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WEND STUDY – ENC COVERAGE
(by Portugal)

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References and Sources

- ABN-AMRO World Shipping Map
- Hydrographic Offices of IHO Member-states
- IHO WEND Committee, Minutes of the 6th Meeting
- IMO (International Maritime Organization)
- OECD (Organization for Economic Cooperation and Development)
- UNCTAD (United Nations Conference on Trade And Development)
- WTO (World Trade Organization)

1 - Introduction

Results from the 6th WEND Meeting. Actions taken by IHB.

2 - Overview of the Present ENC Coverage

The available data for the present ENC coverage is presented in the following tables and graphics, for each Regional Hydrographic Commission or INT Chart Region.

(sheets from EXCEL file: *wend_overview.xls*)

3 - ENC Coverage of Main Shipping Routes

3.1 - Trends in Maritime Trade

The available data refer to the year 2000 and are mainly due to the United Nations Conference on Trade and Development (UNCTAD) and published in the *Review of Maritime Transport, 2001*.

World maritime transport (goods loaded) recorded its fifteenth consecutive annual increase reaching a record of 5.88 billion tons. The annual growth rate increased to 3.6% compared to 0.9% in 1999.

The world merchant fleet expanded to 808.4 million deadweight tons (dwt) at the end of 2000, a 1.2% increase. The fleet of oil tankers and dry bulk carriers, which together make up 70.1% of the total world fleet, increased by 1.1% and 2.0% respectively. There was a 8.8% increase in the container ship fleet and a 6.9% increase in the liquefied gas carriers fleet.

The average age of the world fleet remained around 14 years. General cargo vessels had the oldest average age at 17.0 years and container vessels were the youngest at 10.4 years.

The year 2000 was a busy year for the tanker market. The overall volume of maritime crude oil trade increased by 3.3%. Also, the shipments of the main bulks, particularly iron ore and coal, increased by 7.4%. Again, by the end of 2000, the level of freight rates in the main containerized routes – transpacific, transatlantic and Asia-Europe – were mostly above the levels that prevailed in 1999. World container port traffic continued to expand at a rate of 7.3% over 1998.

The most significant regional development was in East Asia (Japan, Republic of Korea, China, Hong Kong-China, Taiwan-Province of China and the major ASEAN countries).

In general, maritime trade increased in 2000, as well as the world merchant fleet. The initial previsions for 2001 point to a slightly smaller increase, but the events of September 11th in New York may change the projections.

3.2 - Existing Coverage

The following routes are based mainly in the analysis of the seaborne trade (crude oil, grain, ore and containers), passenger liners and pleasure cruises.

Baltic Sea

Good coverage by: Sweden, Denmark, Germany, Finland, Poland, Estonia, Latvia and Russian Federation.

ENC on market by: Sweden, Denmark, Germany, Finland, Poland, Latvia and Russian Federation.

North Sea and British Channel/La Manche

Good coverage by: Denmark, Germany, Norway, UK, France, Netherlands and Belgium.

ENC on market by: Denmark, Germany, Norway, UK, France, Netherlands and Belgium.

Strait of Gibraltar, Mediterranean and Black Sea

Fair coverage by: Spain, France, Italy, UK (Egypt), Russian Federation (?!) and Turkey.

Poor or non-existing coverage in other areas, namely near the North African coast.

ENC on market by: Spain, France, UK and Russian Federation (?!).

Eastern Atlantic Ocean (West Africa, Iberian Peninsula and Gulf of Biscay)

Fair coverage by: Portugal, Spain and France.

Poor or non-existing coverage in the African coast.

ENC on market by: Portugal, Spain and France.

Northwestern Indian Ocean, Persian Gulf, Red Sea and Suez Canal

Poor or non-existing coverage (only by UK in Egypt).

ENC on market by: UK (Egypt).

East Asia

Fair/good coverage by: Japan, Republic of Korea, Singapore, China (?!) and Indonesia.

Poor or non-existing coverage in other areas.

ENC on market by: Japan, Republic of Korea and Singapore.

Central Indian Ocean

Fair coverage by: India.

Poor or non-existing coverage in other areas.

ENC on market by: none.

Western Indian Ocean, South and Central Africa (Cape Route)

Fair coverage by: Republic of South Africa.

Poor or non-existing coverage in other areas.

ENC on market by: Republic of South Africa.

Caribbean Sea and Gulf of Mexico

Fair coverage by: USA (NOAA) and Colombia.

Poor or non-existing coverage in other areas.

ENC on market by: none.

Western Atlantic Ocean (North and Central to/from South America)

Good coverage by: Canada and USA (NOAA).

Fair coverage by: Brazil and Argentina.

Poor or non-existing coverage in other areas.

ENC on market by: Canada.

Northern Atlantic Ocean (North and Central America to/from Europe)

Poor or non-existing coverage, except near the Azores archipelago and American and European coasts.

ENC on market by: Canada, Portugal (Azores and European Continent), UK, France, Spain, Norway, Germany and Denmark.

Northern Pacific Ocean (East Asia to/from North and Central America)

Poor or non-existing coverage, except near Hawaii and Asian and American coasts.

ENC on market by: Japan, Republic of Korea, Singapore and Canada.

Eastern Pacific Ocean (North and Central to/from South America)

Good coverage by: Canada and USA (NOAA).

Fair coverage by: Colombia, Peru and Chile.

Poor or non-existing coverage in other areas.

ENC on market by: Canada and Chile.

Southeastern Indian Ocean and Southwestern Pacific Ocean

Fair coverage by: Australia and New Zealand.

Poor or non-existing coverage in other areas.

ENC on market by: none.

3.3 Comments

1. It is possible to see that, although the production of ENC cells is well disseminated around the world, there are only a few areas where the coverage and the availability on the market are satisfactory.
2. The situation is better in the Baltic and North Sea, Canadian coasts and East Asia. In the Mediterranean there are several producer countries but the coverage and market availability are not yet good enough. The same applies to the Caribbean Sea and Gulf of Mexico, for instance.
3. The worst situation is relative to Africa, including the Mediterranean coast. In this continent the only ENC producers are the Republic of South Africa and the United Kingdom (for Egyptian waters).
4. It was noted that many ENC producer countries do not have their cells available on the market, due to problems related to adequate update and distribution methods. In accordance, in some areas there are many ENC cells already produced but not available to the mariners.
5. From the available data of ENC coverage and considering the intensity of maritime traffic and the danger of marine pollution, the most critical areas/maritime routes are:
 - a. ROPME Sea (Northwestern Indian Ocean, Persian/Arabic Gulf, Red Sea and Suez Canal);
 - b. Mediterranean and Black Sea;
 - c. Caribbean Sea and Gulf of Mexico;
 - d. Western Indian Ocean, Central and West Africa;
 - e. South Asia and Australian continent.

6. The ENC production and availability in other areas should also be improved, namely in the North and South American coasts and in the approaches to European Atlantic coasts.
7. Although it is not a so stringent case, it should be noted that there is no ENC production at all for the Antarctic Ocean.

4 - Needs of the Users

1. Through several inquiries and field tests, the opinions of end-users about ENC and ECDIS may be summarized as follow:
 - a. in general, ENC/ECDIS are useful to the mariners;
 - b. the use of ENC/ECDIS may increase the safety of navigation and reduce the danger of environmental disasters;
 - c. the costs, specially of the ECDIS are too high;
 - d. the training required to operate an ECDIS is considerable;
 - e. the visual aspect of the ENC is quite different from the usual paper charts;
 - f. the query functions are often very laborious and time consuming;
 - g. sometimes there is too much information on the display, confusing or even distracting the watch keeper;
 - h. there is an insufficient ENC coverage;
 - i. to many ship owners, the overall investment in ENC/ECDIS is considered to be exaggerated, even considering the increase in marine safety.
2. As result of some of the previous drawbacks, many mariners prefer to use raster charts/RCDS. They argue that the simplicity of operation of the RCDS, the likelihood of the display with the paper charts, the availability of suppliers around the world and, mainly, the low price are strong reasons to use raster charts/RCDS instead of ENC/ECDIS.
3. Also, the actual or potential ECDIS manufacturers dislike the complexity of these systems and the interpretation of some rules of S-52 creates some harmonization problems between them and the HO which produce the ENC cells.
4. It should be stressed that among the mariner community there are also many supporters of ENC/ECDIS. These are specially related to potential high-risk marine activities, as for instance high-speed passenger ships. Many of them would like to use ENC/ECDIS in the final approaches to docking and berthing.
5. It is generally accepted that, in the new building SOLAS ships, the integration of ECDIS with AIS/VTS and on-line marine safety information systems will be used in a not distant future, especially if the insurance rates get lower due to the increase in safety. Also, the ECDIS price is only a very small part in the total cost of a new building ship.

6. Several Navies are interested in the use of Warfare ECDIS (WECDIS), meaning by this an ECDIS with special military specifications and running ENC cells with Additional Military Layers (AML). Some work on these issues is underway, at least among NATO countries. Meanwhile, many warships are being fitted with ordinary ECDIS.
7. The importance of the National Maritime and Portuary Authorities in the definition of safety criteria for visiting ships (Port Control) and their corresponding taxes and operational costs is quite relevant in the awareness of ship owners and cargo operators to the advantages in the use of ENC/ECDIS.

5 - Needs for Assistance and Support in ENC Production

1. In the most problematic areas, the majority of the countries do not have hydrographic offices (HO), or, if they exist, they have very limited resources. Often, the responsibility for the nautical cartography of those countries is assumed by another nation, in accordance with the corresponding regional hydrographic commission. As the priority for each HO is the production of ENC for its national waters, and the resources are getting shorter for everyone, it is evident that the production of ENC for those problematic areas is left behind. Also, the age and accuracy of the hydrographic data in many of those regions are not appealing to an ENC producer.
2. The main problems related to a convenient ENC coverage and availability on the market seem to be, depending on the area:
 - a. the non-existence of well established hydrographic offices;
 - b. the lack of resources by the hydrographic offices;
 - c. the lack of recent and accurate data;
 - d. the difficulty to establish an adequate ENC distribution and updating system.
3. The international cooperation may overcome some of these problems, as, for instance, the production and distribution of ENC for Egyptian waters by the United Kingdom, or the multi-national cooperation for the ENC coverage of the Malacca and Singapore Straits (Indonesia, Malaysia and Singapore).
4. The establishment of RENCs can provide an international cooperation in order to harmonize the production of ENC and help the distribution through common service providers. That would prevent that a mariner needs to buy the necessary ENC cell for one voyage from a multitude of sellers.

6 - General Assessment

General assessment of the present situation. Possible ways to be followed in the future.

7 - Final Comments and Recommendations

To be done by IHB.

Wend Study- ENC Coverage

Replies to CL 31/2001

Baltic Sea Hydrographic Commission (BSHC) – Chair: Estonia

- Questionnaire provided by Denmark, Estonia, Finland, Germany, Poland, Russian Federation and Sweden. Latvia, although not being an IHO MS, also sent a questionnaire.
- Paper on Major Shipping Routes and Harbours, by Helsinki Commission.

Nordic Hydrographic Commission (NHC) – Chair: Denmark

- Questionnaire provided by Denmark, Finland, Iceland, Norway and Sweden.

North Sea Hydrographic Commission (NSHC) – Chair: Iceland

- Questionnaire provided by Denmark, France, Germany, Iceland, Netherlands, Norway and UK.
- No reply from Belgium.

Mediterranean and Black Sea Hydrographic Commission (MBSHC) – Chair: Italy

- Questionnaire provided by Croatia, Cyprus, France, Greece, Italy, Spain, Tunisia, Turkey, UK and Yugoslavia. Malta, although not being an IHO MS, also sent a reply.
- No reply from Algeria, Egypt, Morocco, Russia, Syria and Ukraine.

East Atlantic Hydrographic Commission (EAtHC) – Chair: Spain

- Questionnaire provided by France, Portugal and Spain.
- No reply from Morocco and Nigeria.

Caribbean and Gulf of Mexico Hydrographic Commission (CGMHC) – Chair: UK

- Questionnaire provided by Colombia, Cuba, France, UK and USA (also letter).
- No reply from Jamaica, Netherlands and Venezuela.

Southern Africa and Islands Hydrographic Commission (SAIHC) – Chair: Mozambique

- Questionnaire provided by South Africa and UK.
- No reply from France, Mozambique and Norway.

South East Pacific Hydrographic Commission (SEPHC) – Chair: Colombia

- Questionnaire provided by Chile, Colombia and Peru.
- No reply from Ecuador.

South West Pacific Hydrographic Commission (SWPHC) – Chair: Australia

- Reply received from Australia (with Letter) New Zealand, USA and UK.
- No reply from Fiji, France and Tonga.

US-Canada Hydrographic Commission (USCHC) – Chair: Canada and USA

- Questionnaire provided by USA (also letters) and Canada.

East Asia Hydrographic Commission (EAHC) – Chair: China

- Questionnaire provided by Korea (Rep. of), Japan, Thailand, Indonesia and Singapore.
- No reply from China, Malaysia and Philippines.

ROPME Sea Area Hydrographic Commission (RSAHC) – Chair: Iran

- Questionnaire provided by Bahrain, Pakistan, Iran and UK.
- No reply from Oman and UAE

Antarctic Hydrographic Commission (AHC) – Chair: IHB

- Questionnaire provided by France and UK.
- No reply from Argentina, Australia, Brazil, Chile, India, Italy, New Zealand, Peru, South Africa, Spain, Russia and USA.

INT Region C1 – Co-ordinator: Brazil

- Questionnaire provided by Argentina, Brazil and UK.
- No reply from France and Uruguay

INT Region J – Co-ordinator: India

- Questionnaire provided by India and UK.
- No reply from Egypt and Sri Lanka.