CHRIS15-9.2C rev.3

15th CHRIS MEETING
IHB, Monaco, 10-13 June 2003

NATIONAL REPORTS ON ENC DEVELOPMENT

ARGENTINA

ENC DEVELOPMENT

The SHN has produced only 5 (five) ENCs at different scales and for different purposes in S-57 ed. 3.1 (2 of the Río de la Plata and 3 coastal harbours). They have been made from paper charts and have incorporated the latest hydrographic data available.

These ENCs are not available for commercial purposes yet (commercial navigation) because we have no capability for validation and updating.

ENC PRODUCTION PROGRAM

We have in process ENCs at different scales, covering approaches and harbours of the Rio de la Plata..
After this the SHN intends to produce 12 more ENCs at different scales(approaches and harbours) of the Bahia Blanca Ria and other coastal harbours.

We have only a small capacity production (at the moment we are working with one Caris ENC expert), and the SHN has no capability for validation and updating yet. We expect to increase our capacities close to the end of the present year.

Recently the HYDROGRAPIC AND OCEANOGRAPHIC SERVICE OF THE CHILEAN NAVY (SHOA) has finishied the validation (only as a test) of one of our ENCs and the DIRECTION OF HYDROGRAPHY AND NAVIGATION OF THE PERUVIAN NAVY (DHN) another. Both charts have successfully passed the test with only few amendments.

Once the work is finished the SHN ENC portfolio will reach 100 charts. We have no date for ending the task, it depends on the budget.

At the moment we expect to acquire validation software and increase our capabilities maybe with one more Caris HOM expert and so increase the production. For our products to come onto the market there are lots of weaknesses that we must first improve, and it can take one year time.
We are analysing an IC-ENC proposal to enter into an agreement and at the same time receive some cooperation and training.

We are fully aware that we need some investments to increase our capabilities,we hope to achieve this during the next twot years at least

ELECTRONIC CHARTS (EC).

Also we produce EC in raster format (BSB) . We are commercializing 4 CDs, each of them covers a main navigational area, (RIO DE PLATA, 29 charts// Ría de BAHIA BLANCA 9 charts/// RIO PARANA 14 charts), a total of 52 charts.

We mentioned the raster chart portfolio because basically these charts are the basis for the future ENC cells of the RIO DE LA PLATA, RIO PARANA, and RIA DE BAHIA BLANCA

AUSTRALIA

1 ENC Production

1. Australia's ENC production program remains in the first instance targeted to providing ENC coverage for those vessels and areas most likely to benefit from the early uptake of ECDIS. In Australia this is SOLAS class vessels transiting Torres Strait and The Great Barrier Reef (GBR) and those entering Australia's major ports.

2. Production priorities are therefore:
   - Major routes and restricted pilotage waters
   - Approaches and Ports
   - Coastal
   - Remainder

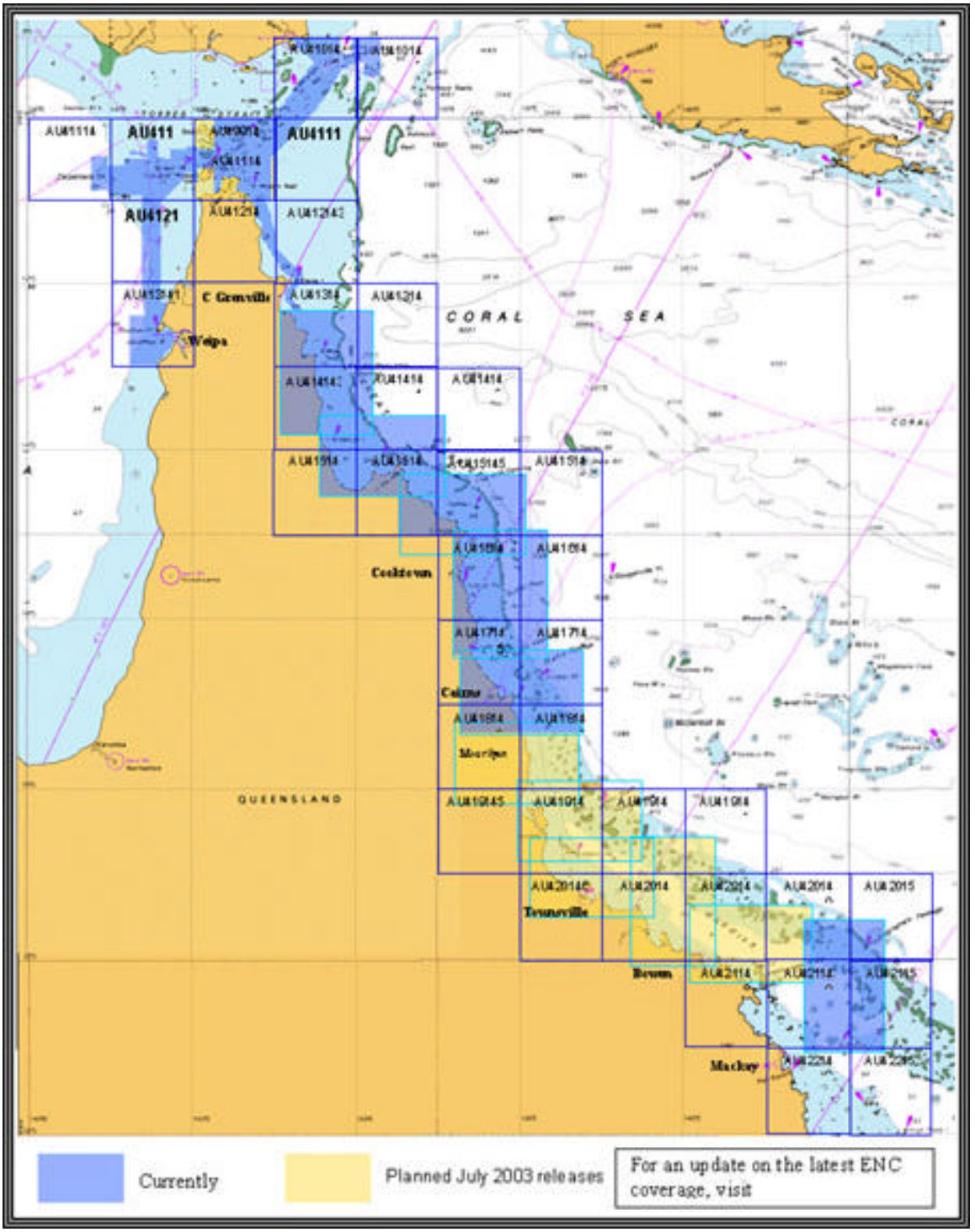
3. The AHO compilation strategy is to work "from the part to the whole". In other words firstly to create "larger scale" ENCs of priority areas and rely on RNC coverage as a backdrop for less frequented or less critical areas. Progressively, each ENC will contain more and more detailed data through revision and the completion of more and more priority areas.

4. Detailed coverage of the 1100 nautical mile GBR compulsory pilotage route, its approaches and linking passages is being compiled in most instances from source survey and contains bathymetry at one metre contour intervals in the 5-20m depth band. A "small scale" (1:1,500,000 scale) ENC of the GBR will be published at the end of the year or earlier.

2

5. Australia's ENCs (*Seafarer® ENC*) have been available for commercial sale since 1 July 2002. They are available through the *Seafarer® RNC* network of distributors. *Seafarer® ENC* are supported by an update service. *Seafarer® ENC* cost the same as *Seafarer® RNC.* Purchasers of *Seafarer® RNC* receive *Seafarer® ENC* effectively gratis.

6. ENC of Port and Harbours will not be published until the IHO data protection scheme has been implemented by the AHS. This is likely to happen in 2004.


AU411
AU4111
AU4121
C Grenville
Weipa
CORAL SEA
Cooktown
Cairns
Mourilyan
QUEENSLAND
Townsville
Bowen
Mackay
Currently
Planned July 2003 releases
For an update on the latest ENC coverage, visit

CHILE

Report on ENC coverage to 6 June 2003

General

ED.	*CELL*	*DATE Pro. - Issu.*	*S*	*W*	*N*	*E*
3.1	**CL2AI081.000**	06/00 - 05/03	-45,1731000	-76,9984500	-43,1733000	-72,3318100
3.1	**CL2AI082.000**	06/00 - 05/03	-47,1733100	-76,9984500	-45,1731000	-72,3318100
3.1	**CL2AI090.000**	05/00 - 05/03	-49,6633100	-77,5072100	-47,1732800	-73,0072200
3.1	**CL2AN020.000**	10/99 - 05/03	-27,2196182	-73,0020961	-22,6696917	-69,8354165
3.1	**CL2AN022.000**	03/00 - 05/03	-23,7535310	-71,5019598	-21,9202050	-70,1019654
3.1	**CL2AT030.000**	10/99 - 05/03	-30,3326200	-73,5000000	-26,5826400	-70,4999800
3.1	**CL2BB060.000**	09/99 - 05/03	-40,3363600	-76,0027300	-36,5030700	-72,6694200
3.1	**CL2CO040.000**	09/99 - 05/03	-33,3362900	-74,0022800	-29,6696600	-71,0022800
3.1	**CL2LL071.000**	09/99 - 05/03	-42,0039946	-76,0029626	-39,6706325	-72,3363290
3.1	**CL2LL072.000**	10/99 - 05/03	-43,1732800	-76,0030100	-42,0039900	-72,3363300
3.1	**CL2MA101.000**	05/00 - 05/03	-51,3333300	-76,9937700	-49,6633100	-73,1771400
3.1	**CL2MA102.000**	06/00 - 05/03	-53,0675800	-76,9970600	-51,3333300	-73,1803900
3.1	**CL2MA110.000**	10/99 - 05/03	-54,1666700	-69,1666700	-51,3333200	-67,2333300
3.1	**CL2TR010.000**	10/99 - 05/03	-23,2671000	-73,0006300	-18,1671700	-69,8339500
3.1	**CL2TR012.000**	01/01 - 05/03	-20,4196480	-71,3352670	-18,3363640	-70,0019310
3.1	**CL2TR014.000**	03/00 - 05/03	-22,1671040	-71,3339790	-20,1671070	-70,0006460
3.1	**CL2VA050.000**	10/00 - 05/03	-37,3363169	-74,8357817	-32,6697165	-71,3357350

Coastal

ED.	*CELL*	*DATE Pro. - Issu.*	*S*	*W*	*N*	*E*
3.1	**CL3BB010.000**	02/01 - 05/03	-37,2749950	-73,6833330	-36,7083290	-73,0916680
3.1	**CL3CO010.000**	11/01 - 05/03	-30,3333330	-71,7833330	-29,6874950	-71,2499970
3.1	**CL3MA130.000**	03/02 - 05/03	-49,9666670	-75,9166670	-49,6661150	-74,5958310
3.1	**CL3MA140.000**	05/02 - 05/03	-50,2494440	-75,9166670	-49,9666670	-74,5958310
3.1	**CL3MA150.000**	06/02 - 05/03	-50,3333320	-75,1750000	-49,7419420	-73,9791670
3.1	**CL3MA160.000**	07/02 - 05/03	-50,6416670	-75,1750000	-50,3333320	-73,9791670
3.1	**CL3MA191.000**	07/01 - 05/03	-51,3333290	-74,9166670	-50,8399960	-73,8333320
3.1	**CL3MA192.000**	08/01 - 05/03	-51,7083330	-74,9166670	-51,3333290	-73,8333320
3.1	**CL3MA510.000**	07/99 - 05/03	-53,0674610	-75,1688770	-52,3507980	-74,3333370
3.1	**CL3MA520.000**	09/99 - 05/03	-53,0674610	-74,3333330	-52,3507980	-73,6188310
3.1	**CL3MA530.000**	08/99 - 05/03	-53,6174520	-73,8854910	-52,9007850	-73,1000020
3.1	**CL3MA540.000**	08/99 - 05/03	-53,6174520	-73,1000020	-52,9007850	-72,3188290
3.1	**CL3MA550.000**	08/99 - 05/03	-54,2007790	-72,5521650	-53,4841110	-71,7666670
3.1	**CL3MA560.000**	08/99 - 05/03	-54,2007790	-71,7666670	-53,4841110	-70,8105000
3.1	**CL3MA570.000**	08/99 - 05/03	-53,9174470	-71,3355070	-52,9007710	-70,1188400
3.1	**CL3MA580.000**	08/99 - 05/03	-53,0716120	-71,0021620	-52,3091100	-69,2938330
3.1	**CL3MA590.000**	08/99 - 05/03	-52,7166520	-69,6855030	-52,0999800	-67,9230010

Approach

ED.	*CELL*	*DATE Pro. - Issu.*	*S*	*W*	*N*	*E*
3.1	**CL4AI010.000**	09/02 - 05/03	-45,0500000	-74,0083340	-44,8944430	-73,6083360
3.1	**CL4AI020.000**	09/02 - 05/03	-45,0936110	-74,5000000	-44,9611110	-74,0083360
3.1	**CL4AI030.000**	10/02 - 05/03	-44,0750000	-73,1916670	-43,7958340	-72,9499990
3.1	**CL4AN010.000**	12/99 - 05/03	-23,1347003	-70,6325232	-22,9305334	-70,2708563
3.1	**CL4BB010.000**	08/00 - 05/03	-36,8466260	-73,2762530	-36,5031650	-72,9163000
3.1	**CL4CO010.000**	11/00 - 05/03	-30,3285320	-71,6757230	-30,1071440	-71,4673890
3.1	**CL4CO020.000**	07/02 - 05/03	-30,2177780	-71,5166670	-30,0700010	-71,3583330
3.1	**CL4LL010.000**	02/01 - 05/03	-41,9166670	-74,0083330	-41,6416670	-73,3666650
3.1	**CL4LL020.000**	02/01 - 05/03	-41,9166610	-74,0250000	-41,7333270	-73,7499980
3.1	**CL4LL030.000**	08/02 - 05/03	-41,9166610	-73,4333330	-41,6499960	-72,9833340
3.1	**CL4LL040.000**	08/02 - 05/03	-42,2719399	-72,6950000	-41,9541628	-72,3583355
3.1	**CL4LL050.000**	07/02 - 05/03	-42,4958290	-72,6000000	-42,1791620	-72,3499990
3.1	**CL4LL060.000**	07/02 - 05/03	-42,6683330	-73,8166670	-42,3166680	-73,3666650
3.1	**CL4LL070.000**	08/02 - 05/03	-42,6666670	-73,4500000	-42,2666660	-73,0666650
3.1	**CL4MA110.000**	08/02 - 05/03	-50,3125000	-74,9180560	-50,2641660	-74,8416650
3.1	**CL4MA115.000**	09/02 - 05/03	-50,4688840	-75,0216670	-50,4138860	-74,9666670
3.1	**CL4MA120.000**	10/02 - 05/03	-50,9291670	-74,8466670	-50,4880560	-74,2569430
3.1	**CL4MA510.000**	08/99 - 05/03	-53,6674430	-72,7188330	-53,1674430	-72,1604990
3.1	**CL4MA570.000**	08/99 - 05/03	-53,2509460	-70,9851250	-53,0926110	-70,7517880
3.1	**CL4TR010.000**	12/99 - 05/03	-18,5197220	-70,4250000	-18,3366660	-70,2766650
3.1	**CL4VA010.000**	11/00 - 05/03	-33,0503290	-71,7506340	-32,6669980	-71,4339660
3.1	**CL4VA050.000**	09/02 - 05/03	-33,7833333	-79,0666667	-33,5333809	-78,7167321

Harbour

ED.	*CELL*	*DATE Pro. - Issu.*	*S*	*W*	*N*	*E*
3.1	**CL5AI005.000**	11/02 - 05/03	-45,1013889	-74,3011111	-45,0727775	-74,2297214
3.1	**CL5AI010.000**	10/02 - 05/03	-43,9750000	-73,1250000	-43,9541664	-73,0916668
3.1	**CL5AI050.000**	10/02 - 05/03	-49,2177778	-74,4070833	-49,1786108	-74,3816666
3.1	**CL5AI055.000**	10/02 - 05/03	-48,9338889	-74,3816667	-48,8880554	-74,3094456
3.1	**CL5AI060.000**	10/02 - 05/03	-49,1788889	-74,4500000	-49,0583333	-74,3458326
3.1	**CL5AN005.000**	12/99 - 05/03	-22,1169646	-70,2490917	-22,0530770	-70,1796470
3.1	**CL5AN010.000**	12/99 - 05/03	-23,1094228	-70,4986367	-23,0785920	-70,4403001
3.1	**CL5AN015.000**	12/99 - 05/03	-23,6800611	-70,4435722	-23,6136725	-70,3796836
3.1	**CL5AT005.000**	11/00 - 05/03	-27,1589007	-70,9581044	-27,0022340	-70,8006045
3.1	**CL5BB005.000**	08/00 - 05/03	-36,6415732	-72,9883986	-36,6082231	-72,9526661
3.1	**CL5BB010.000**	08/02 - 05/03	-36,7313889	-73,1236111	-36,6805559	-73,0666670
3.1	**CL5BB015.000**	08/02 - 05/03	-36,7450000	-73,0216667	-36,6941662	-72,9666664
3.1	**CL5BB020.000**	09/02 - 05/03	-36,7724716	-73,1982436	-36,7085833	-73,1204108
3.1	**CL5BB025.000**	02/01 - 05/03	-37,0853297	-73,2240700	-37,0036629	-73,1340706
3.1	**CL5BB030.000**	06/02 - 05/03	-37,6055556	-73,6966667	-37,5513889	-73,6369439
3.1	**CL5BB035.000**	06/02 - 05/03	-37,3919444	-73,6736111	-37,3558331	-73,6344447
3.1	**CL5CO005.000**	11/00 - 05/03	-29,9885312	-71,4040547	-29,8935311	-71,2707218
3.1	**CL5LL005.000**	02/01 - 05/03	-39,9456298	-73,4918574	-39,7946609	-73,3386696
3.1	**CL5LL010.000**	02/01 - 05/03	-39,8951485	-73,4334778	-39,8690373	-73,4015291
3.1	**CL5LL013.000**	05/02 - 05/03	-41,7500000	-73,1027778	-41,6999995	-73,0249988
3.1	**CL5LL014.000**	06/02 - 05/03	-41,8466667	-73,3736111	-41,7919449	-73,2847216
3.1	**CL5LL015.000**	06/02 - 05/03	-41,7972222	-73,1702778	-41,7408339	-73,0813888
3.1	**CL5LL020.000**	06/02 - 05/03	-41,8463889	-73,1327778	-41,8041660	-73,0922229
3.1	**CL5LL025.000**	08/02 - 05/03	-41,5250000	-73,0200000	-41,4633336	-72,9099997
3.1	**CL5LL030.000**	08/02 - 05/03	-41,4883333	-72,9638889	-41,4777780	-72,9455555
3.1	**CL5LL035.000**	07/02 - 05/03	-42,4900000	-73,6900000	-42,3416667	-73,5600010
3.1	**CL5LL040.000**	08/02 - 05/03	-42,5361111	-73,8113889	-42,4249999	-73,7186103
3.1	**CL5LL045.000**	08/02 - 05/03	-42,6300000	-73,7900000	-42,6100002	-73,7433335

3.1	**CL5LL050.000**	10/02 - 05/03	-42,9600000	-72,8416667	-42,8599996	-72,6916677
3.1	**CL5MA570.000**	12/00 - 05/03	-53,1793337	-70,9218338	-53,1643336	-70,8973894
3.1	**CL5MA705.000**	09/02 - 05/03	-54,8850000	-70,0225000	-54,7591669	-69,8766681
3.1	**CL5MA710.000**	10/02 - 05/03	-54,8050000	-70,0127778	-54,6788885	-69,9091664
3.1	**CL5MA715.000**	12/02 - 05/03	-54,7994444	-69,9883333	-54,7799996	-69,9583335
3.1	**CL5MA720.000**	01/03 - 05/03	-55,1958333	-69,6100000	-55,0305561	-69,4875010
3.1	**CL5MA725.000**	01/03 - 05/03	-54,8666667	-69,7633333	-54,6999992	-69,5666663
3.1	**CL5MA730.000**	03/03 - 05/03	-54,7725000	-69,6158333	-54,7661111	-69,6047223
3.1	**CL5MA735.000**	02/03 - 05/03	-54,8452778	-69,6900000	-54,8352776	-69,6705555
3.1	**CL5MA740.000**	10/02 - 05/03	-54,9527778	-69,1619444	-54,9366665	-69,1297230
3.1	**CL5MA745.000**	08/02 - 05/03	-54,9316667	-68,3338889	-54,9027780	-68,2858329
3.1	**CL5MA748.000**	10/02 - 05/03	-54,9583333	-68,4316667	-54,8813898	-68,1950002
3.1	**CL5MA750.000**	08/02 - 05/03	-54,9258333	-68,2730556	-54,8969446	-68,2052774
3.1	**CL5MA755.000**	07/02 - 05/03	-54,9319444	-68,3577778	-54,9169448	-68,3283330
3.1	**CL5MA760.000**	11/02 - 05/03	-54,9480556	-67,7311111	-54,9083335	-67,6499999
3.1	**CL5MA860.000**	10/02 - 05/03	-62,8133333	-61,3000000	-62,7166667	-60,9999999
3.1	**CL5TR005.000**	12/99 - 05/03	-20,2452810	-70,2144557	-20,1705589	-70,1311219
3.1	**CL5TR010.000**	04/00 - 05/03	-20,8288889	-70,2633333	-20,7091663	-70,1683336
3.1	**CL5VA005.000**	03/03 - 05/03	-32,7877778	-71,5516667	-32,7000005	-71,4783337
3.1	**CL5VA010.000**	11/00 - 05/03	-32,9353289	-71,5706333	-32,8642178	-71,5006329
3.1	**CL5VA015.000**	12/00 - 05/03	-33,0460333	-71,6538556	-32,9779753	-71,5427336
3.1	**CL5VA020.000**	08/00 - 05/03	-33,6244444	-71,6680556	-33,5477775	-71,6077777
3.1	**CL5VA021.000**	11/02 - 05/03	-33,5966667	-71,6516667	-33,5683333	-71,6099998
3.1	**CL5VA055.000**	08/02 - 05/03	-33,6466667	-78,8366667	-33,6216665	-78,8094447
3.1	**CL5VA060.000**	08/02 - 05/03	-33,6913889	-78,9497222	-33,6416664	-78,9027774
3.1	**CL5VA065.000**	08/02 - 05/03	-33,6800000	-78,8977778	-33,6388887	-78,8463884

Berthing

ED.	*CELL*	*DATE Pro. - Issu.*	*S*	*W*	*N*	*E*
3.1	**CL6LL010.000**	10/02 - 05/03	-41,5002778	-72,9888889	-41,4969445	-72,9847223
3.1	**CL6VA010.000**	12/00 - 05/03	-32,9297736	-71,5420224	-32,9279124	-71,5389669

Summary

DENMARK

This report provides a status for the Danish ENC production

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Danish waters

The Danish waters have been covered by ENCs since July 2000. The total number of cells are now 363 but will be frequently increasing due to the production of paper charts in better scales where necessary. The produced cells include 30 of the most significant harbours, among which are the harbours according to the HELCOM agreement.

The ENCs are updated weekly and distributed through PRIMAR STAVANGER.

The ENC cell scheme is largely based on a regular grid much like the cell structure described in S-57, version 2 and the source material is the current 62 standard (paper) charts (incl. 30 INT charts). These charts are produced in accordance with international standards and are all in digital vector format.

Verification

For verification the DKHO is using the programs CARIS Easy ENC, Hydroservice dKart Inspector and 7C's ENC Analyzer. Two ECDIS programs, Transas Marine's Navisailor and OSL ECPINS have been installed. These programs together with manual proof reading of the cell contents, present adequate information for quality assurance. The verification is done in accordance with the PRIMAR STAVANGER procedures, and also uses the PRIMAR VRC (Verification Report Checkler).

Greeland and Faroe Islands

There are no plans for ENC production in these areas.

Plans for improvements of the ENCs

Feedback from ECDIS users has revealed that the most pressing task still, is to harmonize the contents of ENCs between neighbouring countries. The problems do not arise from the S-57 standard as such, but more in the different interpretation of the object presentation. Examples are: cables versus cable areas, the density of soundings, different depth contour interval, the use of caution areas, etc.

FINLAND

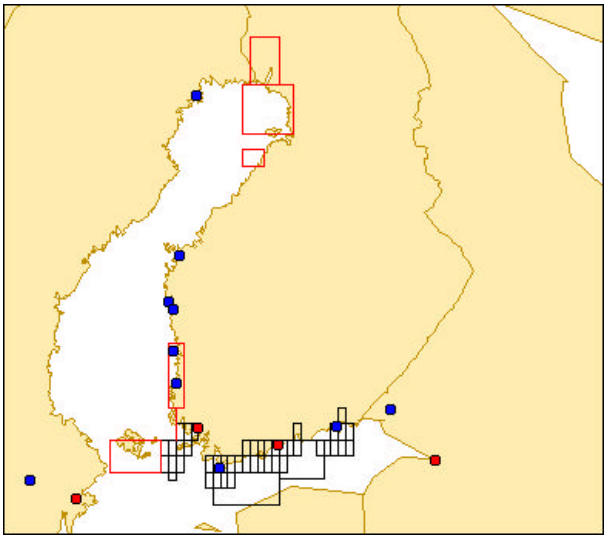
The current status of the released ENCs by the Finnish HO (FHO) and the areas where the production is going on can be seen on the Primar Stavanger Chart Catalog and on the IHO web pages. See also the figures attached.

ENC production

The routes to main ports have been covered by ENCs. This means mainly the ports along the coast of Gulf of Finland. There are 49 ENC cells available at usage bands general (2), coastal (5) and approach (42).

The production of the ENCs for routes to the secondary ports is going on. These are planned to be complete by the end of 2004. Thus the requirement of the Helsinki Commission Copenhagen declaration will be fulfilled. The ENCs will be updated by a 10 days basis.

Finnish ENC cells are validated using dKart Inspector 4.0 SP2 and ENC Analyzer 2.1.3. Also type approved ECDIS is and two ECS's are used for visual verification and ENC tests.



Finland considers these ENCs fully compliant to the SOLAS V chart carriage requirements.

ENC Distribution

The ENCs and their updates will be delivered by the Primar Stavanger.

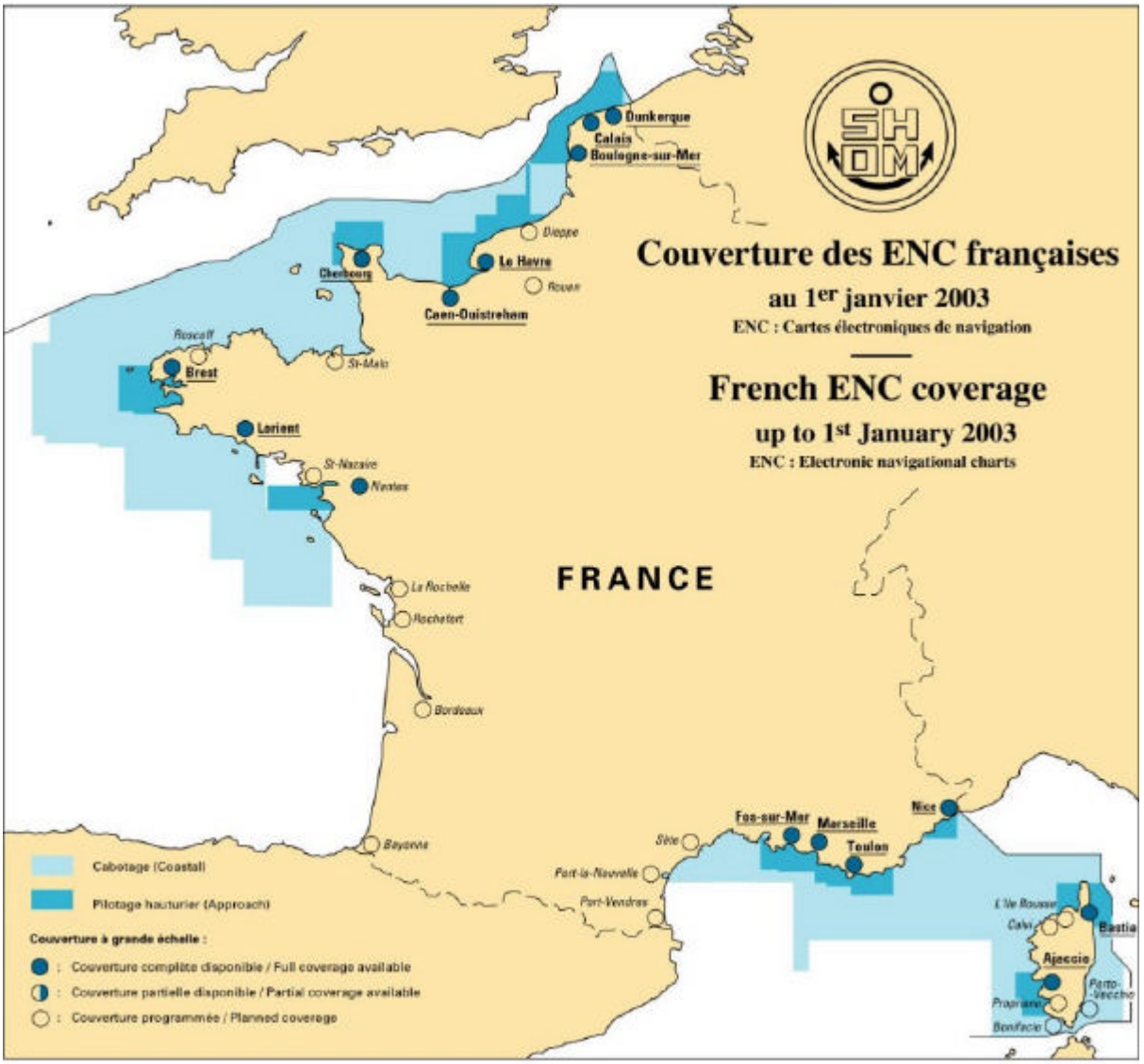
For the time being, ENC's for FMA's own vessels (ice-breakers, research vessel etc.) are distributed by the FHO, but in the future that will be a task of the Traffic Department. ENC's for the Navy are delivered by FHO on request but in the future also Navy will distribute ENC cells to its own vessels.

System Development

The Finnish HO has now a new production line by which both base ENCs and Paper Charts can be produced from a single Master Database (HIS). Some further development is still needed for enhancing the sounding data capabilities and the ER production.

FRANCE

France has produced the ENCs for the international routes and main harbours in metropolitan France from the border with Belgium to Nantes harbour, and in the Mediterranean Sea including Corsica. This represents about 80% of the passenger and goods traffic.



Further plans (including externalization of some parts of the production, but not the final validation) concern the areas of historic and INT responsibilities of SHOM, as well as the French overseas dependencies.

Distribution including E/R profiles is made via Primar Stavanger.

For the time being SENC distribution has not been allowed by France maritime administration due to some reservations on the control of the ENC-SENC conversion process.

GERMANY

1. ENC Coverage

BSH has completed coverage for its areas in the Baltic Sea including numerous ports at large scale ranging from large, international ports down to small pleasure boat marinas. Herewith Germany has satisfied the requirement from the Helsinki Commission to complete coverage in the Baltic Sea by end of 2004.

In the North Sea, Germany has produced one small scale and a medium scale cell as well as the approaches to the two major ports Wilhelmshaven and Bremerhaven, as well as the port of Wilhelmshaven itself (oil tanker port). It is intended to complete North Sea coverage including the Elbe River and the port of Hamburg by 2004. Problem is the high temporal variability of the seafloor in the North Sea requiring frequent New Editions.

All German data are continually being updated synchronously with respective the paper chart corrections.

2. Validation and Distribution

All German data and ER updates are validated by and distributed through the International Centre for ENCs (IC-ENC), UK. They are made available to Distributors through Value-Added Resellers (VARs) with the aim at getting integrated with ENCs from other RENCs and HOs. The cells are being packaged and sold in form of "Cell Units" that correspond to the paper chart coverage of a paper chart of the same scale band. A Cell Unit may contain cells from different scale bands, and may contain data from e.g. several ports, just as a paper chart with a sea area and different harbour plans. As the Cell units are sold ex-gate IC-ENC at a standard price, this packaging represents a considerable prive reduction.

Germany has approved its data for SENC distribution in accordance with the ptrocedures defined by IC-ENC.

GREECE

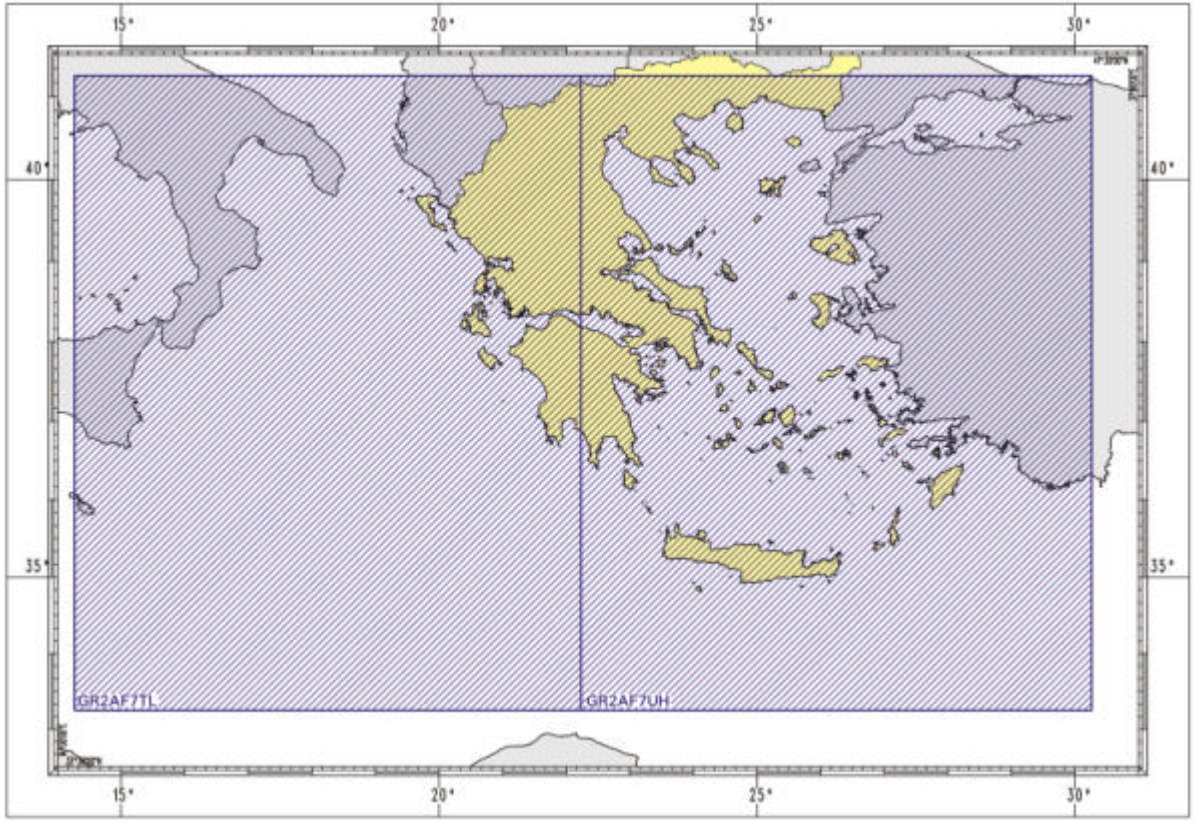
ENC Development in Greece

In 2001, Hellenic Navy Hydrographic Service (HNHS) has signed a contract with the private sector to co-operate in the development of ENCs and Updates, which will cover the Greek area of responsibility. This project has started on March 1, 2001 and according to plans it's completion is estimated during the first quarter of 2004.
The first phase of the production has been based on selected charts of HNHS paper chart portfolio, which has been digitised and transformed into S57 Ed 3.1 format. It should be noted that for all, converted to S57 Ed 3.1 charts there is an Updating service in progress, according to which the contractor generates the necessary ER files based on HNHS's monthly issued Notices to Mariners.

At a second phase, after eliminating all redundant data that occur due to overlapping of the paper charts, the dataset will be cut into cells to generate a seamless database for the different Usage Bands. The cell scheming (Figures 1 to 5), which is harmonized to the WEND principles and covers the Greek area of responsibility, has been finalized and the production plan is shown in the following table.

		June 03		March 04	
	Total number of Cells	**Number of Cells**	**%**	**Number of Cells**	**%**
General	2	2	100.00%	2	100.00%
Coastal	83	4	4.82%	83	100.00%
Approach	14	9	64.29%	14	100.00%
Harbour	49	26	53.06%	49	100.00%
Berthing	159	31	19.50%	159	100.00%
	307				

GENERAL



Source data

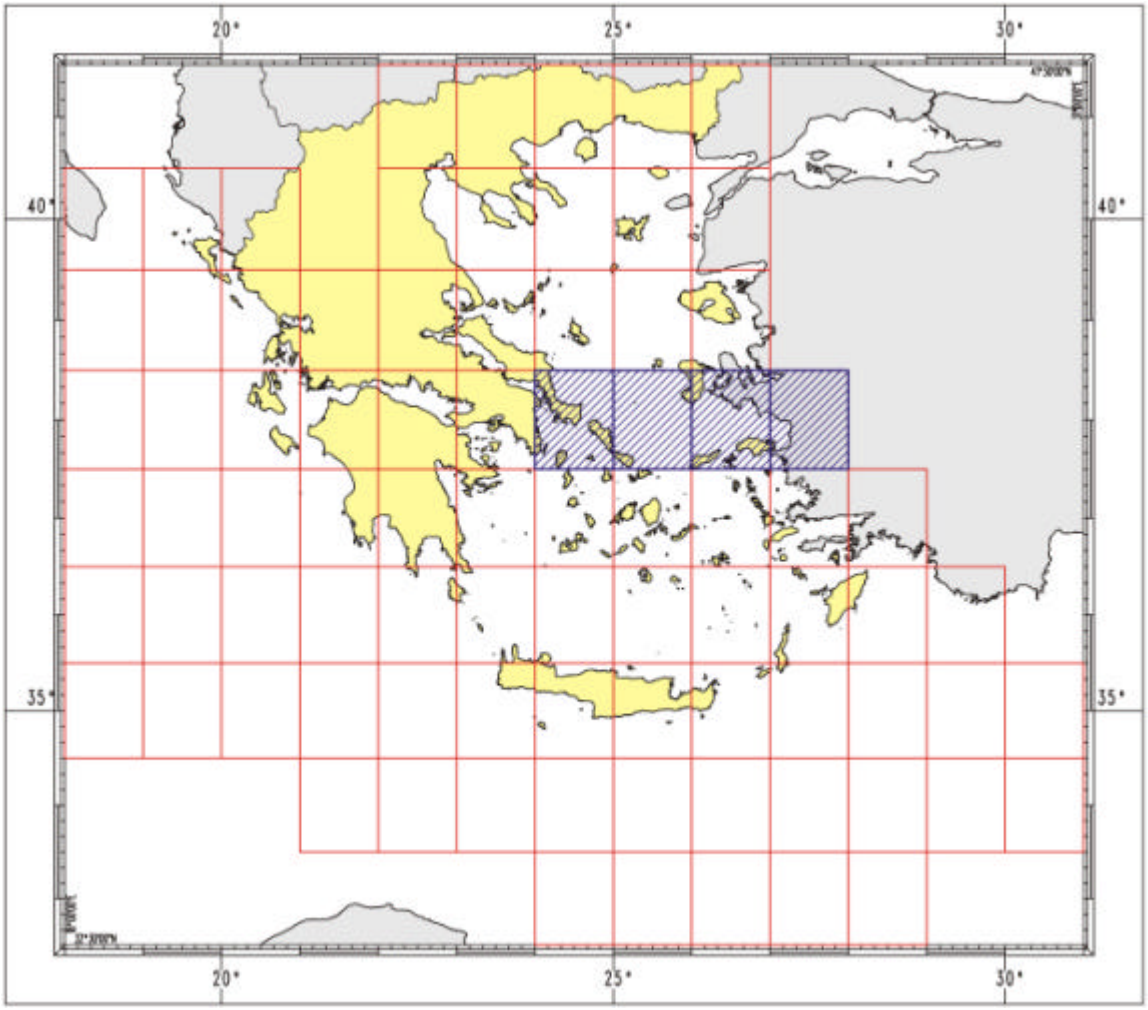
Paper Charts of scales
1:300001 – 1:2250000

Status of production

	Cells	**%**
June 03	2	100.00%
March 04	2	100.00%

Figure 1

COASTAL



Source data

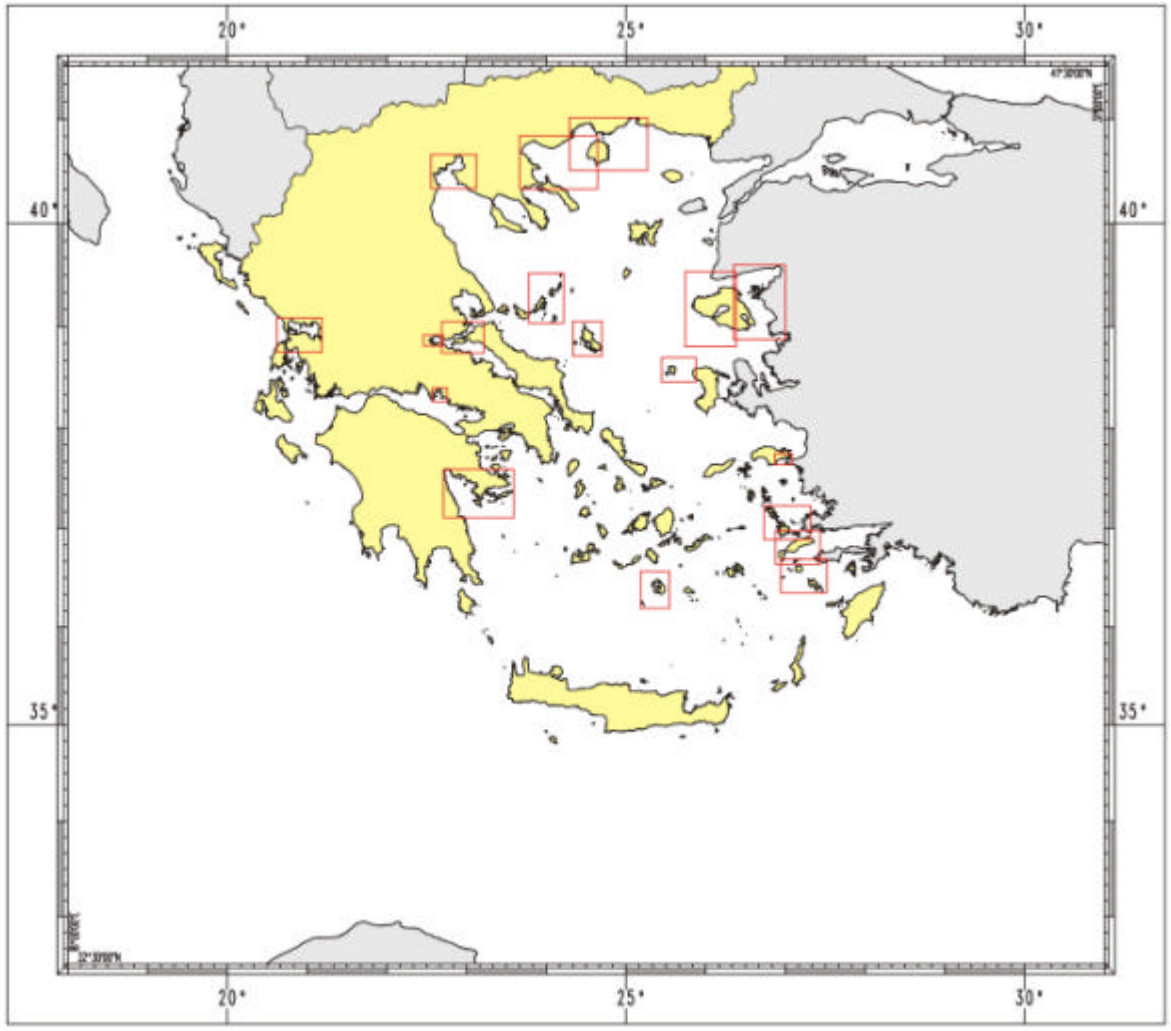
Paper Charts of scales
1:80001 – 1:300000

Status of production

	Cells	%
June 03	4	4.82%
March 04	83	100.00%

Figure 2

APPROACH



Source data

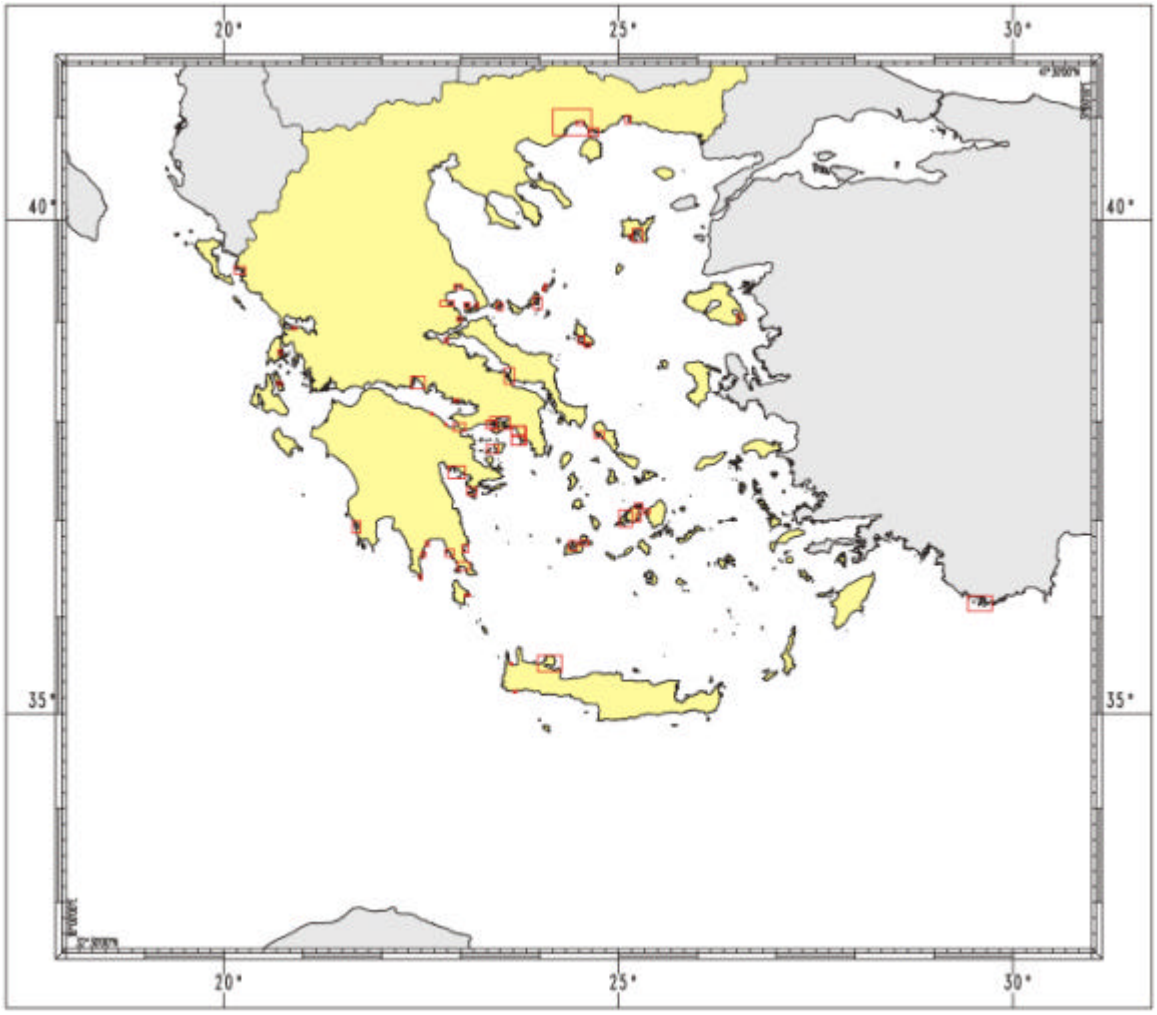
Paper Charts of scales
1:40001 – 1:80000

Status of production

	Cells	%
June 03	9	64.29%
March 04	14	100.00%

Figure 3

HARBOUR



Source data

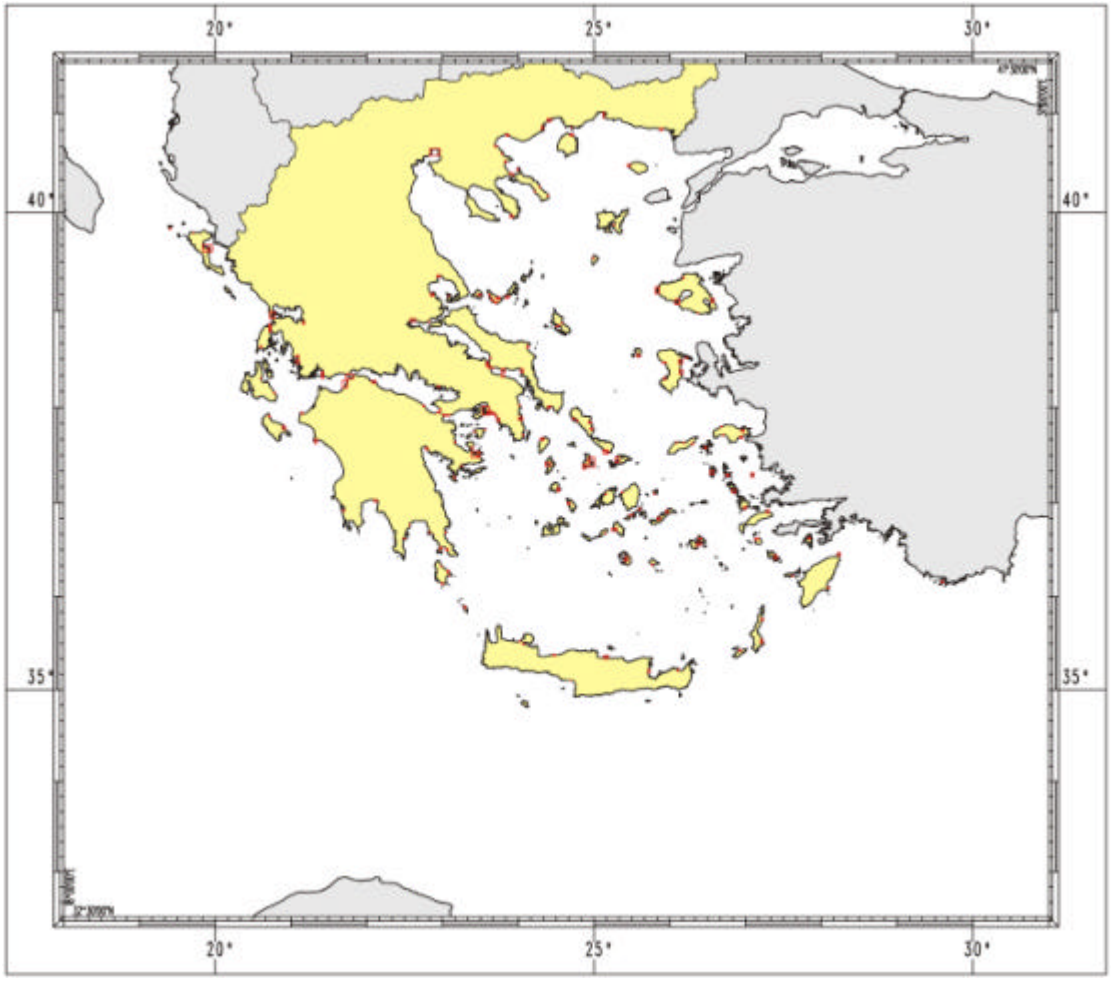
Paper Charts of scales
1:10001 – 1:40000

Status of production

	Cells	%
June 03	26	53.06%
March 04	49	100.00%

Figure 4

BERTHING



Source data

Paper Charts of scales
= 1: 10000

Status of production

	Cells	%
June 03	31	19.50%
March 04	159	100.00%

Figure 5

INDIA

Introduction :

The National Hydrographic Office has produced 248 ENCs on different scales and for different purposes in S-57 Edn. 3.1 format by incorporating the latest hydrographic data available. The Paper Chart Production has reached to 190 charts after installation of Image Setter. Remaining ENC and paper charts using ENCDB are being taken up on priority.

Progress of ENC Production -

Production of 220 ENCs for navigational purposes covering coastal, approach and harbour, has been almost completed. 42 charts involving small scale charts, are in the compilation stage using latest survey data.. The ENCs produced contain latest survey data and the new editions of the existing charts. All the charts converted under INT Chart Scheme for Area 'J' are based on the revised INT Limits. The list of ENCs is given in Appendix 'A'.

Validation of ENCs -

The office has completed validation of 248 ENCs in S-57 Edn. 3.1 format. Manual and automatic modes of validation has been used to validate these ENCs, using S/W tools. In order to resolve the common issues of validation in WEND situation, it is felt that a comprehensive validation S/W be developed under the authority of IHO to enable the National HOs to ensure reliable and systematic validation of ENCs on a common standard.

Marketing of ENCs -

Presently the office is investigating the modus operandi for marketing of our ENCs. As regards encryption of ENC data sets, we are studying the encryption/decryption technology as per IHO Security Scheme. We are planning to market our ENCs data set after appointment of suitable Agent/VAR/Distributors and/or UKHO bilateral arrangements by June 2004.

Updation of ENCs through N to M–

The ENC data set are updated and corrected up to 28 Feb 2002. Now all the changes promulgated through Notices to Mariners are being incorporated in the data sets for making data sets up to date before marketing.

ECDIS Equipment –

There are a very few manufacturers who produce ECDIS Equipment meeting IMO/IEC specifications with due type approval from the competent national authorities. Unless trade enlarges this aspect, the usage and economic viability of ENC program will be restricted. It is also necessary that IHO take up with IMO to make the fitment of ECDIS as a mandatory equipment fit in ships of GRT 300 to enable ENC utilisation with consequential economic and safety benefits under SOLAS regulations.

RENC & WEND –

A large number of ENCs are getting ready for marketing by June 2004. North Indian Ocean Regional Hydrographic Commission has been established since Jan 2002 with India as Chairman of NIOHC. We are looking at the options of a RENC vis-à-vis joining other RENCs for the exchange and marketing of ENCs and their updates. India is willing to consider its ENCs for use in the SHARED Program. There is an urgent need for more transparent and remunerative returns based on principles of equity and justice, vis-à-vis the quality of data, for which some well set out mechanism may be required to be formulated at IHO/WEND.

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JAPAN

3 ENC production

JHOD publishes about 600 nautical paper charts to cover Japanese waters. Small-scale ENC data are created from paper charts at the scale less than 1:80,000 (see table 1). ENC data for harbor and approach are created from harbor plans and approach charts (see table 2). ENC data cover the route for international shipping of around Japan. By the end of March 2002, JHOD completed ENC data for major harbors and their approaches. Development of ENC data for local harbors and fishery ports is under progress. 288 paper charts have been converted into 463 ENC cells. ENC cell size is based on a regular grid of the cell structure as defined in S-57, version 2. Table 1 and 2 show ENC CD-ROMs and their numbers of referred paper charts. More detailed information can be found on JHOD website. (http://www1.kaiho.mlit.go.jp/)

Table 1 - Small scale ENC

	Issue Date	S-57	Referred paper charts
E3001	Sep. 1998	Ed. 3.0	38
E3002	Nov. 1999	Ed. 3.0	45
E3003	Nov. 1999	Ed. 3.0	46
E3004	Sep. 2000	Ed. 3.0	58

Table 2 - Harbor and approach

ENC No.	Issue Date	S-57	Referred paper charts
E3011	March 1998	Ed. 3.0	16
E3012	Jan. 1999	Ed. 3.0	13
E3013	March 1999	Ed. 3.0	22
E3014	Aug. 1999	Ed. 3.0	17
E3015	June 2000	Ed. 3.0	23
E3016	Nov. 2000	Ed. 3.0	25
E3017	Feb. 2000	Ed. 3.0	17
E3018	Mar. 2001	Ed. 3.0	10
E3019	June 2001	Ed.3.0	11
E3020	Nov. 2001	Ed.3.0	12
E3021	Mar. 2002	Ed.3.0	18

4 Electronic Notices to Mariners

"Notices to Mariners (in print)" include small corrections for paper chart and for ENCs, and are issued every Friday. "Electronic Notices to Mariners (ENtMs)" are issued on the last Friday in every month. ENtMs include update cell files (ER data) to maintain ENCs. ER data are created from small corrections and new editions of paper charts.

5 The price of ENC and ENC updating service

Prices of CD-ROM with small scale ENCs are ¥73,200 (tax excluded) each. Prices of CD-ROM with large scale ENCs are ¥37,100 (tax excluded) each. ENC updating service (ER) costs ¥2,400(tax excluded) per month. ENC and ER are on sale through the Japan Hydrographic Association (JHA). (http://www.jha.or.jp/)

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SPAIN

The total number of ENC produced by May 2003 is the 78. They are divided as follows:

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Nav.Purp.	**1**	**2**	**3**	**4**	**5**	**6**	TOTAL
Cells		3	16	25	34	-	78

All of them are maintained and available for distribution through IC-ENC .

N. B.: For more information, please contact www.ic-enc.org and www.iho.shom.fr

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THE NETHERLANDS

Early 2000 onwards NLHO started ENC-production with the focus on the usage band "coastal" for the NL continental shelf and the usage bands "approach" and "harbour" for the Europoort area; bearing in mind that already a complete RNC (ARCS) coverage has been established in co-operation with UKHO.

At present the Netherlands area of responsibility is fully covered with sufficient ENC's in the usage band "coastal". Also the approaches of Europoort, Flushing/Terneuzen and Den Helder are covered in the usage band "approach" and "harbour".

Within two years the approaches of Ijmuiden/Amsterdam and Delfzijl/Emden will become available together with some scale ENC's in the usage band "general". From 2007 onwards there will be ENC's available of the inland waters navigable by SOLAS-shipping (other than the above mentioned approaches) and Caribbean Sea; these waters are already available as RNC (ARCS).

From 2007 onwards there will be an increasing difference in content of ENC's and paper nautical charts. ENC's are meant to become a more and more representative presentation of the actual and dynamic true maritime environment. The paper nautical chart will stay relatively static (but still sufficient for save navigation together with other nautical publications), bearing in mind that the Print on Demand (PoD) developments are a step forward in the direction to the content of this future ENC.

Beside the production of ENC's, there is also an increasing exchange of S-57 data (gridded bathymetry, obstructions, navaids, etc) with especially the port authorities of Rotterdam and Schelde-area; this facilitates an efficient co-operation in favour of ENC-production progress and initiatives like IPPA/Inland ECDIS.

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NORWAY

NHS has during the last year continued the ENC production with a goal to have complete ENC coverage for Norwegian coastal waters within 2007. The task also includes resurveying of waters of high significance. ENC's are produced from source data (primary data) in a combined ENC/paperchart production process. So far the production has been focused on ENC's in the user band "approach" and "harbour", but expanding the production to other user bands are under consideration. The NHS has recently (with effect from May this year) been certified to ISO 9001:2000.

NHS has partly outsourced its production, and two private companies are now engaged in ENC production. Distribution of data is made via Primar Stavanger. Norway has also approved its data for distribution in accordance with Primar Stavanger for SENC distribution.

In the second half of 2002 an upgrading of the ENC production flow line was completed, and a new S-57 translator was implemented into the production line. New ENC's are now produced according to S-57 version 3.1, while previous produced ENC's gradually will be upgraded to version 3.1 in accordance with issuing of New Editions. Updating via ER profiles is carried according to "Notice to Mariners".

The current status for ENC production is shown in the table below/

Usage Band	ENC Cells produced	% Total ENC Coverage	Equivalent paper Charts
Berthing	0	0	0
Harbour	64	65	27 (Approx.)
Approach	382	53	70 (Approx.)
Coastal	0	0	0
General	0	0	0

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SWEDEN

The Swedish HO is very much aware of the fact that the database has to be continuously updated for ENC production and the delivery of ERs. There is no capability yet to produce ERs, which means that the updates are sent as new editions. However, work is being done to create such a capability.

For the verification Sweden is using the dKart Inspector and ENC Analyser. The cell scheme is based on the preparatory work of S-57 ed. 3, which is an amended version 2 scheme and which allows cell sizes between 8° x 8° down to 3.75' x 3.75'.

For the delivery of ENCs Sweden cooperates with the PRIMAR-Stavanger. At moment around 200 ENC cells are delivered to PRIMAR-S. First in the production line were nautical charts in a scale of about 1: 250 000 covering the Swedish coastal waters. Also the charts in larger scale covering the Swedish side of the Sound had a very high priority. Thus by now its is possible to sail around the Swedish coast in the open sea up to the Bothnian bay. Also for the largest ports the ENCs are available. The ENC production continues with a priority for primary traffic lanes and ports. For the Bothnian bay new produced charts including ENCs in the scale 1: 250 000 are under production for publishing next year.

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UNITED KINGDOM

Production

By May 2003, the UKHO had produced 350 ENCs and 220 of these ENCs were available for distribution through IG-ENC and the UKHO's ENC service.

The UKHO has the capacity to produce about 20 ENCs per month (either as new cells, new editions or as a mixture of both).

All of the UKHO's ENC production processes are ISO 9001:2000 certified.

Coverage

The main areas of geographic coverage of the UKHO's ENCs are the waters around the UK and parts of the Mediterranean Sea, the Red Sea and the Gulf. Plans to extend the coverage to other parts of the world are presently under consideration.

Each of the UKHO's ENCs is broadly equivalent to a paper chart both in terms of its area of coverage and its content.

Data Capture and Verification

Initial data capture is contracted out to a company in India (IIC). This reduces the average in-house production time for new cells from 6 to 3 weeks.

The verification of data from IIC and all work on the production of updates for ENCs and new editions is done in-house in the UKHO.

Training and Assistance

UKHO is keen to see the successful uptake of ECDIS using ENC, and is willing to assist other nations to produce, maintain and distribute ENCs.

UKHO has developed an international training course in ENC production and this course is registered with IHO.

For further information, please contact:

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United Kingdom Hydrographic Office
Admiralty Way
TAUNTON
Somerset TA1 2DN
United Kingdom

Tel: +44 (0)1823 337900 Ext.4201
Fax: +44 (0)1823 351945
E-mail: Peter.Wright@UKHO.gov.uk
www.ukho.gov.uk

28 May 2003

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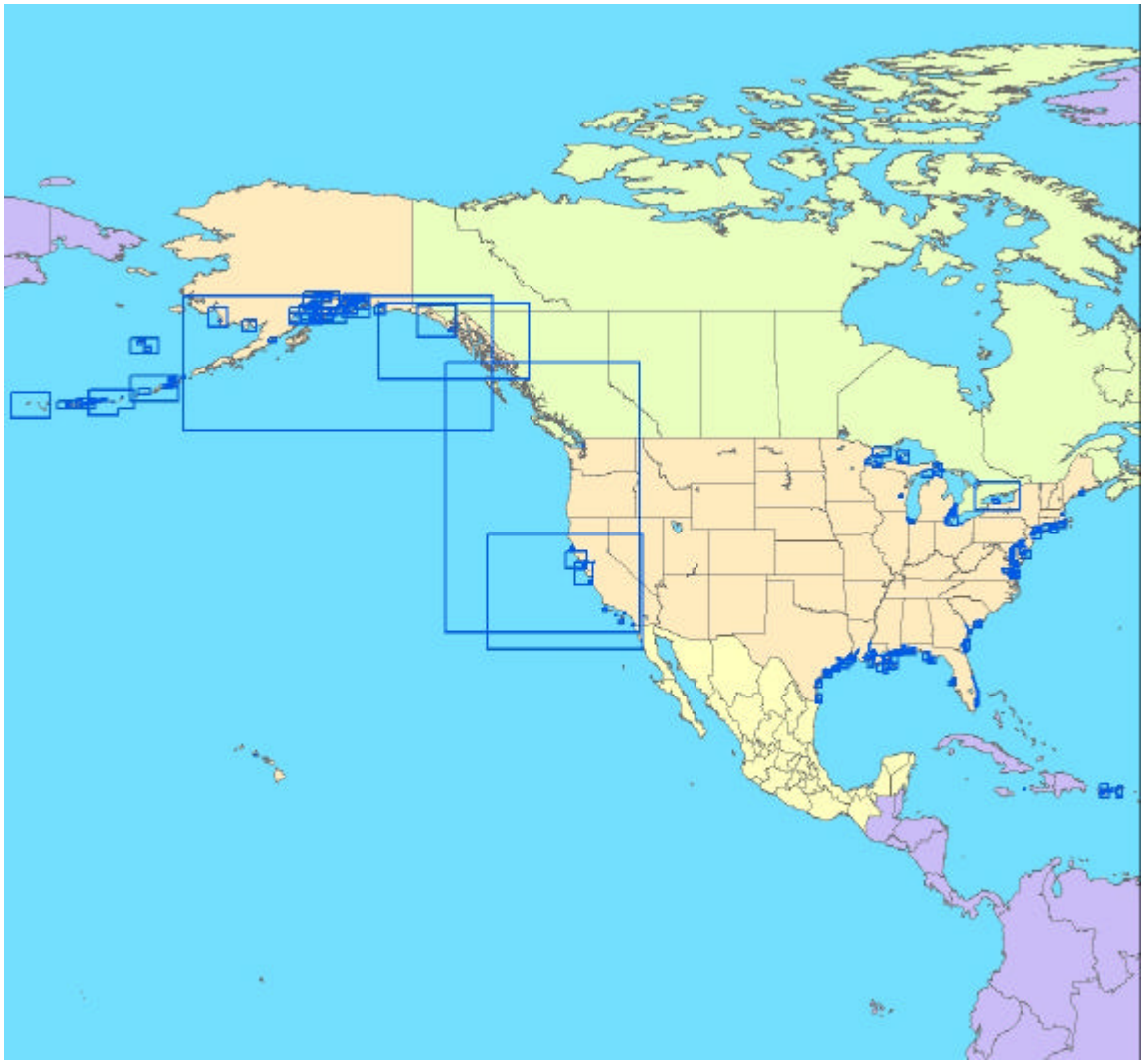
UNITED STATES (NOAA)

1. The following table provides the status of ENC production for the United States (NOAA) as of April 10, 2003.

Paper	Raster	ENCs	Equiv.'t Paper charts	Version One	Version Two	Active Updates
1002	1002	259	259	39	220	220



2. The short-term goal is to provide ENC coverage of the major commercial ports in the U.S. This will require approximately 200 ENCs. Ninty percent of this goal has been achieved. The remaining 10 percent will be completed in October, 2003. Upon completion of this goal, approximately 400-450 additional ENCs will be prepared.

The first 60 ENCs that were produced have reduced content and are intended for deep draft navigation only. These ENCs are referred to as "Version One" data in the table above. "Version Two" ENCs contain full chart detail except for roads, railroads and land contours. All ENCs presently in work, and all ENCs to be produced in the future, will be Version Two. Version One ENCs will be upgraded to Version Two as time and resources permit.

Up-to-date information about the U.S. ENC program and the U.S. raster chart program can be found at the Web site http://NauticalCharts.noaa.gov/.

3. ENCs are being produced using the LaserScan Automated Map Production System 2 (LAMPS2). Quality Control is being done primarily using dKart Inspector.

4. Monthly updating of the completed ENCs is being performed. ENC corrections are not being distributed as incremental update. Rather, an entire new ENC is generated and re-issued.

5. NOAA has published the announcement that makes its ENCs "official" and suitable for navigation. Mariners may now use those ENCs in lieu of paper charts when using a type-approved ECDIS aboard vessels and in situations conforming to U.S. Coast Guard regulations. To read this announcement, go to the URL http://www.gpoaccess.gov/fr/index.html and search on "Electronic Navigational Charts."

6. Distribution of the NOAA ENCs is being done using the Internet. The ENCs are distributed for free. The URL for downloading ENCs is http://NauticalCharts.noaa.gov/mcd/enc/index.htm.

   Since distribution began, 534,349 ENCs have been downloaded. A voluntary registration system provides the following statistics about those downloading ENCs and choosing to register.

organization_type	**Number identifying themselves as being in this category**
Gen Public	5424
Business	2902
None specified	2621
Not Assigned	1841
Academia	1762
Consultant	1595
Non-profit	1099
Research	842
Military	703
State Gov't	332

Utility	298
Non-NOAA Federal	294
Local Gov't	261
NOAA	250
Media	186
Foreign	140
Legal	133
Foreign Gov't	91
Foreign Business	78
Foreign Academia	55
Tribal Government	26
Congressional	23

Total = 20956

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