

FINLAND

The Republic of Finland

Finland is situated in Northern Europe, neighbouring Estonia, Norway, Russia and Sweden. The total land area is 338,000 km² and the sea area about 90,000 km², including continental shelf areas. Finland has extended its territorial waters to 12 nautical miles in 1995. The length of the Finnish coastline is about 1,100 km. Finland has a large and beautiful archipelago and some 180,000 lakes. The Åland Islands form an autonomous area on the south-west coast. The capital of Finland is Helsinki.

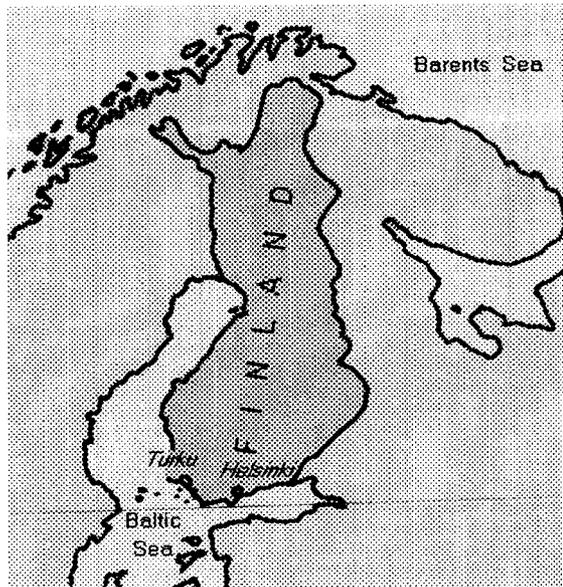


FIG. 1.- Finland.

Finland has a population of 5 million. The country is officially bilingual - roughly 93% are Finnish-speaking and 6% Swedish-speaking. The remaining, 1%, are of other nationalities. Finland declared itself an independent Republic on 6 December 1917, before which Finland was an autonomous area in Russia and before 1809 a part of Sweden.

As a small country with a free market economy, Finland is very dependent on foreign trade. As 85% of foreign trade-exchange relies on shipping maritime connections are vital for the country. The amount of goods transported between Finland and her trading partners each year approximates 71 million tons, the handling of which requires 30,000 ports calls annually. At the end of 1995, the Finnish merchant fleet consisted of 597 vessels with a total gross tonnage of 1.6 million. Since 1995 Finland has been a member of the European Union.

Finnish territorial waters are normally ice-bound in winter. The National Maritime Authority has therefore 9 icebreakers, which keep a total of 22 harbours open in wintertime.

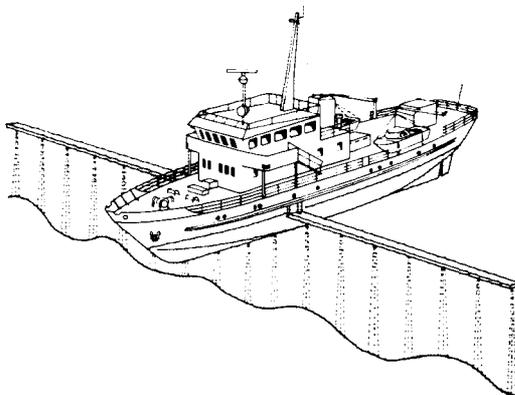


FIG. 2.- The echo sweeping vessel AIRISTO built in 1973.

There are some 7,700 km of sea channels and 6,500 km of inland channels, which are marked on charts and fitted with navigational aids. These buoys and beacons, cairns, leading beacons, lighthouses, edge marks, racons and lights, - total over 22,000.

The Hydrography and Waterways Department

The history of the Finnish maritime administration dates back to 1696. Last year was the 300th anniversary of the Statute of the Swedish King Charles IX to order the Stockholm Pilotage district also to cover southern Finland. The National Maritime Administration (named earlier National Board of Navigation) was founded in 1917, soon after the country's declaration of independence. Until the Hydrographic Department was founded in 1937, the hydrographic surveys and cartography were the responsibility of the Pilotage and Lighthouse Department. The Hydrographic Department and the Waterways Department were combined together in 1996 with the Hydrography and Waterways Department.

The National Maritime Administration is an independent body reporting to the Ministry of Transport and Communications. Its administration comprises four maritime districts. The total work force of the National Maritime Administration numbers some 2,000, around 280 of whom work in the Head Office. Besides nautical charting the Administration is responsible for piloting and icebreaking in the Finnish waters and vessel inspection in Finnish Ports.

The National Maritime Administration is divided into four departments, one of them is the Hydrography and Waterways Department. The Department, in turn, consists of five divisions: the Hydrographic Survey Division, the Chart Division, the Military Division, the Navigational Aids Division and the Waterways and Ports Division.

Hydrographic surveys are carried out by six hydrographic expeditions consisting of 220 people manning seven ships and 30 survey launches. One ship is equipped with an echo sweep hydrographic survey system, one ship with a multibeam hydrographic survey system and the remaining five are depot vessels. In addition there is a geodetic survey party performing geodetic GPS and NavAids position surveys. Owing to weather and ice conditions, surveys can be carried out only from May to October. There are two forms of hydrographic surveys: regional surveys, which chart the average depths and indicate obstacles providing dangers to navigation, and fairway surveys, which are needed in the planning and construction of fairways. The methods applied are echo sounding, multibeam sounding, echo sweeping and mechanical sweeping.

The development of automated survey methods and processing started in the 70's. All the latest survey launches are fitted with automated sounding equipment, capable of collecting, recording and printing out positioning and depth data in digital form. In processing data into a form that fits both survey charts and nautical charts, a programme developed in house is used. Processing takes place partly on board the depot ships of the various expeditions and partly in the Hydrographic Survey Division. At present, all echo sweeping data, 99% of the sounding data and over 90% of the other forms of survey data are processed digitally.

Systematic hydrographic surveys were first taken in 1851. To date, reliable survey results are available for about 80% of the total sea area and for about 60% of the inland waters with navigational significance. With today's surveying capacity about 2 000 km² may be covered annually. An area of 150-200 km² is surveyed by echo or mechanical sweeping annually.

NAVI 2003 strategy has been formed to improve the quality and applications of the chart products, as a demand of data contents and accuracy in chart material from external customers. It also guides currently the survey work and waterways maintenance. The objective of chart production is to safeguard navigation in the fairways. Charts covering areas off the general tracks are published as extensively as the resources allow and the safety of yachting and fishing requires. The Hydrographic and Waterways Department is also responsible for the production of charts requested by the Navy. About 50 employees are involved in chart production.

The National Maritime Administration publishes charts covering various parts of the Baltic Sea and the inland waterways. Sea areas are covered by 46 coastal charts (scale 1:50,000), 14 general charts and 22 Decca charts (scale 1:100,000 - 1:500,000), 7 harbour charts (scale 1:20,000) and 7 chart series for yachtsmen (scale 1:50,000). Inland waterways are covered by 32 charts (scale 1:40,000 - 1:50,000) and 8 chart series (scale 1:10,000-1:50,000). Work has commenced on the production of INT charts. CHART 1, a booklet explaining chart symbols, abbreviations and terms has been published.

As early as 1952 the Hydrographic Department started production of chart series for yachtsmen. They are published in album form. Today they cover most of the coastal waters and major inland waterways. The format, which is smaller than that of normal charts, is better suited for use on board. Apart from indispensable nautical information, the chart series contain useful information on safety matters and harbour services. A Harbour Pilot (in two volumes: a Coastal Pilot and an Inland Waters Pilot) is published for pleasure boaters. Two chart series covering the Gulf of Finland are now also available on CD-ROM with a GPS interface.

Charts are continuously updated with regard to nautical information. Revised editions of charts for merchant shipping are published annually. Yachting chart series appear every two years and others as occasion requires. About 35,000 coastal charts and some 20,000 chart series are sold annually.

A Hydrographic Information System (HIS) that will manage and validate hydrographic data is under development in cooperation with the Swedish chart authority. The current FINGIS chart production will continue, as the main tool. In this, the whole data content of a chart is stored in a digital database, from which ready-for-print films for each printing ink are produced. Digitally produced charts are revised by updating the database and taking new films for each new edition.

The Hydrography and Waterways Department also published other nautical publications. Among these are Notices to Mariners, which appears three times each month, Notices to Yachtsmen, which appears three times a year, and the List of Lights in Finland (separate volumes for coastal waters and inland waters), which appear every two years. Information on navigational aids and channels is stored in a database, from which e.g. the List of Lights can be printed out directly.

The Navigational Aids Division plans and supervises various navigational aids, such as buoys, leading lights and lighthouses on the Finnish waterways, as well as supervises the canal and lock operations. It also maintains the DGPS differential corrections service (IALA type) and the DECCA beacons in Finland. The Waterways and Ports Division plans and supervises the construction of waterways. It also sustains the waterway network and makes feasibility studies on the waterways and ports. The Hydrography and Waterways Department is a member of the IHO, its regional Baltic Sea Hydrographic Commission and Nordic Hydrographic Commission. It is also a corporate member in the Hydrographic Society, a member of International Association of Lighthouse Authorities (IALA) and a member of the Permanent International Association of Navigation Congresses (PIANC).