreaker has the authority to determine the best way to render such assistance.

6.4 Estonia

The responsible organization for icebreaking in Estonia is the Estonian Maritime Administration. The Director-General of the Estonian Maritime Administration decides on traffic restrictions and directives on winter navigation. The icebreaking coordination center consisted of 12 members in 2008, chaired by the Head of the Maritime Safety Division of the Maritime Administration, and acts as an advisory board for the Director-General in icebreaking issues.

Ports that are serviced by state ice-breakers are Muuga Harbour, harbours of Tallinn and Kopli Bay, Paldiski North Harbour, Paldiski South Harbour, Kunda Harbour, Sillamäe Harbour and Pärnu Harbour.

Currently, Estonia has one icebreaker, TARMO, to operate in the Gulf of Finland area, and the multi-purpose vessel EVA 316 to operate in the Pärnu Bay. Icebreaking to the port of Pärnu was carried out by multi-purpose vessel EVA 316.

Icebreakers engaged by the Estonian Maritime Administration 2009/2010:

Name	Type	Engine power
TARMO	Icebreaker	10 000KW
EVA 316	Multi-Purpose Vessel	3 x 1 717 KW
PROTECTOR	Tug	1 x 2 748 kW

6.5 Latvia

During the ice navigation operated in the Riga golf and Irbe strait - icebreaker Varma 10165 kW.

Icebreaker season began 26.01.2010., ended on 07.04.2010.

- ships assisted from Irbe strait to Riga – 150,
- ships assisted from Riga to sea – 117,
- towed – 7.

Restriction to navigation:

- ice class 1c Swedish-Finish or similar classification societies,
- ships power less 1600 hp,
- river-sea ships, barges.

6.6 Lithuania- no information

6.7 Poland

EAST COAST AREA

1. Actions taken before winter season.

There were no typical ice-beakers available on East Coast area of Poland. Tugs with ice class were in use for ice breaking service covering roads and approach channels to the main ports.

Ice-breakers were ready for service from 10th of November 2009. At the same time all Harbour Masters on the East Coast were informed that following ports will not be protected by the ice-brakers: Jastarnia, Puck, Gorki Zachodnie and Swibno. All vessels (mainly fishing vessels) should be ready to move to the following ports: Hel, Wladyslawowo, Gdansk and Gdynia which will be protected by the icebreakers.

2. Winter season 2009/2010

In general winter season was respectively cold. Ice formations exist during whole winter season.

During whole season an information were collected from main ports about:

percentage of ice cover inside the ports and on roads

thickness of ice

ice restrictions and any necessity of ice-breakers use

Ice-breaking action was commenced on 24th January 2010 for the port of Gdynia and suspended on 27th January 2010, and again from 15th February till 26th February 2010. During that time ice-breaker was used twice for a period of total 3 hrs.

No any serious difficulties to the traffic were reported during whole winter season 2009/2010.

WEST COAST AREA

1. Winter season 2009/2010

1. The months of winter season in Poland usually are November, December, January and February.

November was rather warm, the mean temperature was +8,7° C and during the nights temperatures were a little less, only twice it dropped to zero.

On 15 December temperatures dropped below zero and on 21 December the ice formation appeared.

January 2010 was really cold, with low temperatures up to minus 16° C and the ice developed.

February was a little milder than January, but resuming the frost dominated.

Even on March, the first decade was frosty - up to minus 5° C.

The minus temperatures in December 2009 caused the first ice formation in the area of responsibility of Maritime Office In Szczecin. And in the following days and months the ice has been becoming more difficult. In the last days of January the ice thickness was even 50 cm and ice cover was up to 100 %.

II. Actions taken

1. As the first ice formation had appeared, on 21 December 2009 VTS Szczecin started **publishing in internet the ice statements** for regions: Zatoka Pomorska, Swinoujscie, Dziwnow, Zalew Szczecinski and small ports of Zalew Szczecinski and port of Szczecin. These "ice news" contained:
percentage of ice covering thickness /
rafting of ice
ice restriction, if were any, put into force by Harbour Master of port of Swinoujscie/ Szczecin in their area of responsibility.

The end of publishing ice news was on 30 March 2010.

2. Putting into force the ice restrictions by Harbour Master of Swinoujscie / Szczecin, in their area of responsibility.

- The first restriction was published on 21 December 2009 and it was said that the main fairway Swinoujscie - Szczecin and small port of Swinoujscie and Trzebiez were not available for wooden and laminate crafts, later on this restriction was valid for inland navigation.

4 January 2010 the fairway Swinoujscie - Szczecin and port of Szczecin were available for vessels with ice class L-4, and one way traffic was established

9 January 2010 the fairway Swinoujscie - Szczecin and port of Szczecin was available for vessels with ice class L-3

26 March 2010 all restriction was cancelled

3. Ice breaking actions

After the ice breaking contract was signed, on 30 January 2010 the traffic was organized in convoys with strong tug ahead.

During the February every day was one convoy in and one out.

From 1 March 2010 to 15 March 2010 only 4 convoys took place, the last was on 15 March 2010,

Total time of work of tugs, as ice breaker, came to 391,2 hours.

4. Special statements of Harbour Master of Swinoujscie/Szczecin.

Statements issued by Harbour Master of Szczecin:

- **21 December 2009 to 1 January 2010** tug exemptions were suspended.
- **29 January to 30 March** pilot exemptions were suspended.

III. The summary

1. Winter season 2009/2010 can be defined as severe and difficult.
2. Ice formation was serious obstacle to navigation.
3. "Ice news" containing information about weather condition, ice formation, vessels traffic were available everyday in internet and any time on request on VHF from VTS.

6.8 Germany

The ice situation in German waters during the last winter season gives an idea what happens if the winter becomes suddenly colder and the ice situation intensifies.

During the prolonged cold weathering in the last winter at first the sheltered waters of Greifswalder Bodden and Oderhaff were covered by ice in December and January, followed by Schlei, Eckerförder Bucht und Flensburger Förde.

Short before all floating aids to navigation were removed or changed to ice buoys.

Depends on the winddrift the sea ice was more concentrated on the east coast of Rügen, where it came to a compact area on the end of January. The inner areas were completely covered by ice and the supply of the island of Hiddensee (close to Rügen) could only be maintained with utmost efforts.

The Multi Purpose Vessel "Arkona" and two smaller icebreakers ("Grömitz" and "Ranzow" were nearly in service during the whole period. On the beginning of February also the open sea was partly affected by ice. The thickness was not so large and the period was, due to changing wind directions, not so long, so that no icebreaking services were needed away from the coast line.

During this time the Icebreaker ARKONA was assisting in the approach to Stralsund, Landtief and in the Greifswalder Bodden.

GÖRMITZ was assisting in the northern Peenestrom, southern Greifswalder Bodden and Osttief. RANZOW was assisting in the Strelasund and in the Greifswalder Bodden.

The northern approach to Stralsund, the southern Peenestrom and Kleines Haff were closed for navigation. Only daytime navigation was allowed to Stralsund.

Other adjacent waters with minor importance for winter traffic, like the Schlei in the western part of the area, were closed for shipping with beginning of ice development.

The main entrances to the large ports could be kept ice free with help of larger tugs.

In the summary there were no extraordinary disabilities for the ships traffic in the last winter. The other Multi Purpose Vessels than ARKONA, were not needed for icebreaking.

6.9 Denmark

The Danish Ice service is the responsibility of the ministry of Defence. Management of the Ice service is delegated to The Danish Navy. The Ice Service has until now operated 3 icebreakers referred to as navy icebreakers as follows:

Name	Built	Engine Power
DANBJØRN	1965	8 700 KW
ISBJØRN	1966	8 700 KW
THORBJØRN	1980	4 700 KW

The Danish government has decided that the Icebreakers DANBJØRN, ISBJØRN and THORBJØRN will no longer be operated Danish authorities. Exactly when operations with the icebreakers will end is not known at the moment. What will happen with the icebreakers after end of operations is not known either. The future of the Danish Ice service under consideration by a interministerial workgroup. The workgroup are due to report by November 2010.

As the winter 2009 – 2010 was cold the Icebreaking service was activated, though the 3 navy icebreakers did not become operational. Ice breaking assistance was carried out chartered tugboats.

7.0 Norway

In Norway the government, by Norwegian Coastal Administration, is responsible for the icebreaking in open waters and main fairways along the coast. In the fjords and the approaches to the ports, the harbour/port is responsible for the icebreaking.

The Norwegian Coastal Administration operates only 2 buoy tenders that can be used for minor icebreaking operations:

Name	Type	Engine power
VILLA	Motor Vessel	Total Bhp 1.250. Total Kw 920 Kw
HEKKINGEN	Motor Vessel	Total Bhp 1.250. Total Kw 920 Kw

The ports operate tugboats which are used as icebreakers in the harbour and their approaches. These tugs are old and we don't see any renewal of the icebreaking equipment.

The Norwegian Navy/Coastguard has one ice going coastguard vessel, "SVALBARD", operating in the north.

Same port the winter 2009 - 2010 was the strongest winter in the south part of Norway for many years. We can nearly compare it with the 1986 – 1987 winters.

The tugboat "Bamse Tug" was hired for ice breaking from primo February to the middle of March.

The buoy tender "Hekkingen" was also operating as ice breaker in the same period.

It was the first time for 23 years that the ice breaking was effectuate by the government.

**ANNEX 1
PRESS RELEASE
10.1.2007
For immediate release**

Joint Baltic web service on winter navigation www.baltice.org launched

A joint web service on winter navigation in the Baltic Sea area has been launched on January 10th. The purpose of the web service is to provide seafarers and the whole shipping industry with information on winter navigation and the conditions prevailing in the Baltic Sea in winter. The capability of vessels to navigate in ice has constantly improved but, due to lack of experience, the know-how of ship's crews has decreased. Furthermore, traffic volumes have increased. The aim of the free website is to give the best conceivable information on winter conditions in the Baltic Sea in order to prevent accidents and damage to vessels and to enable vessels to manage as far as possible without icebreaker assistance. The information presented on the website was formerly difficult to access as it was scattered on the websites of various organisations.

The web service contains ice reports, an up-to-date ice chart, an ice thickness chart, reporting instructions for vessels, information on traffic restrictions, icebreaker operating areas and ice navigation courses for seafarers. Data is collected from the organisations responsible for winter navigation in the Baltic Sea area.

The idea to create an ice data portal originates from Baltic Icebreaking Management (BIM) and is part of the Baltic Sea Winter Motorways project, which is led by the Finnish Maritime Administration. BIM, which was founded in 2004, consists of the icebreaker managements

of the Baltic Sea countries, i.e. Finland, Sweden, Denmark, Norway, Germany, Poland, Estonia, Latvia, Lithuania and Russia. The whole project was carried out in Finland and Finland will continue to coordinate it in the future. Moreover, Baltic Icebreaking Management will be chaired by the Finnish Maritime Administration for the next two years. The project has been financed by Finland, Sweden, Denmark, Estonia, Russia and the EU.

AffectoGenimap has been in charge of the technical implementation of the project. During the website's first year of existence, ice information will be provided by the Ice service of the Finnish Institute of Marine Research.

The address of the website is www.baltice.org.

Further information:

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ANNEX 2
PRESS RELEASE
11.4.2007
For immediate release

Training in ice navigation for seafarers

The Baltic Sea states wish to enhance safety and the efficiency of vessel traffic also by means of instruction. The video guide "Ice Navigation and Baltic Ice Conditions", which has only just been released, is intended especially for those seafarers who lack experience in ice navigation.

Traffic in the Baltic is constantly increasing. Although ships' capability of navigating in ice has improved, know how on board has deteriorated owing to lack of experience. This is why it was felt that there was a need for a winter navigation guidance video. Training material of this kind has not been available before. The English language video deals with matters crucial to winter navigation: the ice situation and the various types of ice, ships' capability of navigating in ice, means of avoiding icing of ships and equipment, voyage planning and operation in ice. The video can be watched free-of-charge at www.baltice.org (Ice Training Movie).

The project has been financed by the Finnish Maritime Administration and the European Union, the Swedish and Estonian Maritime Administrations, the Danish Ministry of Defence and St. Petersburg Port Authority, which all distribute the video on DVD in their own countries. In Finland, copies of the DVD have been sent to the maritime colleges. The

Finnish Maritime Administration has been responsible for the realization of the whole project.

Guidance for seafarers is also provided by the joint Baltic Sea web service www.baltice.org, which was launched in January this year. Both the web service and the video have been produced by Baltic Icebreaking Management (BIM), a board for various joint projects realized by the icebreaking authorities of the Baltic Sea states.

The web service and the video are part of a EU financed project called Baltic sea Winter Motorways. A third project included is the report 'Study on frequent lines – Differences in running costs between an icebreaking cargo vessel and a vessel that needs icebreaker assistance', which has been published by the Finnish Maritime Administration (Merenkululaitoksen julkaisuja 7/2006).

Further information:

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