

# National Report of Finland

(29 May 2007)

## Executive Summary

This Report gives an overview of the main activities of the Finnish Hydrographic Office since the last BSHC 11<sup>th</sup> Conference in 2005. The main issues are:

- Study for future options on production and publishing yachting charts was done, waiting for decision
- The Hydrographic Programme for 2005 - 2015 was published in 2005 and will be updated in 2007
- The Process Management System (including Quality Management and Environmental Program) has been developed further on
- The production of nautical charts and ENC's has been delayed due to the delays of implementing the new production system
- OSAE Pilot Project for contract surveys of the EEZ-area

## 1. Hydrographic Office

### Administrative and Organisational Status

The district organization of the FMA was changed in July 2006. The fairway activities are now managed and coordinated by the central office.

A decision of the **future options of the internal production** of the FMA is expected to be made by the new cabinet during the first half of 2007.

The internal production has arranged an **open competition for manning the survey ships** (all crews except survey officers). As a result a manning contract was signed with *Meriaura Oy* for the next few years.

A **study on the future options for production and publishing yachting charts** (chart series) was done. Decisions are expected in 2007.

### Hydrographic Department 2006:

- **The Director and Staff** (4)
- **Hydrographic Surveys Division** (3)
- **Charts Division** (13)
- **Hydrographic Information Division** (22)

### Internal Production Services includes

- **Survey Production Division** (12 + 26 survey officers on board vessels). In addition 40 + 42 persons were contracted from Finstahip (Shipping Enterprise).
- **Chart Production** (18)

The yearly budget of all these units is between 10 – 11 Million €.

### Strategic Plans

**The Hydrographic Programme for 2005 - 2015** was completed in 2005. The Board of the Finnish Maritime Administration approved the programme. The programme is the first of its kind and will be updated at three-year intervals. It is based on an extensive analysis of the needs of the navigation and other activities of the society. It includes an analysis of the current situation, prioritized areas where new hydrographic surveys are needed and new nautical charts to be published. It also includes the proposed time schedule and cost estimations for the future actions. The guidelines set out in the programme are based on an extensive customer survey. The programme pays due regard to the considerable changes that have taken place in the marine operating environment. One of the most essential changes is the expected rapid growth of oil transport in the Gulf of Finland. In enhancing the safety of these transports the importance of hydrographic surveys and charting is emphasized. It also deals with another essential part of the charting process, i.e. hydrographic information management, which has increased in importance due to enhanced data collection and improved production methods. The Hydrographic Programme for 2005 - 2015 has been in use and it will be updated for years 2008 – 2018 during 2007.

The implementation of the **Navi Programme** is going on almost as planned. Insufficient resources have slowed down some activities. Some reorganisation of steering group has been done.

**The process management system (including Quality Management and Environmental Program):** The Process Management System is a strategic project for the FMA during 2006 and 2007. The objective is that the Process Management System is in use in all core and support processes in 2008. The aim of the strategic project is to improve the quality and performance of the operations. The FMA has defined its core processes in 2005 and the Hydrography is one of them. The *QPR Process Guide* software for process modelling and the *QPR ScoreCard* for measuring were taken in use in 2006. The Process Management System is a quality management system including Environmental Program but also Business Operating System. The risks have been evaluated in 2005. The purpose is to combine the risk management with the process

management system and evaluate operation yearly by the owners of processes. The Environmental Program 2004 - 2008 will be updated 2007.

## 2. Hydrographic surveys

### Survey results in total in 2006 (own production):

- 678 km<sup>2</sup> single beam echo soundings
- 0,4 km<sup>2</sup> surveyed with bar sweep method
- 1899 km<sup>2</sup> surveyed with multi-beam method
- 250 geodetic control points measured
- 270 fixed aids for navigation measured

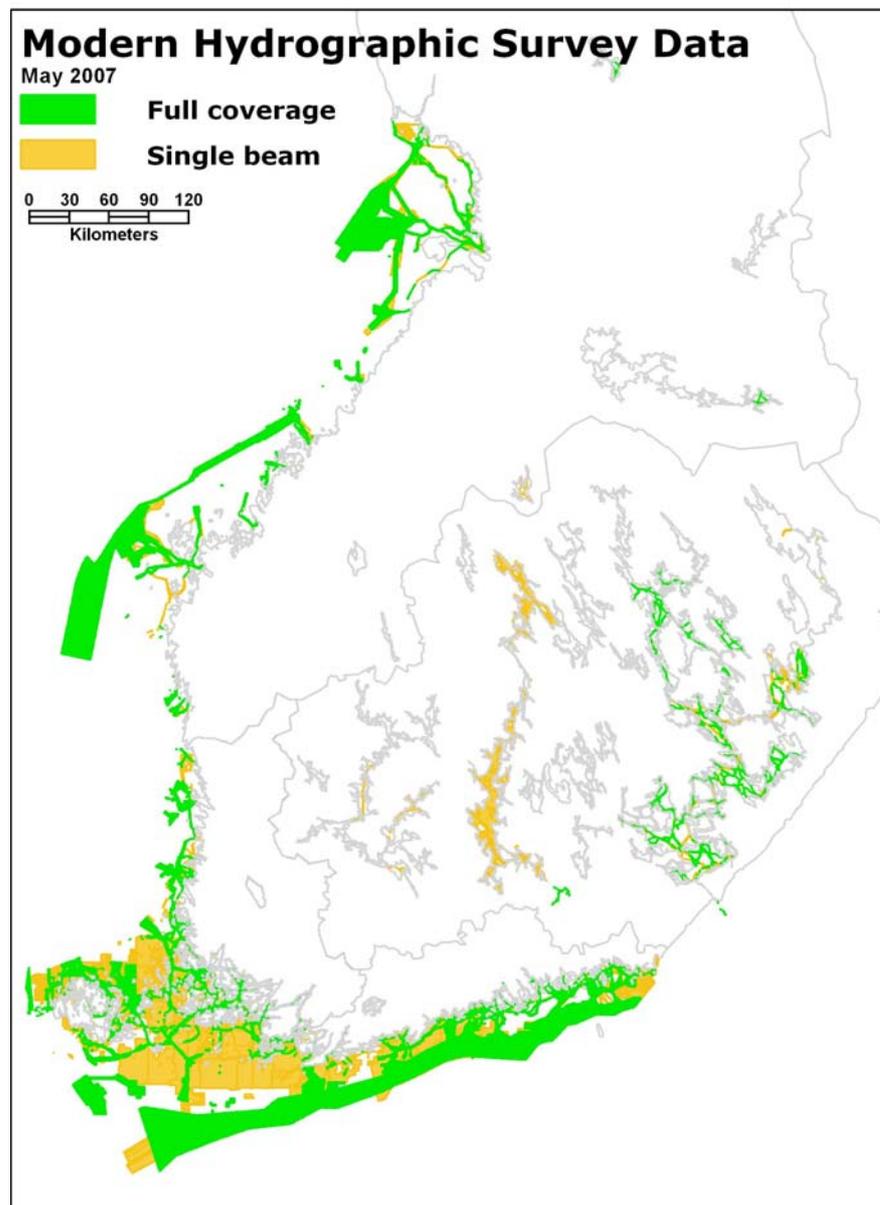


Fig. 1. Modern hydrographic survey data until end 2006.

The operational costs for hydrographic surveys were 7.5 million € (Hydrographic Surveys Division in Helsinki included)

### Survey vessels of FMA Survey Production Division 2006

Vessel	Type / length	Multi-beam launch	Other survey launches	Crew during season	Operation area
<b>Prisma</b>	Depot ship / 57 m	M120	7	45	South & SW coast
<b>Saaristo</b>	Depot ship / 43 m	M640	3	33	<i>Gulf of Bothnia</i>
<b>Sesta</b>	Depot ship / 19 m	-	3	9	Lake <i>Saimaa</i>
<b>Airisto</b>	Survey ship/ 28 m	Echo sweeping system will be renewed as a MBES: <i>Fansweep 30 C</i>		12	No production in 2006.
<b>Suunta</b>	Survey ship/ 36 m	MBES: <i>SeaBat 8111</i>		14	Coast & open sea
<b>Kaiku</b>	Survey ship/ 22 m	MBES: <i>SeaBat 8101</i>		5	Lake <i>Saimaa</i>

The two multibeam launches of depot ship **Prisma** and **Saaristo** are similar 15 m type launches equipped with *SeaBat 8101* multibeam. S/v **Kaiku**, continued her effective work on the shallower fairways of the *Lake Saimaa*.

The geodetic survey team belongs to **Prisma**, but works independently on all areas of Finland. The main tasks of the team (9 persons) is the survey of control points for the new EUREF-FIN coordinate frame and the survey of fixed aids for navigation. During the seasons 2005-2006 this group renewed survey control network over *Åland islands* and the Southern Archipelago sea and Lakes *Nasijärvi-Ruovesi-Virrat* including positioning of fixed aids to navigation.

S/v **Airisto** has been modernized during winter 2005-2006 and was equipped with a new ATLAS *Fansweep 30* Coastal MBES system. Due to technical difficulties in the delivery of the survey system there was no survey production during the season by s/v **Airisto**.

The continuation of the re-survey of all sea fairway areas is the main objective of surveys (Navi Programme). This task is enlarged now to the surveys of open sea lanes (HELCOM survey plan). General surveys for chart renewals were continued in the western parts of *Åland* by depot ship **Prisma** and her launches. On inland lakes, the depot ship **Sesta** with her launches, and s/v **Kaiku** also, continued the project for renewing the charts of north-eastern *Saimaa* (*Oravi – Joensuu* area).

Depot ship **Saaristo** and her launches have worked along the whole *Gulf of Bothnia*. Fairways to *Oulu*, *Kalajoki* and *Kokkola* have been the main tasks.

Depot ship Prisma was decommissioned at the end of the survey season 2006. Her survey officers and survey launches will be relocated to other survey expeditions.

The FMA internal fairway production has also some amount of survey capacity for fairway surveys (Navi and fairway construction).

The BSHC/HELCOM Coordinated Hydrographic Re-Survey Plan has been updated with the survey results of the season. [The Monitoring WG has a separate Explanatory Note.](#)

**Pilot Project for hydrographic surveys:** Finland is participating in Master Plan for the Motorways of the Baltic Sea TEN-T project. Work Package 3 of this project consists of Safe Major Routes for the MBS in the Gulf of Finland. A contract of 1,35 Mill € was made with Offshore Survey and Engineering, OSAE GmbH, Bremen, Germany. The company surveyed during the season the whole contracted area of almost 4.000 km<sup>2</sup> in the approaches of the Gulf of Finland, containing mostly Finnish EEZ and some Estonian EEZ areas. The survey has been approved by now. The report of this pilot project will be published in June 2007. [There is a separate Explanatory Note on this.](#)

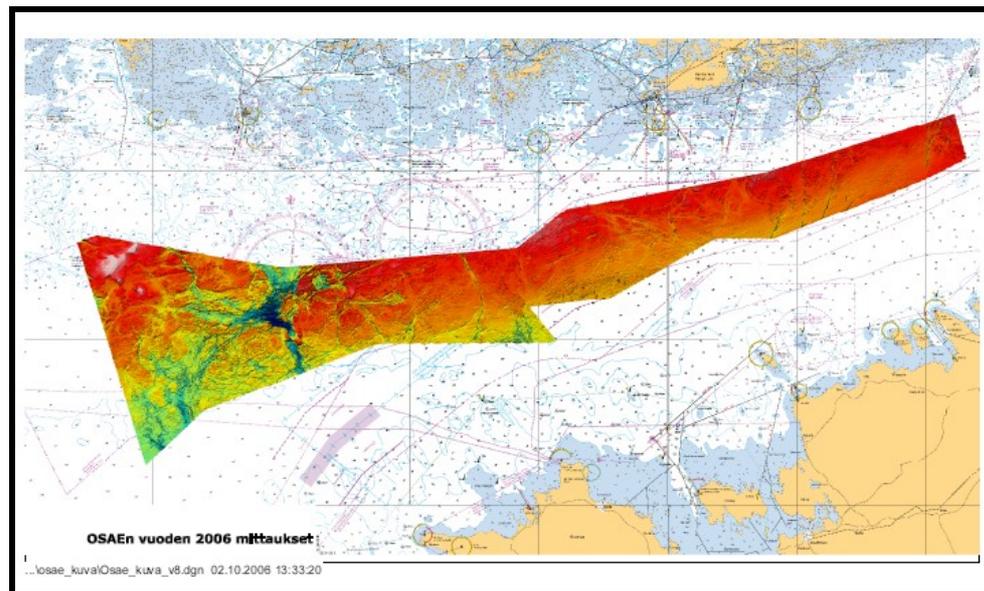


Fig. 2. Area surveyed during the Pilot project in 2006.

### Hydrographic data processing and management

Survey data validation and quality checking against surrounding data as well as registration into bathymetric databases takes place in the FHO in Helsinki. The soundings are stored as original soundings in the Sounding Database System (SYRE). At the moment SYRE contains about 10 billion soundings covering 15000 square km coastal waters and inland lakes. Geographic information of controlled areas and meta data of all survey projects are stored and maintained in the Controlled Area

Database System (VARE). Data processing systems and databases are developed further and maintained by FMA.

The FMA has one centralised hydrographic information management system integrated with both the ENC and printed chart production lines. The data management system (KATISKA), based on *Oracle10/ArcSDE9* and *ArcMap9* include databases and tools for processing and maintaining hydrographic data and export functions for ENC production. Printed charts are produced using the *nSector* system via automated update management interface. Since both digital and paper products are derived from a single source there are no discrepancies between the different products.

The new system has been in use since November 2006 except automated ENC cell builder (used for EN and ER production), which are yet under testing.

The fairway register (VÄRE) is a central register for fairway information (based on *Oracle/SDO* and *GeoMedia*). The database includes navigation lines, fairway areas, dredging areas, dumping areas and restricted areas. The Fairway register complements the central navaids database, VATU (*Oracle*). The navigational information is derived from these databases to the KATISKA.

The chart corrections register ATA (*Oracle* and *MapInfo*) has been extended to cover all district offices of the FMA.

### 3. Nautical Charts

#### Cartography

The chart modernisation where traditional Finnish nautical charts are compiled as INT charts was started in 2003. The progress of this process has been somewhat slowly than planned, some problems with the new system drawbacks have been encountered. So far all coastal charts, all existing harbour charts (except one), 4 general charts and about 60% of the yachting charts series have been renewed. The revision of the whole chart portfolio will be completed by the end of 2009 for coastal charts and inland charts for SOLAS traffic and other inland charts by 2011.

The CHRIS Chart Standardisation and Paper Chart Working Group (CSPCWG) has approved the proposal for the fairway area, but IHO CL voting not yet done. [There is a separate Explanatory Note on this issue.](#)

[There is a separate Explanatory Note on the Presentation of PSSA areas on charts and publications.](#)

#### ENC production and distribution

At the end of year 2006 there are 134 Finnish ENC cells on the market, see Fig. 3 and 4. These cells cover main fairways in Gulf of Finland and Archipelago Sea. The cells covering fairways to ports of *Raahe*, *Oulu* and

*Kemi* in the *Gulf of Bothnia* has been produced. Full ENC coverage in navigational purpose approach will be reached during 2008.

While waiting the ENC Production line of the new *KATISKA* system, ENC updates are produced using *SevenC's* ENC tools *ENC Manager* and *ENC Designer*. Tools for validation of ENC's are *dKart Inspector* made by *Hydroservices AS* and *ENC Analyzer* made by *SevenC's*.

The distribution of the ENC's is done via *PRIMAR Stavanger*. The FHO has used the VPN service as a main data transfer tool. Also other services and tools (*VRC*, *S57 Advisor*, discussion group etc.) provided by *PRIMAR Stavanger* are used. The experiences of services have been very positive.

Several Finnish icebreakers, one research vessel and many commercial vessels are using the ENC's.

In the end of 2006 there were 120 customers and 270 vessels using Finnish ENC's. Total number of active subscriptions was approximately 14000. Some statistics of Finnish ENC sales are in Fig. 5.

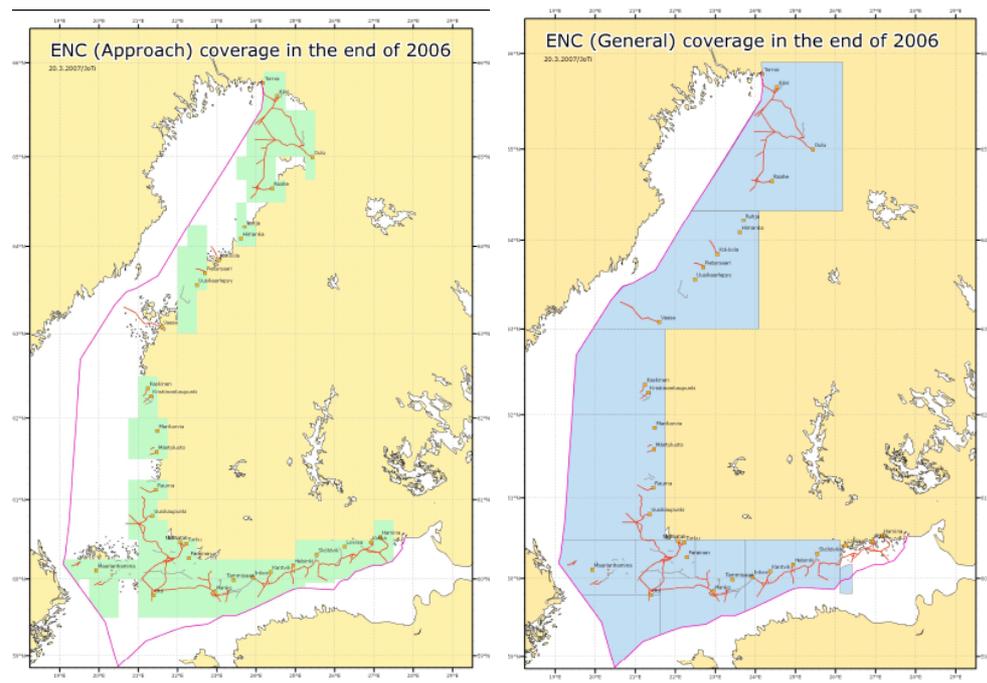


Fig. 3. Coverage of Approach cells

Fig. 4. Coverage of General cells

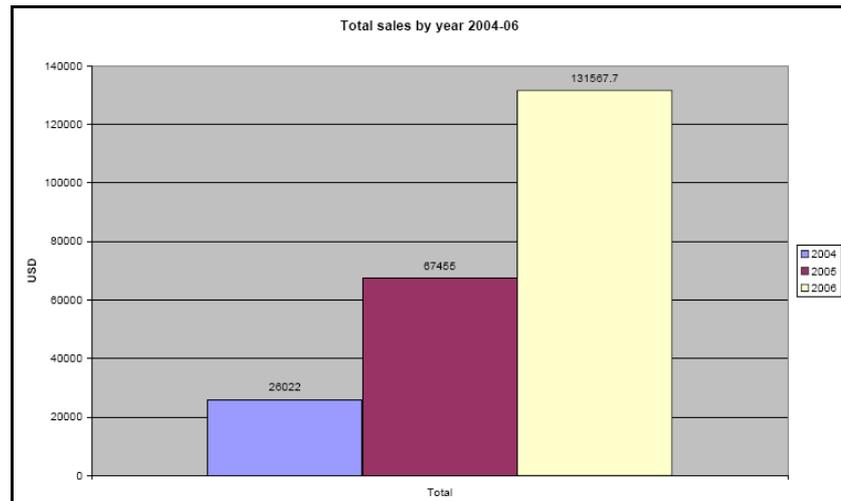


Fig. 5. Total sales of Finnish ENC's in 2004 – 2006 [USD].

### ECDIS promotion / Feedback

FHO organised ENC user seminar in August 2005 in Helsinki, approximately 50 people attended the event. Several presentations about use of ECDIS and digital charts were seen during the day. Also the FMA participated with a stand on the National Maritime Fair in Turku in November 2005 with the main emphasis of ENC and ECDIS issues.

FHO took part work of Primar Stavanger and IC ENC Joint Information Working Group (JIWG) and received some positive feedback from Finnish maritime community regarding results of the working groups work. Finnish translation of the "Facts about charts and carriage requirements" document were produced and distributed.

[There is a separate Explanatory Note on efforts to promote the use of ECDIS on the Baltic Sea.](#)

### Problems encountered

Main problems have been delays in production schemes for printed charts and ENC's. The main reasons have been the extra workload and uncertainty for planning re-organisations and possible outsourcing of the internal production work, and the delays and technical difficulties for implementing the new KATISKA system and specially its ENC Production line.

## 4. Nautical publications 2006

Notices to Mariners are published every tenth day and are available also on the Internet. ENC charts are updated once a week based on the NtM material. Notices to Yachtsmen, which are compiled on the basis of the NtM, are published five times a year.

The latest edition of the List of Lights on the Finnish Coast was published in May 2005. General information is given in Finnish, Swedish and English, but the actual list of lights is only in Finnish and Swedish. The database will be updated continuously. The coordinates of all lights are given both in the Finnish national and WGS-84 (EUREF-FIN) coordinate systems. The List of Lights, the *Saimaa* Lake District and the *Saimaa* Canal was published in May 2006. The book contains a complete list of lights about this area and general information about the pilot, DGPS and rescue services.

A latest edition of the Catalogue of Finnish Nautical Charts was published in April 2005. The new sales Catalogue of Finnish Nautical Charts was published in February 2006.

## 5. MSI

### Navigational Warnings

The FHO (Helsinki Co-ordinator), *Turku Radio* and the designated persons in the Maritime Districts maintain an up-to-date file for navigational warnings. *Turku Radio* (24h service) is sending the Finnish navigational warnings based on this. Navtex warnings will be sent to *Baltico* in Sweden and transmitted by Stockholm Radio.

The system is supervised and co-ordinated by The Hydrographer and Helsinki Co-ordinator, whereby the Finnish navigational warning practice constitutes a part of the international navigational warning system.

## 6. S-55

The S-55 database has been updated yearly by the Finnish data (only minor changes).

IHO S-55: Finland		Updated		04 April 2007		INT Region		E		
<b>Status of Hydrographic Surveys</b>					A1/A2 = % adequately surveyed 0-200m / >200m B1/B2 = % requiring re-survey at larger scale or to modern standards 0-200m / >200m C1/C2 = % which has never been systematically surveyed 0-200m / >200m <b>Comment</b> 1. Contributes to the HELCOM harmonised re-survey programme. 2. Complex sea area with extensive shallow waters, islands and rocks critical to navigation.					
A1	A2	B1	B2	C1	C2					
30	0	60	10	10	90					
<b>Status of Nautical Charting</b>					A = % covered by INT Charts, B = % covered by RNC, C = % covered by ENC					
Offshore passage/Small			Landfall Coastal passage/Medium			Approaches Ports/Large			<b>Comment</b>	
A	B	C	A	B	C	A	B	C	Target for M-4 compliance is 2008. Main area of responsibility is covered by RNC, but not to S-61 standard.	
50	0	80	100	0	90	90	0	10		
<b>Status of Maritime Safety Information</b>										
Local Warning			Coastal Warning			Port Information			NAVAREA Warning	
YES			YES			Partial			NO	
Master Plan		Area A1		Area A2		Area A3		NAVTEX		SafetyNET
NO		YES		YES		NO		YES		YES
									In co-operation with BALTICO	

## 7. Capacity building

The Hydrographic Course in the Helsinki University of Technology (HUT) has continued in 2005 and 2006. FHO staff has given lectures on various fields of hydrography.

## 8. Oceanographic activities

The FMA has an action plan to take a new vertical reference datum in use. This new datum will be based on the European Height reference system. In Finland also the land mapping authorities have decided on the same vertical reference datum. [There is a separate Explanatory Note on the work for a common vertical reference on the Baltic Sea.](#)

## 9. Other activities

### Bilateral Arrangements

No new Bilateral Arrangements were signed. Negotiations with Germany are going on.

The FHO has continued to develop its pricing policy with the aim to encourage more wide use of up-to-date official data. Thus the pricing level and the price of updates have been reduced up to 50 %. The use of the data is increasing, especially for non-navigational purposes.

The FHO has been active with the Finnish National Council for Geographic Information to specify the national policy according to the Government Information Society Programme. Also an active role on commenting the INSPIRE development (especially the distribution of depth data) has been important. In addition, the FHO has participated a national INSPIRE GeoPortal pilot project.

### International activities

The Hydrographic Office has participated actively on the IHO work. Finland has representatives in the WEND and CHRIS Committees, and FIG/IHO/ICA Committee on competence of Hydrographers and Nautical cartographers, and in various working groups e.g. TSMADGW, CSPCWG (as Vice-chair) and S-44 WG. Also Finland has represented both the NHC and BSHC in the SPWG and WEND Task Group. Finland has chaired the PRIMAR Stavanger Advisory Committee until September 2006.

The BSHC/HELCOM Coordinated Hydrographic Re-Survey Plan has been updated. Finland has chaired the Monitoring Working Group. The Web-based interface to this database has been linked to HELCOM and IHO web pages. [There is a separate Explanatory Note on this.](#)

## 10. Conclusions

This report highlights the main activities of the FHO in 2005 and 2006. The hydrographic surveying has proceeded mainly as planned. There have been remarkable delays in the production of nautical charts and ENCs.