

NATIONAL REPORT OF SWEDEN

Executive summary

This report gives a summary of the main activities within the Swedish Hydrographic Office since the last report given at the 20th BSHC meeting in Riga June 2014.

1. Hydrographic Office

The Swedish Hydrographic Office is a part of the Swedish Maritime Administration which also consists of other services e.g. Pilotage, Fairway Service, Icebreaking, SAR and Maritime Traffic Information.

At the time of compiling this report 116 persons are employed by the Hydrographic Office including the hydrographic survey personnel.

The operations are certified by SP (SP Technical Research Institute of Sweden) in accordance with ISO 9001 and from 2014 also certified in accordance with the environmental standards ISO 14001. The quality management system has been expanded to all parts of the operations and supporting activities within the Swedish Maritime Administration.

The Hydrographic Office organisational structure has been stable and no management positions have changed during the period.

2. Surveys

2.1 Overall status and surveys 2014

Most Swedish waters are surveyed to some degree over the years. The long term objective is that all Swedish waters should be surveyed in accordance with the IHO standard S-44 implemented as a common Finnish-Swedish realisation named FSIS-44. This standard is achieved in most fairways used by SOLAS vessels.

Surveys and re-surveys now and in the coming years are focused on shipping routes as defined as HELCOM Cat I and II areas in the Hydrographic re-Survey plan for the Baltic Sea. During 2012 SMA made a total review of the areas used by commercial traffic, as part of the work being done within the BSHC HELCOM Re-survey Monitoring Working Group. After the review Cat I and II now encompasses over 120 000 km² out of totally 165 000 km² within the Swedish EEZ.

The previous EU TEN-T project Mona Lisa, co-financing surveys in Sweden and Finland 2011 – 13 was completed in 2013. Together with several other Baltic Sea HOs a new project application was submitted to the EU-Commission CEF programme (CEF – Connecting Europe Facility) in February 2015, as part of the FAMOS project (see also C6 FAMOS status report). The application was successfully evaluated by the EU-

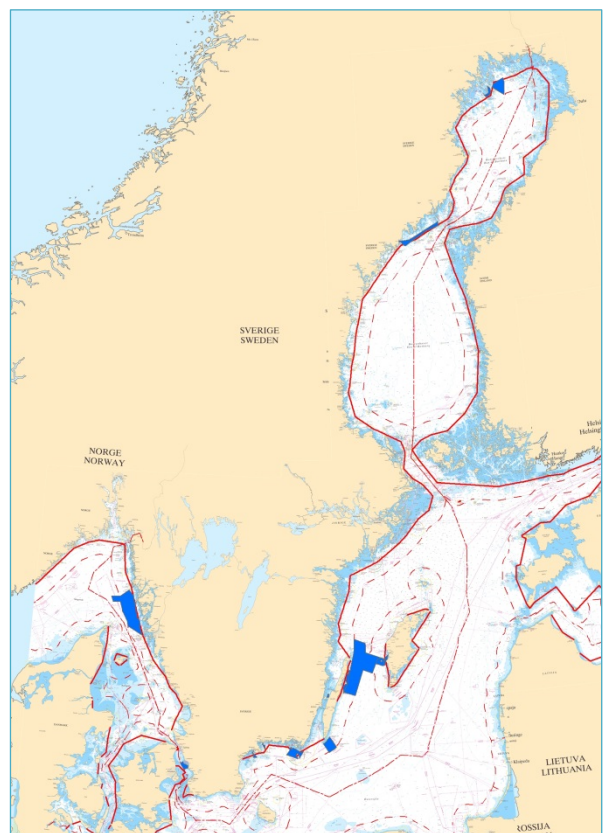
Commission. At the Coordination Committee meeting on 10 July 2015, the Commission's list was approved by the member states, which means that the project will receive the requested EU funding for the planned activities 2014-2016. Within the global FAMOS project surveys is planned from 2014 until 2020.



In 2014 a total amount of 5 255 km² were surveyed in Swedish waters, 5 241 km² by SMA vessels and 15 km² by external hydrographic survey companies ordered by other parties such as harbours or local authorities – figure 1. This means that 48% of Swedish waters are surveyed in accordance with FSIS-44 – figure 4.



Figure 1 Hydrographic Surveys performed 2014



Surveys 2015

2.2 Survey Vessels and New Survey Vessel for Bar Sweeping



Figure 2- SMA Survey vessels. To the left the two survey vessels Jacob Hägg and Baltica where surveying is performed 24 hours per day and 7 days per week weather permitted. To the right the two survey boats Petter Gedda and Anders Bure.

In June 2015 a new survey vessel was delivered to SMA, built by the Swedish shipyard Dockstavarvet. The vessel is named Gustaf af Klint after one of the most prominent hydrographic surveyors from the Swedish survey history. Gustaf af Klint is specialized for bar sweeping which is conducted in fairways and harbours with minimum clearance. Sweeping is done with a 30 meter steel bar which is hinged in a winch system.

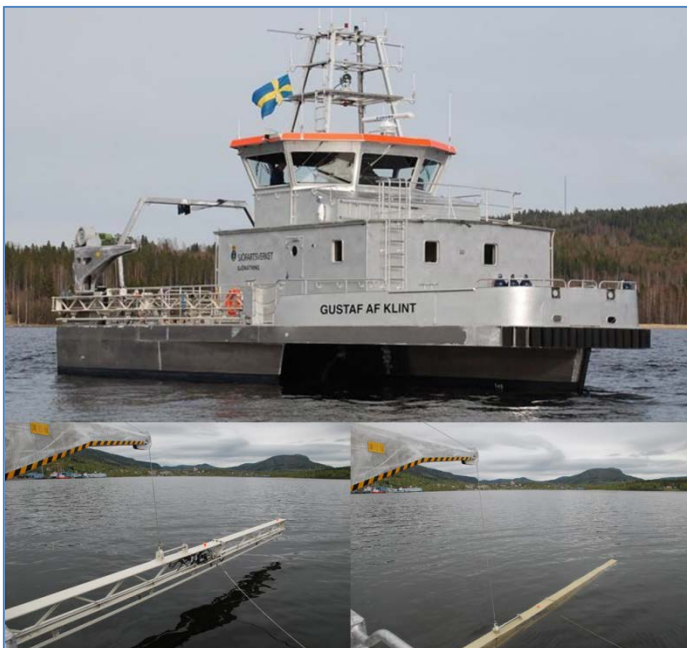


Figure 3 The new bar sweeping survey vessel Gustaf af Klint. The bar is athwartships across the stern and is here lowered into the water.

The ship is built as a trimaran, completely in aluminum and measures 17,6 x 8,6 meter. Propulsion is by one VOLVO-PENTA diesel of 558 kW via a TWIN-DISC MGX-5204 gearbox with trolling function giving only 25 rpm on the propeller at dead slow. Thrusters of 75 kW each are installed both forward and aft in order to enable the ship, with DP functions, to sail on a straight line independent of wind and current up to certain limits. The thrusters and the complete winch system for handling of the beam are electrically powered from a 250 kW VOLVO-PENTA genset.

2.3 Depth Database

The depth database DIS (Depth Information System) is handled in an ESRI-system with some specialized tools developed by a Swedish GIS company specialized on ESRI tools. At the time writing the report 92,5 billion (92 503 465 707) depths was stored in the database occupying 3,8 TB at the SMA servers.

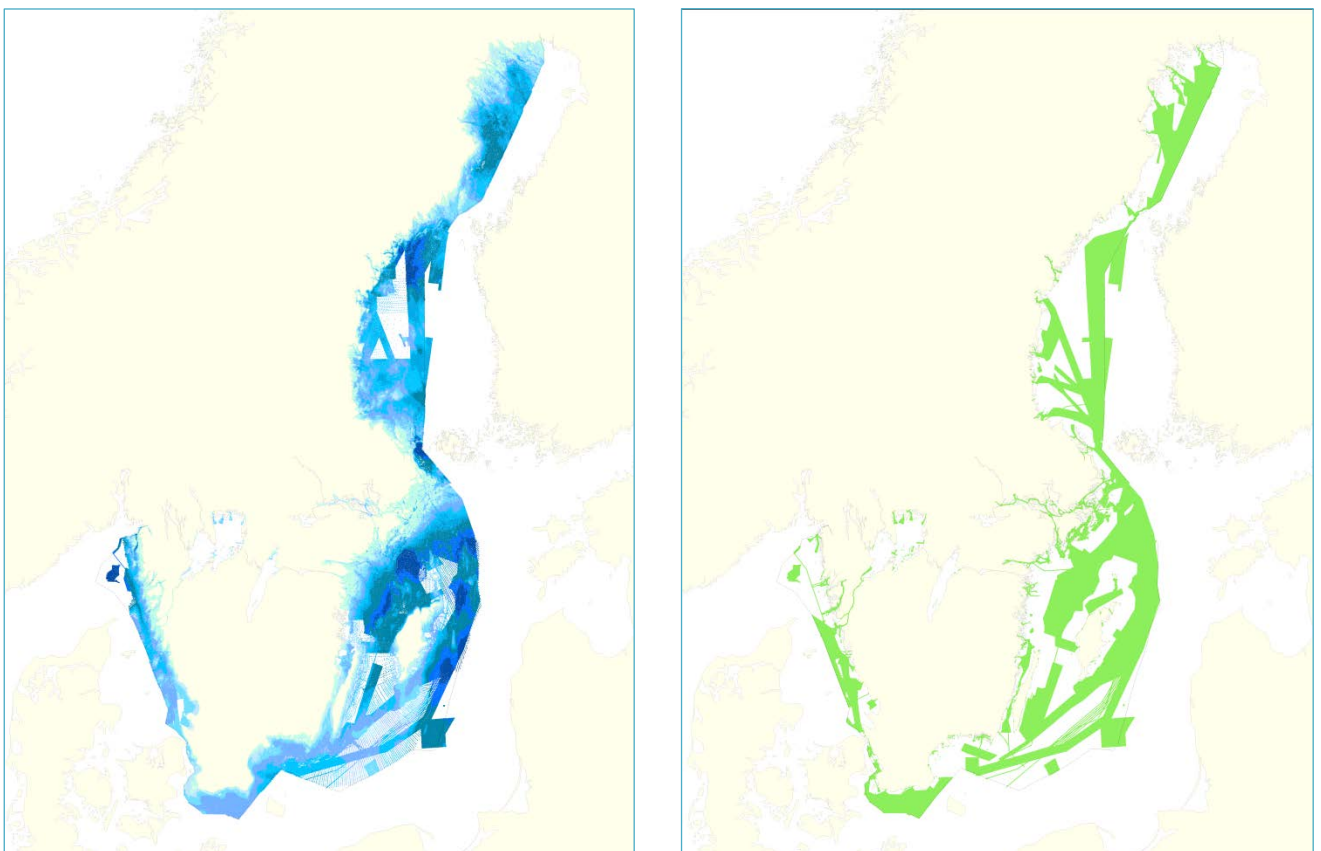


Figure 4 Populated 500m grid cells in DB, August 2015 Data that fulfills FSIS-44 in August 2015

3. New charts and updates

3.1 New ENC and Paper Charts

The Swedish paper chart portfolio consists of approximately 120 charts and 16 series of charts for small craft. Special charts, tailored to the customer are also available as well as a service to provide S-57 or raster data to the end user service providers. For convenient S-57 deliveries the PRIMAR service “GeoViewer” is used.

A chart index showing Swedish charts is available at:

<http://www.sjofartsverket.se/sv/Snabblankar/Kartviewers/Se-pa-sjokort-/>

The quality of depth data is also presented at the SMA external website:
<http://www.sjofartsverket.se/Snabblankar/Kartviewers/Sjofartsverkets-karttjanster1/>

Since the last BSHC meeting in June 2014 one new INT-charts at scale 1:250 000 has been issued, SE83-INT1202. The new chart has coverage from the Swedish south east coast, Bornholm and to the Polish routing measures at Slupska Bank. This chart finalizes the Swedish obligation to produce Coastal INT-charts at scale 1:250 000 according to the IHO International Chart Scheme (S-11).

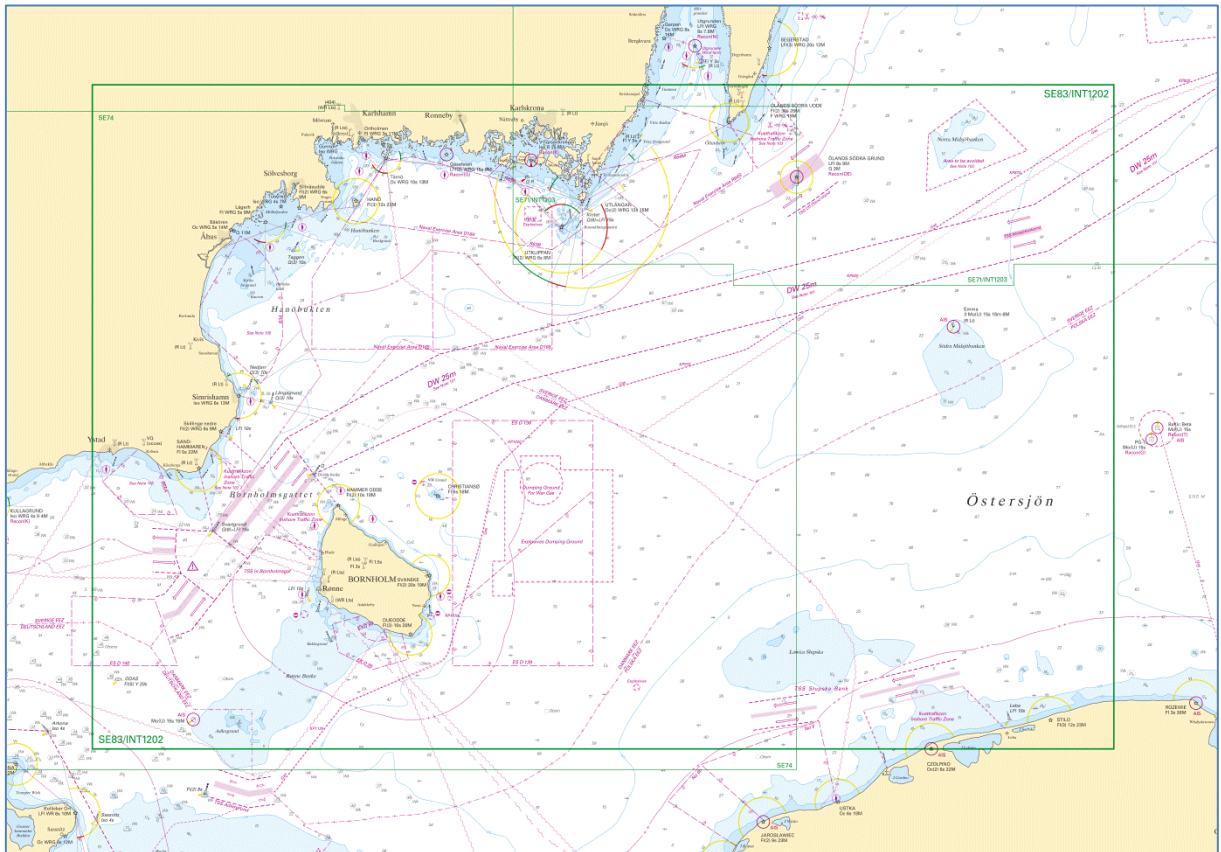


Figure 5 A New Coastal Chart SE83 – INT1202 at scale 1:250 000 has been issued.

New Harbour ENC's was issued in May 2015 covering the outer fairway to Stockholm harbour, where previous only Approach ENC's have been available. More detailed ENC's have been required since there is an increased amount of cruise ships every year to Stockholm. The area will only be available as an ENC product and not as paper charts and will connect to already existing Harbour ENC's in the inner fairway to Stockholm.

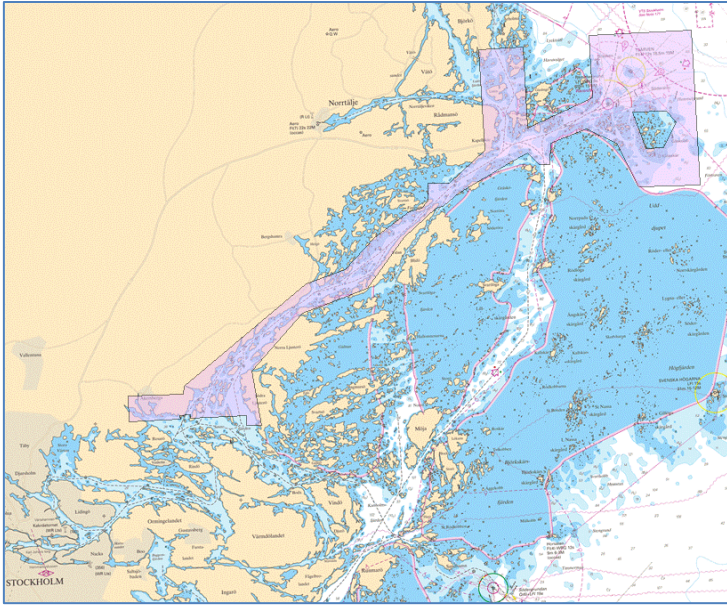


Figure 6 New Harbour ENCs was issued in May 2015 as a consequence of the increased amount of cruise ships to Stockholm. The inner fairway and the harbour were already available as Harbour and Berthing ENCs.

The sales of Swedish ENCs for the last three years are shown in figure 8 below. The number of ENC users is increasing with approximately 8% yearly. However the number of ENCs sold is relatively stable as a result of the new service “Pay as you Sail”.

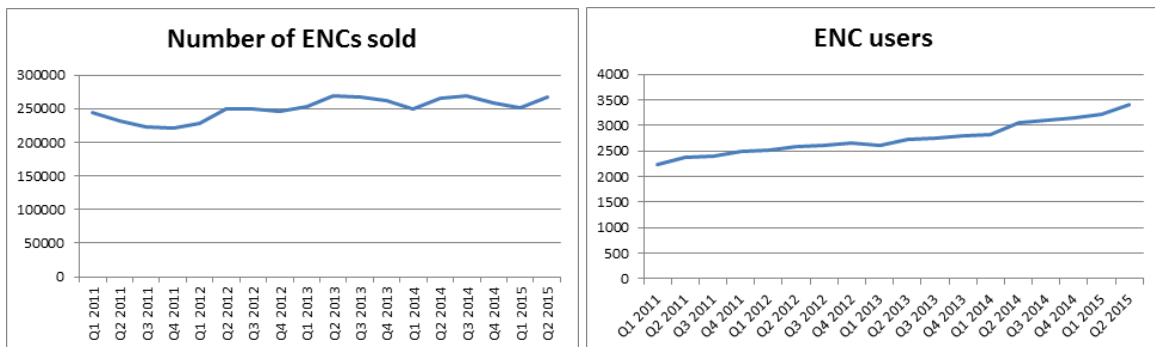


Figure 7 Swedish ENCs

| Usage Band | Compilation Scale | No of SE ENCs |
|------------|-------------------------|--------------------------------------|
| 2 General | 1:350 000 – 1:4 999 999 | 11 |
| 3 Coastal | 1:90 000 – 1:349 999 | 81 |
| 4 Approach | 1:22 000 – 1:89 999 | 224 |
| 5 Harbour | 1:4 000 – 1:21 999 | 153 |
| 6 Berthing | >1:4 000 | 103 |
| | | 572 , total number of SE ENCs |

3.2 Small Craft Charts

The sales of Swedish small craft charts are very important for our net result. For the 2015 season the series Ostkusten was produced as a New Edition. To the next season 2016 the series covering the Swedish West Coast (Västkusten N and S) and the series covering Stockholm Archipelago (Stockholm N, M and S) and Mälaren – Hjälmaren will be produced as New Editions.

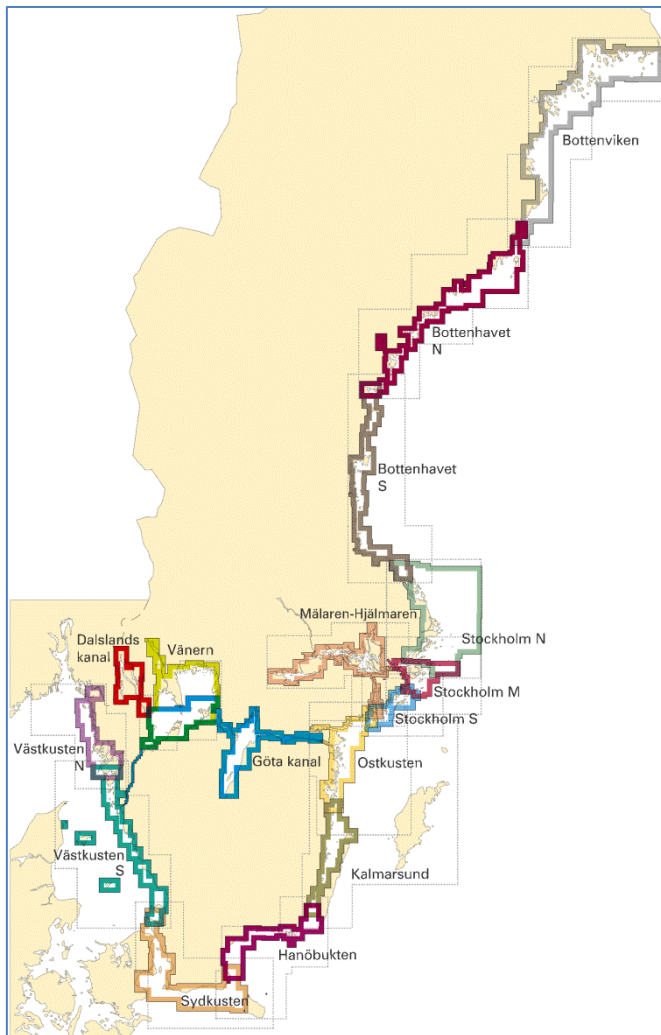


Figure 8 Small craft chart series in Sweden

3.3 New Chart Production System

The existing chart production system at SMA has been in use more or less since 25 years in different generations of operational systems (OS – Open VMS and since 15 years Windows) and different upgrades of software and databases. Since a few years ago the current IT-supplier, 1Spatial, announced that they will no longer supply any updates of one of the basic software Radius Vision. The decision was taken at SMA to procure a new system. In May 2015 the procurement was published in TendSign where SMA is procuring a contract for an IT-partner to deliver a system for managing spatial data, and for producing chart information and products, including ENC (Electronic Navigational Charts) for ECDIS and of course various forms of printed Charts. The tender should be submitted 4

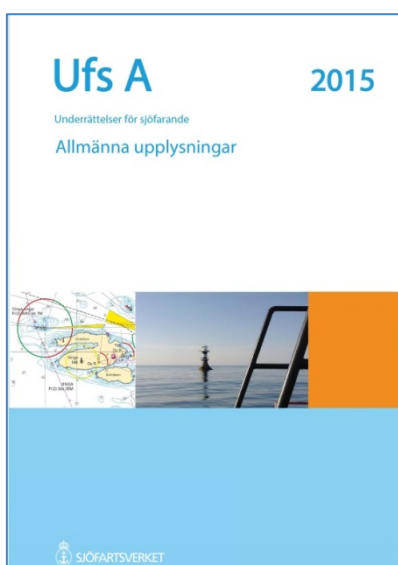
August 2015 the latest. In October 2016 the new system should be in operational mode for ENC. Paper charts would be handled successively with full operation one year after.

4. New publications and updates

The Swedish Notices to Mariners (Ufs) are available in the following ways:

1. A daily updated database in which NtM information can be searched in many different ways, e.g. all notices published for a certain area published during a certain period of time.
2. Each week one Swedish and one English PDF-file in A4 format is published on the website www.sjofartsverket.se/ufs and www.sjofartsverket.se/ntm respectively.

The Swedish Chart Catalogue and the small but comprehensive booklet Ufs A are both published yearly.



5. MSI

All Swedish navigational warnings are drafted and broadcasted by the station **MSI SWEDEN**. This station also performs the NAVTEX broadcasting of MSI for the entire Baltic Sea with exception of area “U”, which is covered by Tallin Radio, see the Navtex map below.

MSI SWEDEN is co-located with SWEDEN TRAFFIC and VTS EASTCOAST in Södertälje.

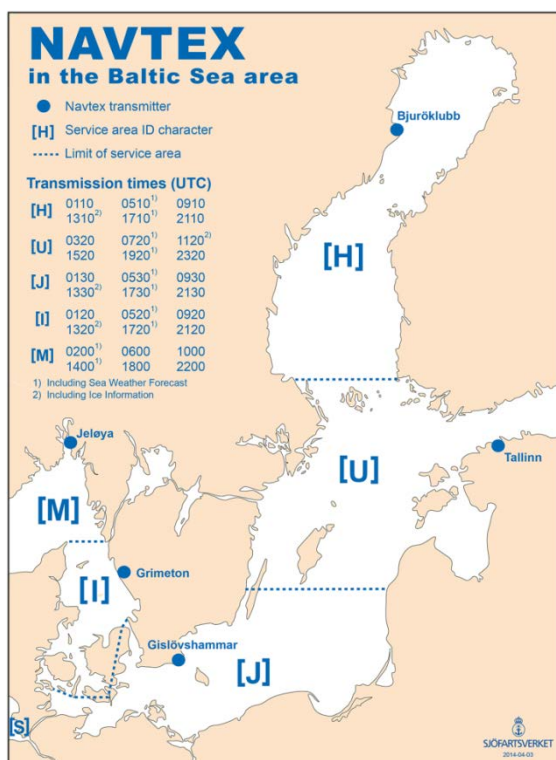
The station is manned H24 all days of the year and may be contacted as follows:

Tel: +46 771 63 06 85

E-mail: msi@sjofartsverket.se

VHF: Call MSI SWEDEN on relevant VHF Channel

The role “Baltic Sea Sub-area Coordinator”, with the responsibility of international coordinator of MSI in the Baltic Sea area, is maintained by the NtM department at the Hydrographic Office in Norrköping.



The table below shows the number of Navigational Warnings that have been transmitted on Navtex in the Baltic Sea area over the past five years.

| Nation | 2010 | 2011 | 2012 | 2013 | 2014 |
|------------------------|------------|------------|------------|------------|------------|
| Baltic Sea Nav Warn | 37 | 38 | 34 | 23 | 45 |
| Danish Nav Warn | 87 | 117 | 91 | 89 | 79 |
| Estonian Nav Warn | 7 | 5 | 11 | 9 | 6 |
| Finnish Nav Warn | 91 | 53 | 49 | 35 | 25 |
| German Nav Warn | 99 | 92 | 92 | 120 | 118 |
| Latvian Nav Warn | 20 | 27 | 16 | 15 | 10 |
| Lithuanian Nav Warn | 34 | 31 | 30 | 65 | 46 |
| Polish Nav Warn | 74 | 78 | 70 | 101 | 107 |
| Kaliningrad Nav Warn | 66 | 68 | 68 | 57 | 70 |
| St Petersburg Nav Warn | 33 | 32 | 40 | 24 | 27 |
| Swedish Nav Warn | 117 | 156 | 120 | 89 | 44 |
| TOTAL | 665 | 697 | 621 | 627 | 577 |

6. C-55

The latest update regarding Sweden in the C-55 database was delivered to the IHB in February 2015.

7. Capacity building

Sweden has not been active in the area of capacity building during the period.

8. Oceanographic activities

The Swedish Maritime Administration (SMA) is responsible for a number of water level stations but it is the Swedish Meteorological and Hydrological Institute (SMHI) that has the main responsibility for the Swedish oceanographic activities. Other actors are the Swedish Geological Survey, universities and research institutes.

9. Other activities

9.1 The national commission for revision of maritime boundaries

The special national maritime boundaries commission has concluded its work and reported to the Foreign Minister at the end of February 2015. The report includes the proposed revised base lines and presents recalculated maritime borders. It is also suggested that Sweden will establish a contiguous zone in accordance with UNCLOS. The SMA and specifically the HO has been deeply involved in the operational work with surveying and calculation of the suggested revised coordinates.

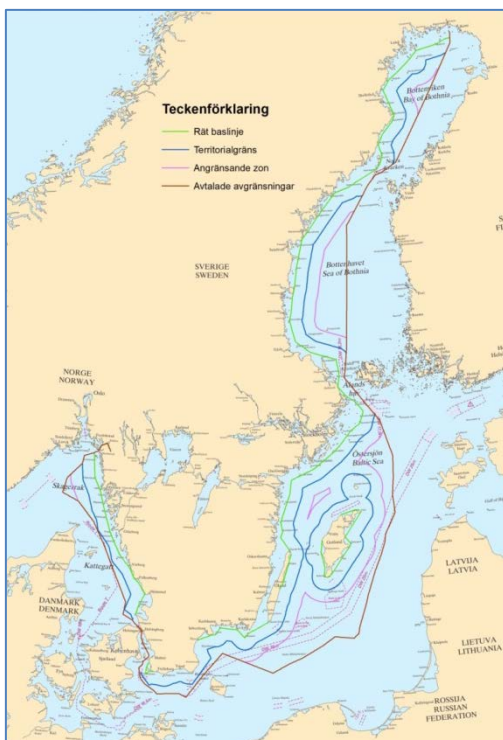


Figure 9 Proposed baselines and maritime borders including contiguous zone



Figure 10 The chairman for the national maritime boundaries commission presents the report to the Swedish Foreign Minister Margot Wallström.

An official consultation, where public authorities concerned are expected to provide their views and opinions, is at the moment of writing this report ongoing. A national legislation as a result of this revision is expected earliest 2016.

9.2 Environmentally hazardous wrecks

Swedish Maritime Administration was appointed by the Swedish Government to perform an investigation of environmental hazardous wrecks in Swedish Waters 2014. Four wrecks have been investigated to develop a standard method to assess and prioritize the environmental risk to be used for further possible necessary actions. SMA is cooperating with other Governmental agencies as Swedish Coastguard, Swedish Agency for Marine and Water Management, Swedish Defence Research Agency and National Maritime Museums as well as Chalmers University and other expert institutions. The project was partly reported in October 2014 and has been extended to October 2015. In August and September 2015 wrecks in Skagerrak, containing munitions from the Second World War will be investigated, where SMA will do surveys and ROV operations.

9.3 Surveys in shallow waters

The Swedish HO has received funding from Swedish Contingencies Agency to perform a study to evaluate survey methods in shallow waters 0-10 meter depth. HO is cooperating with other governmental agencies such as Swedish Geological Survey, Swedish Geotechnical bathymetry. The aim of the project is to find cost effective methods, time required to survey the archipelago and a total estimated cost. The study will be completed in the end of 2015.

9.4 Converting fair sheet archive (ScanDIS)

The digitizing of soundings from fair sheets and similar maps in our archive continues with the overall aim of creating national coverage in the soundings database (DIS). For the Hydrographic Office in particular, this will enable more efficient production of chart information.

This operation is, since 2007, permanent in our organization and will continue until the end of 2016. The Swedish Agency for Marine and Water Management (Havs- och Vattenmyndigheten) is funding this project and SMA is co-operating with them in planning and prioritizing this work. So far we have processed approximately 7670 of an estimated 8560 sheets and maps in the archive. This means that in the end of 2015 all existing data covering the coast of Sweden has been digitized and stored in DIS. In 2016 the last phase of the project will be to digitize fair sheets covering the inland lakes Hjälmarén, Mälaren, Vänern and Vättern.

9.5 ADAPT - Assure Depth of fairways for Archipelago Public Transportation

The overall objective of the ADAPT-project is to develop and implement safe, time-saving and fuel-efficient routes for the transportation of passengers and goods in the Åland and Stockholm archipelagos. SMA will be lead partner in the project where SMA will perform hydrographic surveys in fairways used by public transport where no S-44 surveys previously have been done. Subsequently the official ENC's and paper charts will be updated with the new survey data.

Apart from SMA the Stockholm County Council (Department for Transport Administration), who is responsible for waterborne public transports in Stockholm, and the Government of Åland (Infrastructure Department, Waterborne Traffic), who is responsible for similar public transports in the archipelago of Åland, are partners in the project. An application has been submitted to the INTERREG Central Baltic Programme which aims to stimulate co-operation between regions within parts of Sweden, Finland (along with Åland), Estonia and Latvia. If the application will be positively evaluated the project will start in mars 2016. The INTERREG Central Baltic Programme will announce which projects have selected 25 August 2015. SMA will submit an Explanatory Note to the BSHC20 Meeting and do a further presentation at the meeting if there will be a positive reply from the programme.

9.6 DG MARE projects, Coastal Mapping and Baltic Sea Checkpoint

The SMA will be one of many HO-partners in the Coastal Mapping project where the French HO, SHOM, is the lead partner. The Coastal Mapping project is further described in the B4 Report of the IHO-EU Network.

The SMA is also involved in the Baltic Sea Checkpoint project where the Danish Meteorological Institute, DMI, is the lead partner. The overall aim of this project is to examine the current data collection, observation, surveying, sampling and data assembly programs in the Baltic Sea basin, assess and demonstrate how they can fit into purpose in the 11 challenge areas in terms of data uncertainty, availability, accessibility and adequacy, and deliver the findings to stakeholders through an internet portal with dynamic mapping features and a stakeholder workshop. SMA will be responsible for the challenge area Bathymetry. Other examples of challenge areas are climate change, coastal protection and fishery management.