TRAFICOM
Finnish Transport and Communications Agency

Notices to Mariners

General Information 2026

Contents

Notices to Mariners (NtM)

The PDF booklet is published by three separate versions in different languages (Finnish, Swedish and English). Notices may be published on any day of the month. Notices will be included in the online service the day after their publication and in the next booklet published according to regular schedule. The PDF booklet will always include all notices published after the previous issue. The separate PDF list of preliminary and temporary notices will be given up and replaced by a list of current preliminary and temporary notices included at the end of each PDF booklet. Preliminary and temporary notices are also available via the TM Online search service. Notices to Mariners booklet is still published three times a month; on the 10th, 20th and last day of the month.

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- Nautical Charts:	www.traficom.fi/en/nautical-charts

NtM contains notices on arrangements for and amendments to nautical channels and aids to navigation, obstructions, winter navigation, nautical publications etc.

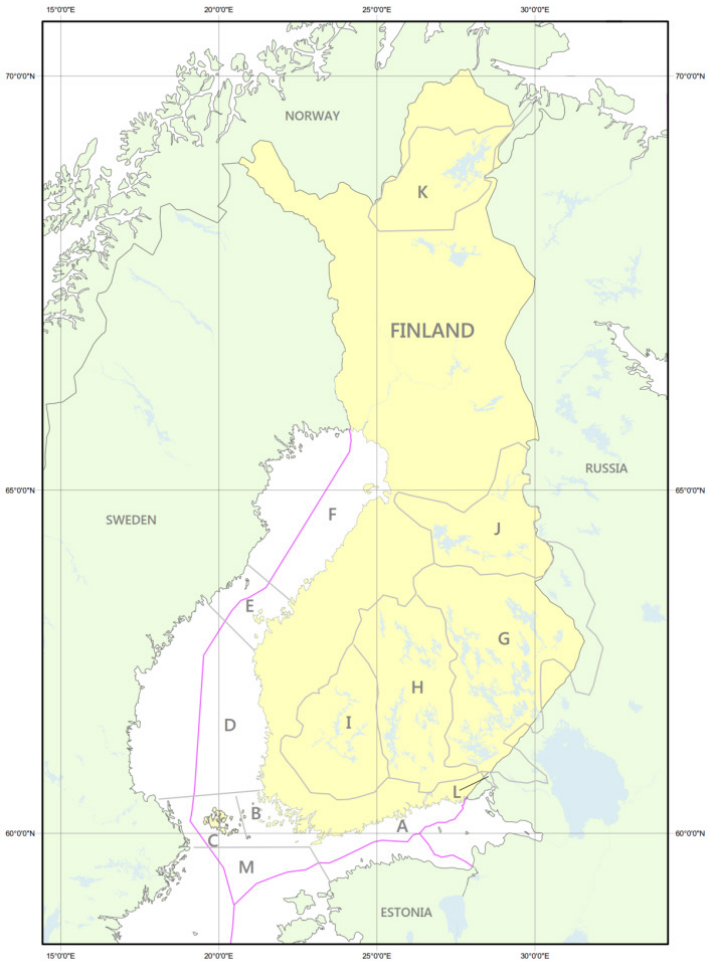
The instructions Insert, Delete, Replace, Amend, Move, according to the IHO S-4 standard, will be used for all chart corrections. When possible, chart symbols will be displayed as images. When required, supplementary chart images and specifications will also be used.

In general the notices published concern the areas covered by Finnish nautical charts. The publication is available in PDF format at: www.traficom.fi/en/nautical-charts and the online search includes published since 10.04.2016.

Notices from the whole Baltic Sea area are occasionally published when these are important to ensure smooth international vessel traffic.

The Hydrographic Office is grateful for all information that can be added to the publication. If the information is to be charted, a chartlet or positioning details should be enclosed.

The material is divided into sectors according to the following:



A. The Gulf of Finland is bounded by the line connecting the lighthouses Russarö (59°46.0'N, 22°57.1'E) and Osmussaar (59°18.3'N, 23°22.0'E) to the west. These lighthouses are situated in the Baltic Sea.

B. The Archipelago Sea is bounded by the Gulf of Finland to the east and by the broken line connecting the lighthouses Russarö (59°46.0'N, 22°57.1'E), Utö (59°46.9'N, 21°22.3'E) and Lågskär (59°50.5'N, 19°55.0'E) to the south.

C. The Sea of Åland is bounded by the Sea of Bothnia to the north and by the broken line connecting the lighthouses Lågskär (59°50.5'N, 19°55.0'E) and Söderarm (59°45.2'N, 19°24.6'E) to the south.

D. The Sea of Bothnia is bounded by the lines connecting the following positions: Kiparluoto (60°40.05'N, 21°16.56'E), Koxnan (60°28.09'N, 19°56.18'E) and Ångskärskatan (Sweden) (60°30.05'N, 18°04.66'E) to the south; and Korsnäs (62°47.2'N, 21°11.0'E) and Järnäs-Sandö (Sweden) (63°26.0'N, 19°39.0'E) to the north.

E. The Quark is bounded by the Sea of Bothnia to the south and by the line connecting Stubben (63°31.5'N 22°09.5'E) and Ratan Södra (Sweden) (63°59.1'N 20°53.7'E) to the north.

F. The Bay of Bothnia comprises the area north of the Quark.

Inland waterways includes relevant nautical and other information about the Finnish inland waterways

G. Vuoksi watercourse

H. Kymijoki watercourse

I. Kokemäkijoki watercourse

J. Oulujoki watercourse

K. Paatsjoki watercourse

L. Saimaa Canal comprises the canal and its entrances from Vyborg Bay to Lauritsala.

M. Northern Baltic Sea comprises the area bordering the above-mentioned areas Gulf of Finland, Archipelago Sea and Sea of Åland.

Announcements contains relevant information to mariners, other than amendments to nautical charts. Announcements can also include notices concerning other areas.

General principles followed in the publication

Numbering of notices

The numbering of the notices starts with number one for the first notice of the year. The consecutive notices are numbered in the order that they are published. The notices in the compilation published three times a month are numbered in ascending order within the region. However, the notice numbers are not necessarily numbered sequentially between the regions.

The positions in the notices are indicated in geographical latitudes and longitudes longitudes in accordance with the original source, greatest given exactitude, example 59°49.949'N, 22°52.237'E (WGS 84). Geographical longitudes are normally measured from the Greenwich Meridian. Exceptions to this rule are indicated in the notices.

Courses and bearings are indicated as true courses from 0° clockwise to 360°. Sector lights are indicated as seen from sea to the light.

Light ranges. In the Finnish sea routes and inland deep water routes the geographic range of light corresponds to 5 metres' height at eye level and in other fairways and routes to 2 metres' height at eye level.

References. In the notices there are references to Finnish and to the relevant countries' nautical charts.

(P) after the notice number denotes a preliminary notice. Such notices are later replaced by an effective notice.

(T) after the notice number denotes a temporary notice.

An updated list of the P and T notices is given with each publication on the Traficom's website with every issue (on the 10th, 20th and last day of the month). The validity possibly indicated in the T notices is with certain exceptions only an estimate of the length of the temporary state. In general a new notice supersedes a temporary notice. When a situation anticipated in a P notice has occurred, the P notice is revoked and a new notice is published in which the entire change is acknowledged.

*** A notice** based on an original source (i.e. the information has not been previously published by any other hydrographic office) is marked with an asterisk (*) which separates it from notices of foreign origin. The primary source is referenced in the notice.

List of nautical charts referred to in the notices. At the beginning of each NtM there is a list of the nautical charts referred to in the published notices.

Information by radio. Mariners are also given important and urgent news in connection with the news broadcasts of the Finnish Broadcasting Company and in the form of navigational warnings.

Navigational warnings and other important information are broadcast on radio along the whole Finnish coast on Turku Radio's working channels and as MSI SWEDEN navtex messages in the Baltic Sea area. The information is given in English and is mainly aimed at commercial shipping. In the Lake Saimaa area, Saimaa VTS gives the warnings in Finnish and English. In addition, the VTS centres provide information about channel conditions in Finnish, Swedish or English.

The warnings are also available in Finnish, Swedish and English on the website: https://vayla.fi/en/service-providers/merchant-shipping/disturbances-in-merchant-shipping

More information about Turku Radio on the website: www.fintraffic.fi/en/vts

Abbreviations used in this publication:

1. Publications and authorities

Traficom	Finnish Transport and Communications Agency
Väylä	Finnish Transport Infrastructure Agency
NtM	Notices to Mariners
SRL, FFK	Suomen rannikon loistot, Fyrar vid Finlands kuster
FLL	Finnish List of Lights
UfS	Underrättelser för Sjöfarande, Finland
Ufs	Underrättelser för sjöfarande, Sweden

2. Other abbreviations

GMT	Greenwich Mean Time
MW	Mean Water
N2000	New depth reference level
BSCD2000	Baltic Sea Chart Datum 2000
VTS	Vessel traffic service
M	Nautical mile
NM	Nautical mile

3. Points of the compass

N	North
NE	Northeast
E	East
SE	Southeast
S	South
SW	Southwest
W	West
NW	Northwest

4. Light characters

Ki – F – F	Kiinteä valo – Fast sken – Fixed light
Ka – Int – Oc	Katkovalo – Intermittent sken – Single-occulting
Ka – Int(2) – Oc(2)	Ryhmäkatkovalo – Gruppintermittent sken–Group-occulting
Ka – Int(2+3) – Oc(2+3)	Yhdistetty ryhmäkatkovalo – Sammansatt gruppintermittent sken – Composite group occulting
T – K – Iso	Tasarytmivalo – Klippsken – Isophase
V – B – Fl	Vilkkuvalo – Blixtsken – Flashing light
V – B (2) – Fl(2)	Ryhmävilkkuvalo – Gruppblixtsken – Group flashing
V – B (2+1) – Fl(2+1)	Yhdistetty ryhmävilkkuvalo – Sammansatt gruplixtsken – Composite group-flashing
KV – LB – LFl	Kestovilkku – Lång blixt – Long-flashing
Pv – Sx – Q	Jatkuva pikavilkku – Kontinuerligt snabblixt sken – Continuous quick
Pv – Sx(3) – Q(3)	Ryhmäpikavilkku – Gruppsnabblixtsken – Group quick
NPv - ESx – VQ	Jatkuva nopea pikavilkku – Kontinuerligt extrasnabbt blixtsken – Continuous very quick
NPv - ESx(3) – VQ(3)	Nopea pikavilkkuryhmä – Extrasnabbt grupp blixtsken – Group very quick
ENPv – EXSx – UQ	Jatkuva erittäin nopea pikavilkku – Kontinuerligt ultrasnabblixtsken – Continuous ultra quick
KeENPv – IntEXSx – IUQ	Keskeytetty erittäin nopea pikavilkku – Intermittent ultrasnabblixtsken – Interrupted ultra quick
Mo (K)	Morsevalo – Morsesken – Morse code

Light characteristics in Finnish nautical charts are indicated in English according to the INT chart symbols and in the WGS 84 coordinate system.

Nautical chart

Mariners are requested to avoid the use of outdated nautical charts. In the Notices to Mariners there is information about the publication of new nautical charts and chart editions.

Nautical charts published in Finland

The following nautical charts covering the sea areas surrounding Finland are published:
- general charts, scale 1:250 000, intended for sea-going vessels and route planning;
- coastal charts, scale 1:50 000, intended for archipelago and coastal navigation;
- harbour charts, scale 1:5 000 – 1: 25 000, intended to facilitate harbour traffic;
- chart folios, scale 1:50 000, enlargements in scale 1:20 000, intended for boating.

For navigation on the Finnish inland waterways the following types of charts are available:
- general chart for Lake Saimaa, scale 1:250 000
- inland waterway charts, 1-folio, scale 1: 40 000 – 1:50 000
- chart folios, scale 1:10 000 – 1:40 000
- yachting charts, scale 1:50 000

www.traficom.fi/en/nautical-charts

Sales and marketing of charts and nautical publications:

Agents, well-stocked boating shops and bookshops.Wholesales, retail contracts

Publisher: Traficom

The nautical publications of the Cartography Unit are sold in the same places as the nautical charts.

Electronic Navigational Charts ENC

In addition to paper charts the Traficom produces electronic navigational charts (ENC) in S-57 vector format for mariners.

ENC data is distributed by Primar in Norway, which has a global network of distributors for the provision of mariners with ENC material. ENC data is encrypted in accordance with the IHO* standard S-63.

For further information on ENC material, its availability and distribution, see the Primar website www.primar.org.

(*IHO = International Hydrographic Organization)

Updating of nautical charts

Safe navigation requires an updated nautical chart. In every chart or chart folio the Edition No is given and also the latest Notices to Mariners (issue and date) according to which the chart edition has been updated (Corrected up to). Only the latest edition of a chart is valid – older chart editions should not be used for navigation. There is a list of the current chart editions on the Traficom's website, at the address https://traficom.fi/en/services/finnish-nautical-charts. The corrections to the nautical charts that have been made after the date given in the chart are published in Notices to Mariners.

Reprint of current edition incorporate only such amendments relevant to navigation that have been published in Notices to Mariners. When a reprint has been published the latest edition is still valid and can be used for navigation, provided that the chart corrections published in the Notices to Mariners have been inserted in the chart

Updating service for nautical charts

All chart corrections made in the 2009 chart editions after the correction date, which have been published in the publication Notices to Mariners, are included. The service is designed for use in merchant shipping but can also be used by yachtsmen. The number of charts will increase as new editions are published. The PDF service is available free of charge on the site: www.traficom.fi/en/services/notices-mariners

QR codes will be available on charts published from the beginning of 2017. These charts will be updated in the new system. Charts published prior to 2017 will be published in the chart-specific updating service on the Trafricom's website.

Coordinate systems, projections and depth reference level

Projections

The Finnish charts are, with only a few exceptions, drawn using the Mercator projection. The projection and coordinate system that have been used are given separately in each chart.

The coordinate system of nautical charts

The coordinate system of the Finnish charts is either EUREF-FIN or KKJ, depending on when the chart has been published. The coordinate system of the modernised charts, EUREF-FIN, is based on the international maritime standard WGS 84, the coordinate system also used in e.g. GPS satellite navigation. EUREF-FIN and WGS 84 coincide so closely (precision 1 m) that the difference is in practice negligible.

Coordinates according to the national geodetic chart coordinate system KKJ that is being replaced can still be found. The International Spheroid INT 1924 (Hayford 1910) constitutes the reference ellipsoid in the KKJ system. The KKJ and WGS 84 systems are not directly compatible and they differ about 0.00' – 0.02' in latitudes and about 0.18' – 0.23' in longitudes, depending on the area.

The coordinate systems in charts 446, 447 and 452 differ from those used today. These charts are only suited for relative navigation with the help of land marks.

Depths

On Finnish charts depths are given in metres. In sea areas depth calculations are based on the Mean Sea Level. In inland waterway charts the plane of reference for depth indications is given separately on each chart and it usually corresponds to the Low Water Level in the watercourse.

However, in the future depths will be indicated in the N2000 height system. Nautical chart products and fairway depth data tied to this system will gradually be introduced, progressing from the Bay of Bothnia to the Archipelago Sea and finally to the eastern part of the Gulf of Finland. If depth data is provided in the N2000 height system, this is specifically indicated on each chart product. Regular information on the progress of the reform will be provided in the publication Notices to Mariners.

More information about the N2000 fairway and nautical chart reform: https://www.traficom.fi/en/transport/maritime/n2000-fairway-and-nautical-chart-reform-improved.

The utilized coordinate system must be ascertained prior to using foreign nautical charts covering Finnish territory.
System for indicating chart corrections and edition data in Finnish charts.

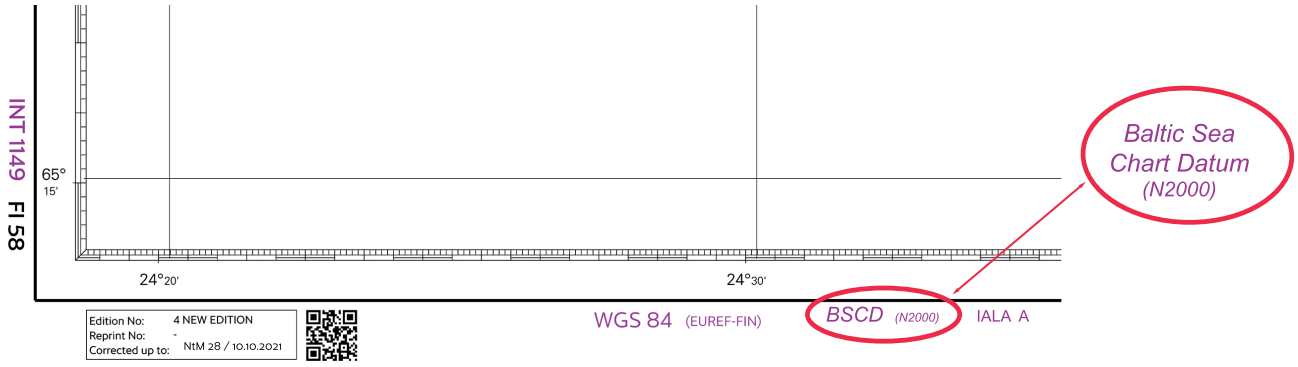
According to the new system chart editions fall into three categories:

1) New Chart: the first publication of a national chart, which has not previously been charted; embraces an area different from any existing chart; or consists of a modernised version.

2) New Edition: a new issue of an existing chart, containing amendments essential to navigation and which includes additional changes to those previously published in Notices to Mariners (NtM).

When the New Chart and the New Edition have been published the previous editions are invalid and should not be used. When the updated edition (Reprint) has been published the previous editions are still valid and usable, if the chart corrections announced in the NtM publication have been made.

3) Reprint of current edition incorporate only such amendments relevant to navigation that have been published in Notices to Mariners. When a reprint has been published the latest edition is still valid and can be used for navigation, provided that the chart corrections published in the Notices to Mariners have been inserted in the chart. A reprint may, however, contain amendments from other sources provided they are not essential to navigation.



The chart correction and edition data is indicated in the bottom left corner:

- the Edition No is given on the first line, stating whether it is a New Chart or a New Edition.
- on the second line the Reprint No, if any, is given.
- on the third line the date of the correction (Corrected up to) is given.

Chart reference level markin

The reference level used is indicated on the upper left-hand corner of the chart. To facilitate the transition to the new N2000 height system, new charts will also include the abbreviation of the height system used on the lower lefthand corner. Charts that present depth information in reference to the mean sea level bear the abbreviation MSL, while charts that present depth information in reference to the N2000 system bear the abbreviation BSCD (N2000). Chart folios will have the same markings on the reverse side of the front cover.

The N2000 fairway and nautical chart reform

New depth reference level N2000 (BSCD2000) for charts

Finnish nautical charts and fairways are currently in the process of switching over to a new harmonised reference level for depth information that is tied to the national N2000 height system. The current reference level for depth information in sea areas is based on mean water level, and it will be replaced with a reference level that is tied to the N2000 vertical coordinate reference system.

The N2000 fairway and nautical chart reform is part of the Baltic Sea countries' joint project BSCD2000 (Baltic Sea Chart Datum 2000). The purpose of the project is to harmonise the interpretation of nautical chart data and available water depth in the Baltic Sea region. The migration to the new depth information reference level will affect the depth and fairway information presented on nautical charts. The changes to the information are caused by the difference between current reference levels and the zero position used in the N2000 system. *Picture 1.*

Integrated reference level

N2000 chart products present depth and fairway information using the N2000 height system that is tied to the Earth's crust instead of the mean sea level MSL (Mean Sea Level) / MW (Mean Water) in sea areas. When using the theoretical mean sea level, the zero level is equal to the average water level in the year in question, which means that the zero level has changed some millimetres each year. N2000 chart products present depth and fairway information using the N2000 height system that is tied to the Earth's crust without being influenced by the effects of the land uplift or sea level changes. Because the zero level in the N2000 system is below the current mean sea level (MSL), the depths on charts will, depending on the area, decrease by approximately 10–20 cm due to the reference level, and the prevailing water level will increase correspondingly. The available water depth does not change when sea level data in the N2000 format is taken into account. *Picture 2.*

The importance of water level in relation to the depth available will be accentuated. The Finnish Meteorological Institute has since September 2021 published its sea level observations and forecasts in the N2000 format as well as in relation to the theoretical mean sea level. The data is available on the Institute's website (https://en.ilmatieteenlaitos.fi/sea-level).

Finnish Environment Institute (SYKE) publishes its water level observations and forecasts in N2000 format as well on its website https://www.vesi.fi/en/karttapalvelu/

Multi-year project

The N2000 fairway and nautical form will be carried carried out in the main over the years 2021 – 2026. The reform has started from the Bay of Bothnia, at the end of 2021, and gradually progress via the Archipelago Sea towards the eastern part of the Gulf of Finland. Regular information on the progress of the reform will be provided in the publication Notices to Mariners.

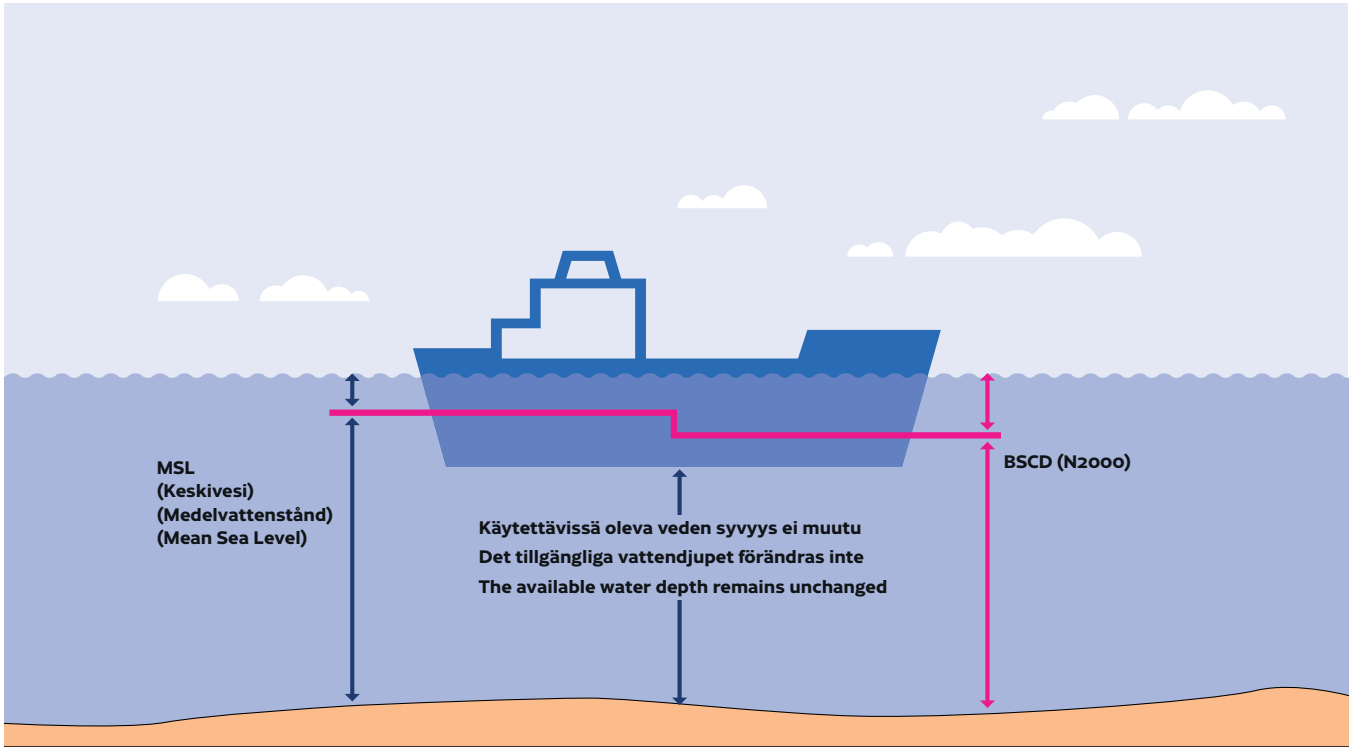
In connection with the reform, depth and channel information on charts -will also be updated. The old depth data on charts will be updated taking into account land uplift over the decades. Plenty of new surveying data will also be added to charts. For this reason, the depth data may undergo larger changes than just those due to the new reference level.

Additional information on the use and information to fairway (Notice of channel use), see page 10.

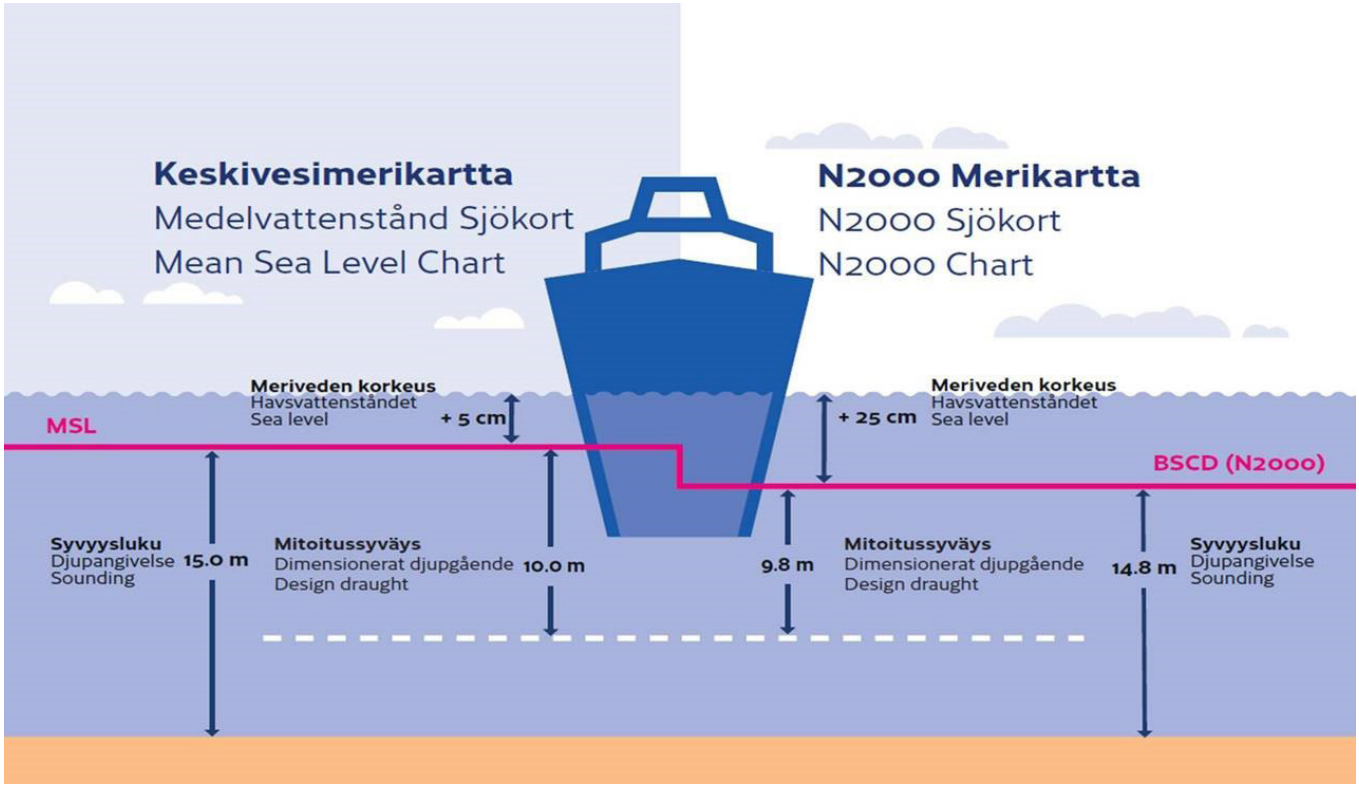
During the transition period, charts in accordance with both the old and the new system will be used. Therefore, it is important to check the reference level of the chart used and the corresponding water level reading. The list of nautical chart products always provides up-to-date information on the valid edition of the charts and the reference level used therein.

List of nautical chart products: https://traficom.fi/en/services/finnish-nautical-charts

More information about the N2000 fairway and nautical chart reform: https://www.traficom.fi/en/transport/maritime/n2000-fairway-and-nautical-chart-reform-improved



Picture 1



Picture 2

Sailing directions for Finnish waters

The Finnish Transport and Communications Agency Traficom publishes the nautical charts and nautical publications in Finland. Nautical publications contain information to support the nautical charts. The Sailing Directions for Finnish waters publication consists of a General information part (part 1) and descriptions of the main approach channels (Part 2 – Main approach channels). Part 2 is divided into several volumes.

Sailing directions for Finnish waters - Part 1, contains general information, guidelines and links to further information. The channel descriptions include depth- and design-data with general notes on usage of the main approach channels. Sailing directions are published as PDF- documents and provided for free download at https://www.traficom.fi/en/services/sailing-directions-finnish-waters.

The General information part and the first volume of channel descriptions 2.3.3 including fairways from Tornio to Raahe has been published together with the first N2000 nautical charts in 20.12.2021. Information of new publications and updates is provided as Notices to Mariners. Mariners should follow the Notices to Mariners and ensure availability of the newest publications including any needed linked material onboard.

Principles and application of channel depths in Finland

New instructions for principles and application of channel depths in Finland has been updated. The Finnish Transport and Communications Agency Traficom has been published the new instructions "Principles and application of channel depths in Finland", 1 November 2021. These instructions supercedes the previous instructions from 2011, "The channel depth practice in Finland - principles and implementation (4955/1021/2011)". The new chart datum N2000 is included in the instruction, additional to existing chart datums. The new instructions entered into force 15 November 2021, and shall be applied nationwide, regardless of the chart datum used.

In the new instructions, the term Authorised draught is replaced by the term Design draught. The design draught refers to the planned draught at which the channel's design vessel can normally use the channel; however, different draughts can be used if the conditions allow it. Portrayal of channel depths in the new N2000-charts is described in the new instructions. Design draughts for merchant fairways (classes 1 and 2) will no longer be included in N2000-nautical charts. For these channels the safe clearance depth (minimum depth) is presented. Additional fairway data, including the design draught, will be presented in a separate nautical publication, published by Traficom. Also channel draughts presented in current charts, referenced to mean sea level (MSL), shall be considered design draughts according to the new instructions. Encoding of channel information in electronic charts is also renewed, as previously notified January 10 2022 in NtM 1/15/2022, (Presentation of channel information on S-57 ENCs).

Clarifications of fairway use and responsibilities, especially regarding the design draught, are added to the new instructions. The instructions are based on the principle that the actual water level at the time of navigation is taken into consideration as an increase or reduction in the channel's indicated safe clearance depth and design draught. This principle is applied both for sea-areas and inland waterways. The Channel Authority is responsible for the channel and the safe clearance depths (minimum depth). The master of the watercraft is responsible for determining the draught of the watercraft. Instruction: https://fiho.fi/lnk/chdepth/en
https://www.traficom.fi/en/transport/maritime/use-fairways-merchant-shipping

Notice of channel use

The Finnish Transport and Communications Agency Traficom has published the instructions "Notice of channel use", specifying the requirements of channel use. Based on the new instructions, the Sailing directions for Finnish waters has been updated. Fintraffic VTS has also updated the related instructions (Master's Guide).

If the vessel's static draught is greater than the channel's design draught taking into account the current water level, the vessel shall ensure that her net underkeel clearance (net UKC) remains adequate and demonstrate it to the VTS Centre that is responsible for monitoring the fairway. Vessel's operator, agent or master shall give the notice of channel use at least 24 hours before its arrival at the pilot boarding position, or if the vessel is expected to arrive in less than 24 hours, no later than when the vessel has left the port of departure for a Finnish port. A vessel departing a Finnish port shall give the notice of channel use as soon as possible, at latest when the departure report is given. Detailed instruction and further guidance is provided by VTS, and procedures described in the regional Master's Guides, found online at https://fiho.fi/lnk/vtsguide/en

Additional data is found also in the Sailing directions for Finnish waters https://fiho.fi/npub/sd/SD_1_EN.pdf and in the Instructions Notice of channel use https://fiho.fi/lnk/chnote/en

The new way of illustrating rocky areas on nautical charts eases safe navigation

The Finnish nautical charts include multiple different symbols for rocks. Beside the single symbols a new symbol has been introduced to represent widespread foul areas. These areas are very rocky and navigating within these is very risky.

The new way of illustrating foul areas will reduce the number of rock symbols and the charts will be clearer and easier to read. However, the new chart symbol will not completely replace the use of single stone symbols.

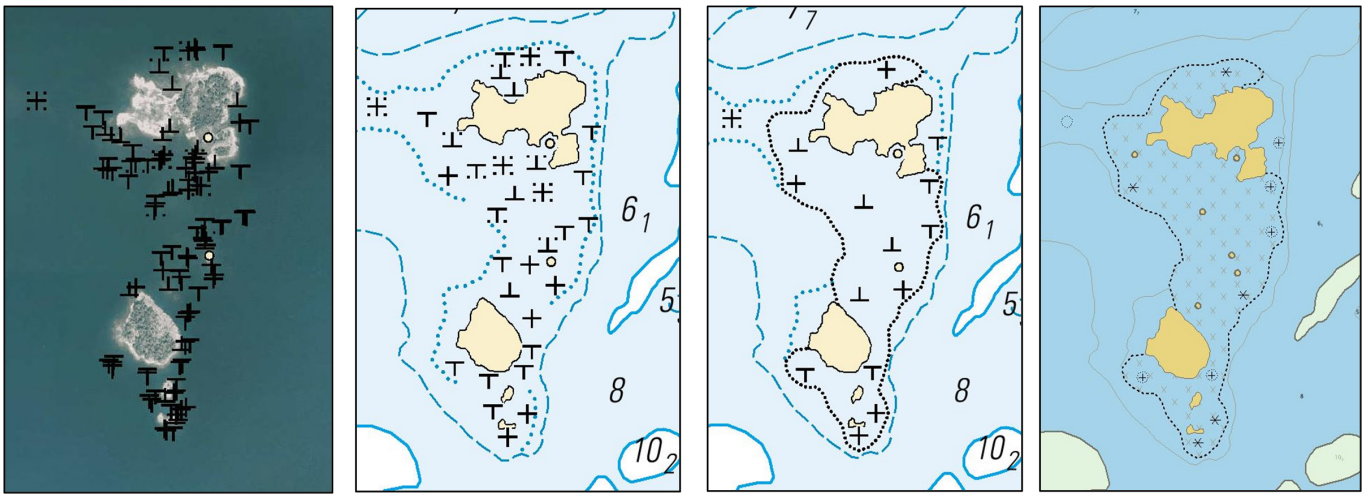
The foul area symbology is based on international nautical chart symbology. A foul area refers to an area where all dangers to navigation are not charted individually. Navigation through the area may be hazardous (IHO S-4, B-422.9). The foul area is outlined with a danger curve, a black dotted line (IHO S-4 B-420.1). It should be noted that the danger curve can be used to illustrate different types of obstacles for mariners, a symbol within the danger curve indicates what kind of danger is present in the area.

From a navigation safety point of view, the new symbology makes it clearer to mariners which areas are rocky and hazardous to navigate. The new area symbol also supports the use of chart plotters as risks related to over-zooming of the chart data, such as distortion of individual rock symbol positions are reduced. When navigating in an area which is illustrated as foul area on the nautical chart, special care should be taken!

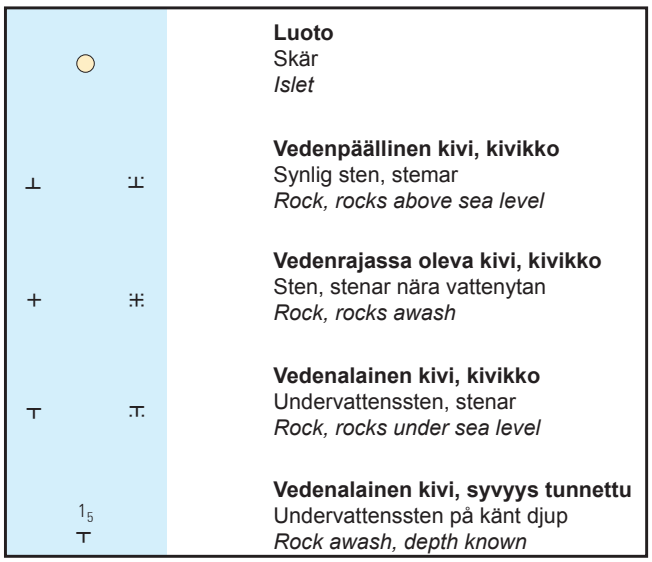
The new symbology will be introduced on charts with the N2000 chart reform starting with the Bothnian Sea charts (chart folio E) 2024.

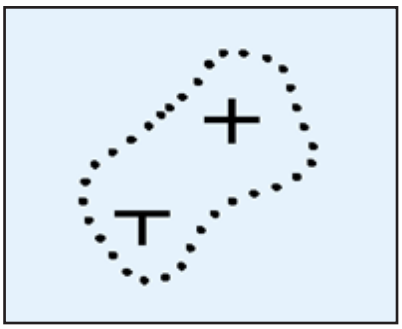
More information: charts@traficom.fi

Examples of the new way of illustrating rocky areas



1. *Aerial photograph by the National Land Survey (NLS) and rock data by the NLS and the Hydrographic office, which are used as base material for nautical charts.*
2. *Current printed chart.*
3. *Foul area on the printed chart.*
4. *Foul area symbology on electronic chart (ENC). It should be noted that the symbology may vary between chart plotters depending on the manufacturer.*





1. *Rock symbols used on Finnish printed charts*
2. *A foul area is illustrated with a danger curve and rock symbols.*

DGPS transmissions

The DGPS system is aimed at shipping and no fees are charged for its use. The transmissions are made according to the internationally accepted standard, ITU-R M.823, using radio beacons. The transmitted message types are 3, 6, 7, 9 and 16. Message no 7 includes information about 1–3 other Finnish DGPS stations. The transmission speed is 100 bits/s. Each transmitted message includes information about the reliability of the reference station, as well as information about if a satellite should not be used. Corrections can be sent for a maximum of 9 satellites at a time, provided that these are at least 7 degrees above the horizon. If the deviation exceeds 10 metres for more than 20 seconds, an error message is automatically transmitted. The error messages reach the receiver within 10 seconds. The accuracy of the DGPS system depends on the quality of the used receiver. The best disturbance tolerance is achieved by using a so-called H-field antenna (loop).

DGPS stations in Finland

Station	ID	Reference Station ID	Position	Coverage (km)	Frequency (kHz)	Bitspeed (bit/s)
Porkkala	(400)	600	59°58'N / 24°23'E	250	293.5	100
Mäntyluoto	(401)	601	61°36'N / 21°28'E	250	287.5	100
Puumala	(402)	602	61°24'N / 28°14'E	70	290.0	100
Outokumpu	(403)	603	62°41'N / 29°01'E	70	304.5	100
Turku	(404)	604	60°26'N / 22°13'E	200	301.5	100
Marjaniemi	(405)	605	65°02'N / 24°34'E	250	314.5	100
Klamila	(406)	606	60°30'N / 27°26'E	250	287.0	100
Haarajoki	(407)	607	60°31'N / 25°10'E	250	292.5	100
Kokkola	(408)	608	63°52'N / 23°11'E	250	290.5	100

The ranges are only rough estimates of how the radio waves proceed over open sea. Even if the radio waves proceed only partly over land, this significantly decreases the range. The system is under continuous supervision at the VTS centre in Turku, which if necessary sends a navigational warning. The detailed functions of the system are registered automatically and the results are stored for 30 days. For more information, please visit the Finnish Transport Infrastructure Agency's website: https://vayla.fi/en/service-providers/merchant-shipping/navigating/radio-navigation

Finland's Winter Navigation

More detailed information and instructions for winter navigation assistance on the website: https://vayla.fi/en/transport-network/waterways/winter-navigation

Weather forecast for shipping

Weather forecasts for shipping are transmitted by the Finnish Broadcasting Company (FBC) and by Turku Radio. In the FBC weather forecasts are given for the next 24 hours for all of the Finnish sea areas. The forecasts are given in Finnish and Swedish five times a day. The weather forecasts for shipping include:

- weather synopsis
- wind direction
- wind speed m/sec.
- visibility or weather phenomena which may restrict visibility
- possible storm and near gale-force warnings or early warnings, rough seas and sea level warnings.

A near gale-force wind warning is added to the weather forecast when the wind speed (10-minute average wind speed) is expected to increase to 14 – 20 m/sec. within the next 24 hours and a storm warning is given when the wind speed is expected to increase to or exceed 21 m/sec.

The warnings include the wind direction from where the near gale-force wind or storm originates as well as the maximum expected wind speed m/sec. (10-minute average).

Wave height warnings are given according to three risk levels when the significant wave height is estimated to exceed 2.5 m (rough waves); 4.5 m (very rough waves) or 7 m (extremely rough waves). Individual waves can be from one and a half to two times higher than the reading given in the warning. Sea water level warnings are issued for each sea area and for low and high sea water levels. Three risk levels are used for high water.

The weather and ice services provided by Turku Radio and the broadcasting times can be found on the website: www.fintraffic.fi/en/vts/maritime-safety-radio

Finnish Meteorological Institute Weather forecast for shipping: https://en.ilmatieteenlaitos.fi/weather-and-sea

Service for feedback on nautical charts

The Finnish Transport and Communications Agency (Traficom) has launched a new service for feedback on nautical charts. Each year, Traficom receives plenty of feedback from customers on the contents of nautical charts. In most cases, feedback results in changes to charts. The most urgent changes are published in connection with updates to electronic navigational charts and in Notices to Marines. Less urgent changes are published in future editions of nautical charts. https://eservices.traficom.fi/merikarttapalaute

Lists of Lights

Traficom's (Finnish Transport and Communications Agency) nautical publications: www.traficom.fi/en/services/list-lights-marine

Floating aids to navigation

Floating aids to navigation are:

- spar buoys and lighted spar buoys
- buoys and light buoys
- ice buoys and lighted ice buoys

Floating aids to navigations include buoys and spar buoys that can be unlit or lit. Mariners are requested to navigate with caution as floating aids to navigation may especially wintertime be off position due to moving ice. They may also be completely under ice or the lighting device may be damaged. The floating aids to navigation may for example be moved in open water by timber rafts in tow. Information about the above-mentioned circumstances caused by the winter conditions is not given separately, but should be taken into consideration by mariners. The inspections of the floating aids to navigation may take several weeks after the break-up of the ice.

The floating aids to navigation as well as the fixed edge marks are usually equipped with radar reflectors, although this is usually not marked in the charts. The symbol of the radar reflector is only included in the aids to navigation which are equipped with an effective, state-of-the-art radar reflector.

Racons

Morse identification signals are depicted as follows:

T = —
K = — • —
M = — —
O = — — —
G = — — •
/ = — • • — •

Variable = The aid to navigation is equipped with a racon which enables automatic adjustment of the vector length to the radar measuring range. The length of the vector on the radar screen is dependent on the measuring range used. When the measuring range is small the vector length diminishes and when the measuring range is large it increases. If a normal radar with a vector character of constant length is used along with large radar measuring ranges, the vector may become so short that it is difficult or impossible to identify the target on the screen. The identification signal always commences approx. 70 metres beyond the raconequipped seamark. Suomenlinna and Harmaja generate a radarbeacon heading

line, which resolves the fairway centerline for navigation. The last dot in Harmaja's Mo-signal lies between the dashes in Suomenlinna's Mo-signal when the racon beacons are lined. Oxhornen front and rear leading lights are equipped with radar reflectors in the leading line azimuth. The displayed signal of Oxhornen front radar beacon equals approx. the interval between the signals. Computed ranges are based on a radar with aerial elevation approx. 30 m and scanner length 2.7 m. The ranges are reduced at lower antenna elevation, at smaller scanner dimensions or in certain types of radars, such as New Technology (NT) radars.

NB

Use of the rain clutter control and similar filtering circuits or a digital processor for the purpose of reducing wave clutter interference will usually cause the racon response to vanish from the PPI display. The rain clutter control and processor should be switched off during the actual observation period to optimize the PPI response. This phenomenon might also be made use of when no racon response is wanted.

Racons

No	Name	Position		Height. (m)	f(x)	f(s)	R(x)	R(s)	T(s)	Morse	Lenght	Model		
8874	Kemi 1	65º23.08'N	24º05.98'E	23.5	K	K	13.7	11.7	18	T: _	1.2	Ericon	MK II	X/S
8887	Keminkraaseli	65º36.63'N	24º33.75'E	27	K	K	14.4	11.9	18	T: _	variable	Tideland Sea Beacon	2Sys5	X/S
9776	Pohjantähti	65º37.51'N	24º22.32'E	10.9	K	E	11.2		6	T: _	1.2	AEI Marconi	Seawatch 300	X
8969	Oulu 1	65º11.42'N	24º30.42'E	24	K	K	13.8		12	T: _	variable	PharosMarine	Phalcon-2000	X/S
8975	Luodematala	65º10.05'N	24º59.60'E	11.5	K	E	11.3		6	T: _	1.2	AEI Marconi	Seawatch 300	X
9030	Nahkiainen	64º36.69'N	23º54.03'E	30.7	K	K	15.2	13.2	18	T: _	1.2	Ericon	MK II	X/S
9031	Raahe	64º39.08'N	24º13.62'E	22	K	K	13.4		12	T: _	variable	PharosMarine	Phalcon-2000	X/S
9189	Heikinkari alempi	64º39.03'N	24º21.15'E	7	K	K	9.8	7.8	18	T: _	1.2	Ericon	MK II	X/S
9778	Äijänkallio	64º14.25'N	23º37.06'E	8.9	K	E	10.4		6	T: _	1.2	AEI Marconi	Seawatch 300	X
9071	Kokkolan majakka	63º59.80'N	22º52.05'E	24	K	K	13.8	11.8	18	T: _	1.2	Ericon	MK II	X/S
7339	Kallan	63º45.07'N	22º31.59'E	24	K	K	12.5	10.5	18	T: _	1,2	Kannad	Hekleo	Sx
7453	Utgrynnan	63º21.04'N	20º45.98'E	25	K	K	14	12	18	T: _	1.2	Ericon	MK II	X/S
7205	Vaasan majakka	63º14.34'N	20º55.87'E	17.5	K	K	12.5	10.5	18	T: _	1.2	Ericon	MK II	X/S
7400	Gåsgrund alempi	63º06.52'N	21º10.65'E	10	K	K	12	10	15	T: _	variable	PharosMarine	Phalcon-2000	X/S
7233	Skvättan	63º07.83'N	20º41.92'E	15	K	K	12	10	15	T: _	variable	PharosMarine	Phalcon-2000	X/S
39912	Cneif	62º17.20'N	21º10.15'E	12	K	K	11.4	9.4	15	M: _ _	Variable	PharosMarine	Phalcon-2000	X/S
7359	Storremmargrund	62º19.81'N	21º12.70'E	9.7	K	E	10.9		6	T: _	1.2	AEI Marconi	Seawatch 300	X
20637	Kristiinank. majakka	62º12.19'N	21º10.40'E	22.7	K	K	13.6	11.6	18	T: _	1.2	Ericon	MK II	X/S
3041	Merikarvian majakka	61º55.80'N	21º16.80'E	17	K	K	12.4	10.4	18	T: _	1.2	Ericon	MK II	X/S
7321	Kupeli	61º38.03'N	21º20.30'E	10.6	K	K	11.2	9.2	18	T: _	1.2	Ericon	MK II	X/S
24416	Morris	61º34.84'N	21º24.97'E	13	K	K	11.6	9.6	18	T: _	1.2	Ericon	MK II	X/S
3067	Rauman majakka	61º08.98'N	21º09.80'E	26	K	K	14.2	12.2	18	T: _	1.2	Ericon	MK II	X/S
3083	Kajakulma	60º59.93'N	21º11.00'E	11	K	E	11.2		6	T: _	1.2	AEI Marconi	Seawatch 300	X
3099	Sandbäck	60º45.91'N	20º44.67'E	14.3	K	K	11.9	9.9	18	T: _	1.2	Ericon	MK II	X/S
6345	Flötjan	59º48.50'N	19º47.12'E	28	K	K	14.6	12.6	18	T: _	1.2	Ericon	MK II	X/S
6099	Rannö	60º31.72'N	20º12.13'E	20	K	E	13		6	T: _	1.2	AEI Marconi	Seawatch 300	X
6116	Bogskär	59º30.27'N	20º21.05'E	29	K	K	14.8	12.8	18	T: _	1.2	Ericon	MK II	X/S
80357	Svenska Björn	59º32.88'N	20º01.33'E		E	E	13	11	15	B: _...	11	Ericon	MK II	X/S
6118	Korsö alempi	60º02.36'N	19º54.03'E	8.5	K	K	10.4	8.4	18	T: _	1.2	Ericon	MK II	X/S
6312	Fästorna	59º51.37'N	20º20.77'E	19	K	K	12.8	10.8	18	T: _	1.2	Ericon	MK II	X/S
3205	Bokullankivi	59º50.82'N	21º25.33'E	10	K	E	11		6	T: _	1.2	AEI Marconi	Seawatch 300	X
3296	Lillharun	59º43.66'N	21º24.24'E	18	K	K	12.6	10.6	18	T: _	1.2	Ericon	MK II	X/S
3302	Söderkobb	59º56.03'N	21º14.21'E	8.3	K	K	10.3	8.3	18	T: _	1.2	Ericon	MK II	X/S
3309	Kalkskärskobb	60º00.31'N	21º04.86'E	15	K	K	12	10	18	T: _	1.2	Ericon	MK II	X/S
11476	Lilla Tärnskär	59º45.19'N	22º58.00'E	10.3	K	K	11.1	9.1	12	T: _	variable	PharosMarine	Phalcon-2000	X/S
11495	Längden	59º46.64'N	23º15.06'E	16.7	K	K	12.3	10.3	18	M: _ _	1.2	Ericon	MK II	X/S
11406	Inkoo 2	59º51.94'N	24º11.06'E	8	K	K	10.2	8.2	18	K: _._	2.4	Ericon	MK II	X/S
11537	Oxhornen alempi	59º57.63'N	24º16.65'E	15	K	K	12	10	18	O: _ _ _	1.2	Ericon	MK II	X/S
11696	Jaktgrund	59º59.80'N	24º33.28'E	10	K	K	9.5	9	6	T: _	1.2	Ins.tsto Ylinen	TMS-2	S
11435	Helsinki	59º56.93'N	24º55.77'E	27	K	K	14.4	12.4	18	T: _	1.2	Ericon	MK II	X/S
11436	Harmaja	60º06.29'N	24º58.72'E	23	K	K	13.6	11.6	30	/: _.._.	3.2	AGA-Ericon,		X/S
11437	Suomenlinnan kirkko	60º08.86'N	24º59.37'E	54.2	K	K	18.1	15.1	30	M: _ _	1	Tideland Sea Beacon	2Sys5	X/S
11587	Ytter Tjärhällen	60º08.23'N	25º18.87'E	8.2	K	K	11	9	18	T: _	1.2	Ericon	MK II	X/S
81	Skarvgaddarna	60º10.96'N	26º07.76'E	10.3	K	K	11	9	18	G: _ _ .	.4	Ericon	MK II	X/S
335	Skarven	60º17.76'N	26º20.91'E	8	K	E	10.2		6	T: _	1.2	AEI Marconi	Seawatch 300	X
69429	Itätoukki	60º06.04'N	25º11.83'E	20.1	K	K	13	11	12	T: _	variable	SeaBeacon 2	System 6	
627	Kalbådagrund	59º59.13'N	25º36.11'E	29	K	K	14.8	12.8	18	K: _._	2	Ericon	MK II	X/S
294	Porvoo	60º05.58'N	25º36.02'E	11.3	K	K	11	9	18	T: _	1.2	Ericon	MK II	X/S
631	Gåsskvättan	60º11.01'N	26º03.01'E	12	K	K	11.4	9.4	18	T: _	1.2	Ericon	MK II	X/S
104	Tiiskeri	60º09.74'N	26º15.71'E	18.5	K	K	12.7	10.7	18	T: _	1.2	Ericon	MK II	X/S
105	Orrengrund alempi	60º16.40'N	26º27.17'E	16	K	K	12.2	10.2	18	T: _	1.2	Ericon	MK II	X/S
13055	Kotkan majakka	60º10.33'N	26º39.24'E	22.7	K	K	13.5	11.5	18	K: _._	2.4	Ericon	MK II	X/S
323	Veitkari	60º15.99'N	27º14.59'E	8	K	E	10.2		6	T: _	1.2	Ins.tsto Ylinen	TM-7	X
169	Rankin Kivikari	60º21.20'N	26º57.39'E	10.5	K	K	11.1	9.1	15	T: _	1.2	SeaBeacon 2	System 6	
307	Tainio	60°12.75'N	26°24.5'E	17	K	K	12.4	10.4	18	M: _ _	1.2			