



SPAIN

NATIONAL REPORT

**TO THE 17th MEETING
OF THE MEDITERRANEAN AND BLACK
SEAS HYDROGRAPHIC COMMISSION
(MBSHC-17)**

**ATHENS, GREECE
1 - 3 JUNE 2011**

**Instituto Hidrográfico de la Marina
Cádiz - España**

1. Hydrographic Service

Instituto Hidrográfico de la Marina (España). There haven't been relevant modifications in the organization of our Hydrographic Service since the last meeting. Our organization, mission and different kind of services offered can be found at <http://www.armada.mde.es/i hm>.

This report cover the period September 2009 - May 2011.

2. SURVEYS

2.1. Coverage of new surveys

Since up to the 97% of the area under our responsibility in the Mediterranean Sea is properly surveyed, our hydrographic efforts have been focused on resurveying areas with the oldest hydrographic data.

In the last two years, a total of 23 surveys have been carried out to update the Mediterranean Sea cartography and nautical publications. These surveys have been performed in the coastal areas of the Iberian Peninsula.

All surveys have been performed according to publication SP-44 (5th edition) requirements, assigning areas of interest to the proper hydrographic ships and equipment.

We have continued our plan of surveying all our main and secondary harbours and their approaching channels to accomplish a 100% bottom coverage, by using shallow waters multi-beam echosounders. These surveys cover from the South to Northeast coasts of the Iberian Peninsula and Balearic Islands. For this purpose the IHM uses 12 metres long hydrographic survey launches (HSL), fitted with full bottom coverage detection systems, which means fitting onboard specialized multibeam echosounders for shallow waters.

This IHM has also been surveying the Spanish EEZ one month per year since 1995. These surveys are carried out by a hydrographic team onboard the Oceanographic Research Vessel (ORV) "Hespérides". As a result, a 20% of the EEZ in the Mediterranean Sea is currently covered.

Work Planning

Following the fourth and fifth editions of S-44, the surveys have been planned considering the characteristics of the relevant navigational area. This requirement means that we must choose the appropriate hydrographic vessel for each survey considering equipment, capability and endurance.

Please find below one graphic displaying the coverage and quality of the bathymetric surveys.



Graphic 2.1. - Hydrographic Surveys from September 2009 to May 2011, Spanish Mediterranean coast.

2.2. New technologies and / or equipment.

The Spanish Hydrographic Vessel (HV) “Tofiño” and “Malaspina” were fitted with one SIMRAD EM-300 multibeam echosounder for deep waters (up to 5000 m) and a SIMRAD EM-302 multibeam echosounder respectively. Since 2004, the aforementioned vessels have improved the quality and reliability of the scheduled annual surveys (three to four surveys per year).

Technical software in use has been updated as developers improved them. This software covers the tasks of data acquisition, processing and management. Our new data acquisition software allows for the display of a ENC or orthophoto while surveying.

The possibility of using Side Scan Sonars (SSS) has been reduced in the past years, so this IHM initiated a program to overcome this limitation with the purchase of a long-range high-resolution synthetic aperture sonar (SAS). It was fitted onboard “Tofiño” to provide full coverage of port approach channels and mooring areas, which is beyond the capabilities of HSLs. This SAS is currently still undergoing tests, but they are expected to be completed by July 2011.

A SSS to be employed in shallow waters boats has already been acquired. It will permit to perform IHO Special order surveys by the combined use with single beam echosounders.

This IHM is entering into agreements and arrangements with government agencies with responsibilities over the sea environment and multibeam echosounding capabilities. These arrangements are aimed to the use of their vessels to acquire bathymetries according to IHO specifications, and to input those bathymetric data into the IHM database.

WECDIS.

On September 2010 IHM installed a new WECDIS equipment in ENC Department, very useful to check ENCs and AMLs produced in IHM on a continuous basis.

Photogrametry.

The Photogrametry Section of the IHM has the fundamental mission of providing the necessary land information to produce Nautical Cartography and support to Hydrographic Ships.

Our products are Planimetric and altimetric land information of the coast line. We are currently working with three photogrammetric workstations capable of capturing three-dimensional data in a "Micro-Station". Besides we are currently performing tests of several software tools for the automated generation of digital terrain models and ortho-photos.

2.3. New ships

The Spanish hydrographic fleet lists two major hydrographic survey vessels, two medium-sized vessels and two launches (HSL). All of them fit multibeam echosounders except the medium-sized vessels.

Those two medium size vessels will be replaced in the near future. There are currently two projects under development to build newer vessels; one of them is to replace the medium size survey vessels but it is being delayed due to the financial situation, and the other is to build a oceanographic / hydrographic vessel which is being developed and it is scheduled for 2016.

2.4. Problems encountered

NTR.

3. NEW CHARTS & UPDATES

3.1. ENCs

3.1.1. Production

Up to date, Spain has produced 59 ENC's covering the area of this commission (out of an overall figure of 120 ENC's produced), which can be classified according to their navigational purpose as follows:

Purpose 2 General	Purpose 3 Coastal	Purpose 4 Approaches	Purpose 5 Harbour
1	11	25	23

Table 3.1.- ENC cells.

Since the last MBSHC Conference, 34 new editions and 249 updates have been produced.

At the end of 2010 we finished the project that began in 1999. This project has been extended with the following ENC's in the Mediterranean Area.

Purpose	Scheduled	Produced
3	1	1
4	21	0
5	41	1
Overall	63	2

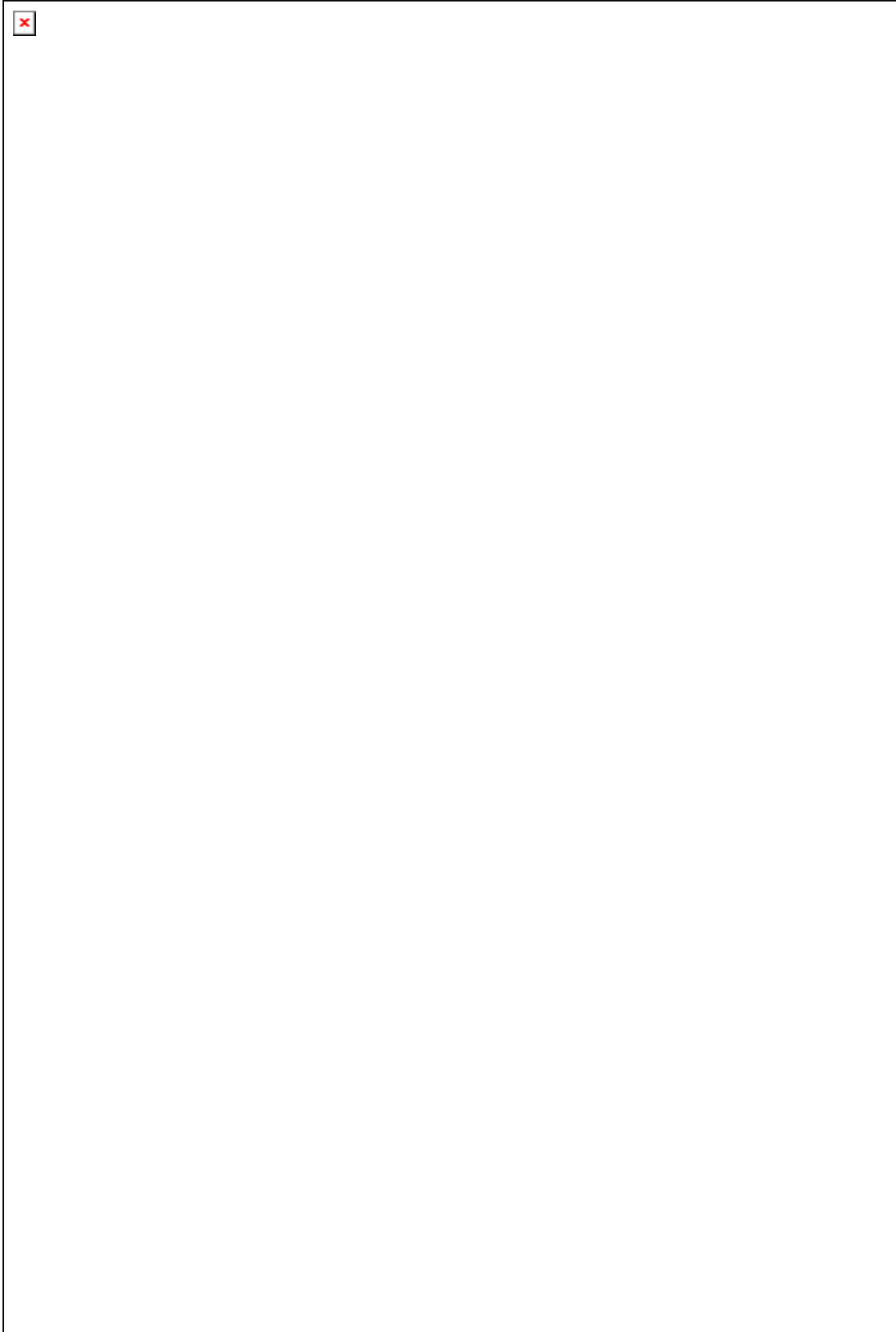
Table 3.2.- New ENC projects.

The aim of the additional project is to get full coverage on navigational purpose 4 for the entire Spanish coast, and to cover with navigational purpose 5 other ports, such as Marinas and small fishing ones, in addition to the main ones already covered.

The following table summarizes the current production status in the Mediterranean Area:

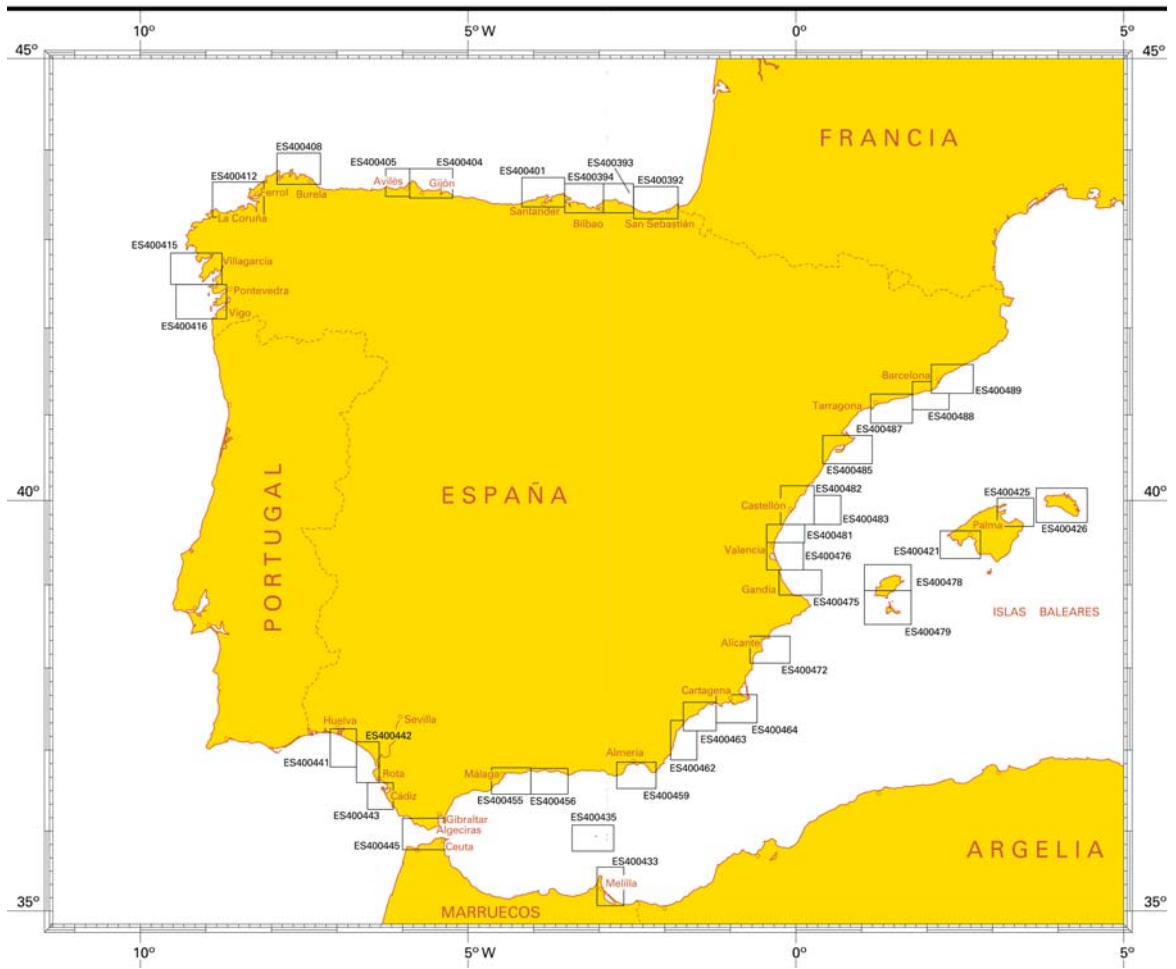
Purpose	Scheduled	Produced
1	0	0
2	1	1
3	11	11
4	46	25
5	63	23
6	0	0
Overall	120	59

Table 3.3.- ENC production status in Mediterranean Sea with the new project.



Graphic 3.1.- Full coverage at small and medium scale (purposes 2 & 3)

APROCHES



Graphic 3.2.- Coverage at large scale, approaches (purposes 4)

PUERTOS



Graphic 3.3.- Coverage at large scale, ports (purposes 5)

3.1.2. Cooperation.

The IHM continues its ENC production, fulfilling IHO recommendations regarding the improvement of ENC vertical and horizontal consistency so that the display in ECDIS systems is also improved

Chart limits have been agreed with the neighbouring countries.

3.2. ENC Distribution Method

Spain is member of the RENC known as International Center for ENC (www.ic-enc.org/). All ENCs from Spain are distributed by IC-ENC. This RENC performs validations and consistency checks before distribution. There is a close relation of collaboration and research with that centre, aiming the optimisation of production and validation processes.

3.3 RNCs

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3.4 INT Charts

International Charts produced since the XVI MBSHC Conference and published covering areas of the Commission are listed in the following table:

INT No	National No	Title	Edition
302	7C	Mediterráneo Oriental	III - Oct 2009
3164	464A	Aproches de Cartagena y Escombreras	VIII- Oct 2009
3167	472A	Aproches de Alicante	III - Dec 2009
3173	4811	Puerto de Valencia	V - Mar 2010
3172	481A	Aproches de Valencia	V - Jun 2010
3176	4821	Puerto de Castellón	IV - Mar 2011
3185	4891	Puerto de Barcelona	IX - Apr 2011

Table 3.4.1

International Charts planned in 2011 second semester and 2012:

INT No	National No	Title
3175	482A	Aproches de Castellón
3180	4871	Puerto de Tarragona
3179	487A	Aproches de Tarragona

Table 3.4.2

Status of the production of International charts assigned to Spain:

Scale	Assigned	Produced
Small 5.000.000-1.000.000	1	1
Medium 350.0000-100.000	6	1(6)
Large 80.000-10.000	18	18
OVERALL	25	20 (25)

Table 3.4.3

The production of the medium scale charts has not been implemented because the national scheme differs from the INT scheme.

3.5 National paper charts

National paper Charts produced since the XVI MBSHC Conference covering areas of the Commission are listed in the following table:

National Nº	Title	Edition
4331	Puerto de Melilla	II - Sep 2009
48A	De cabo de la Nao a Sagunto.	II - Nov 2009
424	De Porto Colom a cabo Farrutx	II - Dec 2009
472	Bahías de Alicante y Santa Pola	III - Dec 2009
464	De cabo Tiñoso a cabo de Palos	V - Jan 2010
4451	Puerto de Algeciras	IX Mar 2010
4731	Puerto de Villajoyosa y Benidorm	III - Mar 2010
4812	Puerto de Sagunto	V - May 2010
488	De Vilanova i la Geltrú a Barcelona	IV - Sep 2010
4831	Islotes Columbretes	III - Dec 2010
2B	Península Ibérica	I - Dec 2010
481	De Valencia a Sagunto	V - Jan 2011

Table 3.5.1

3.6 Other charts.

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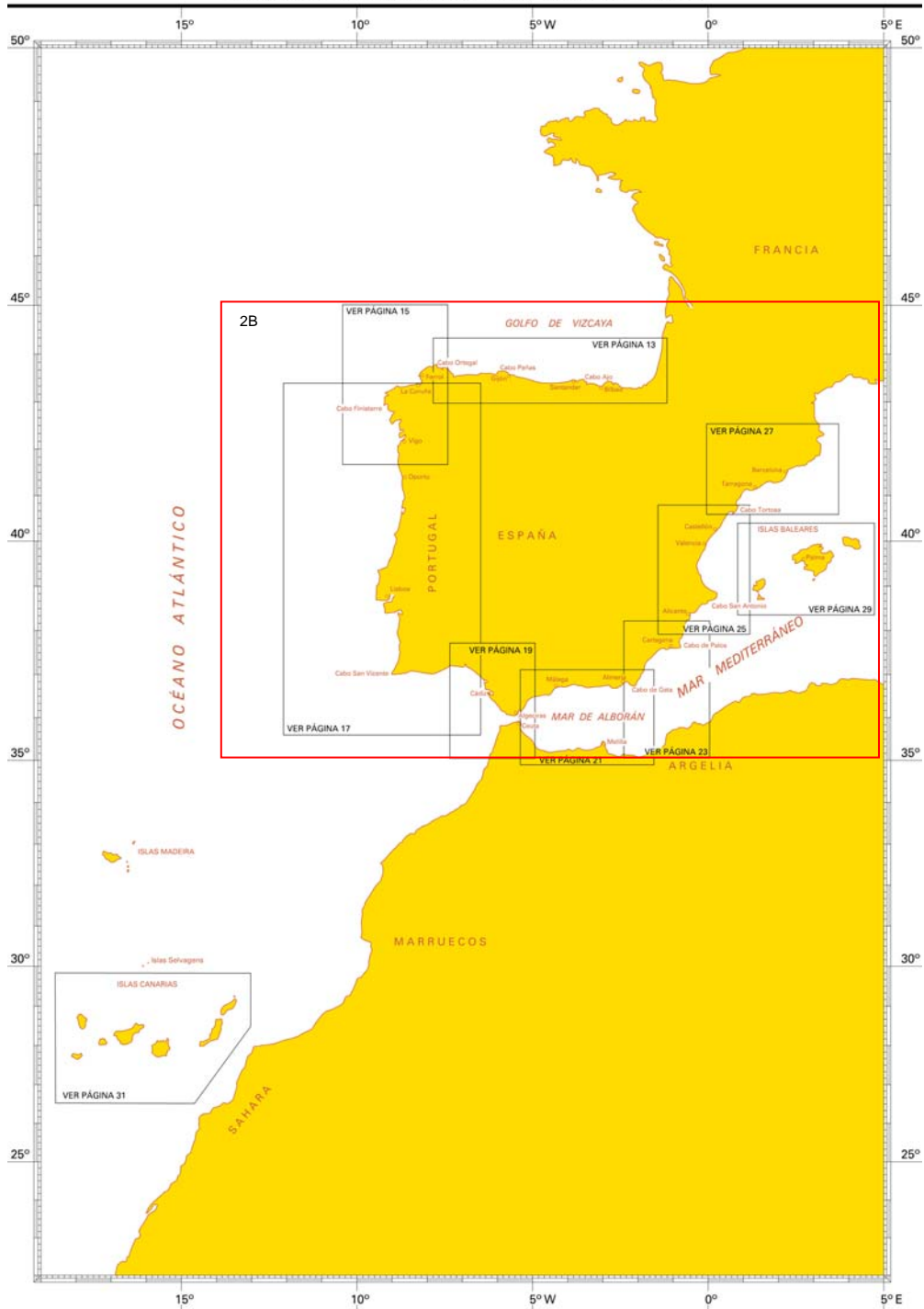
3.7 Problems encountered.

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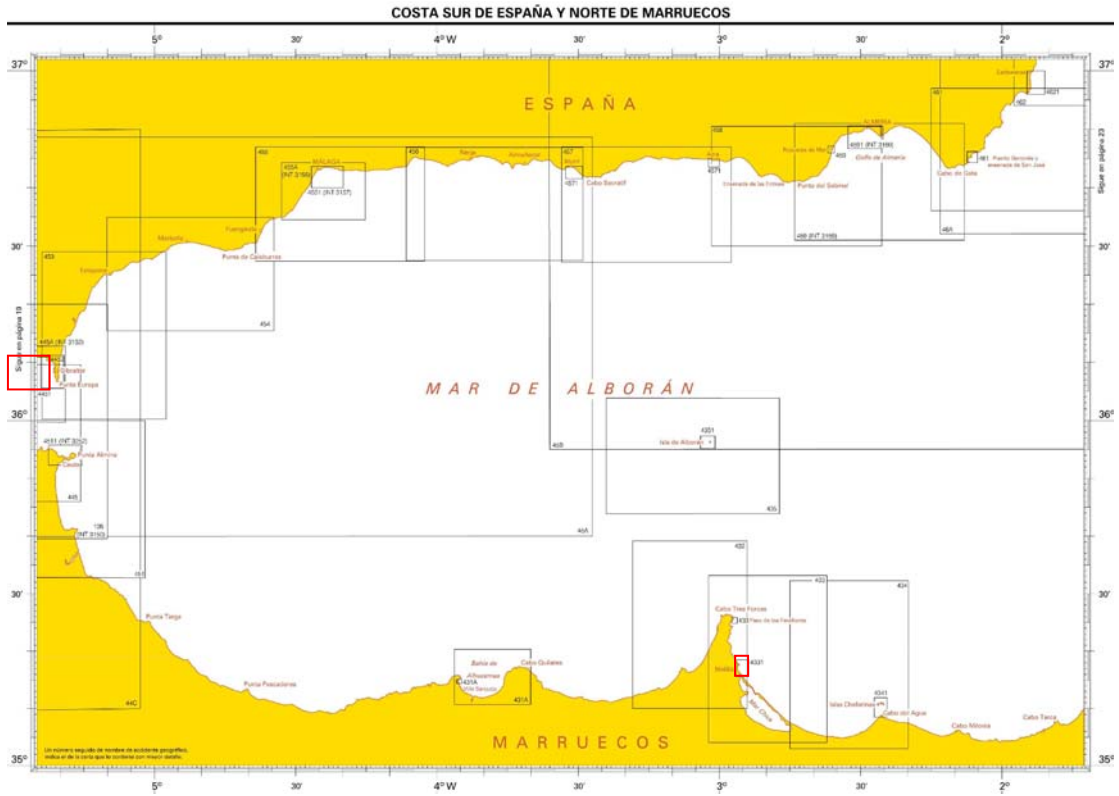


Graphic 3.4.- Area of the paper chart 7C (Eastern Mediterranean Sea)

PENÍNSULA IBÉRICA, ISLAS BALEARES Y CANARIAS - ÍNDICE

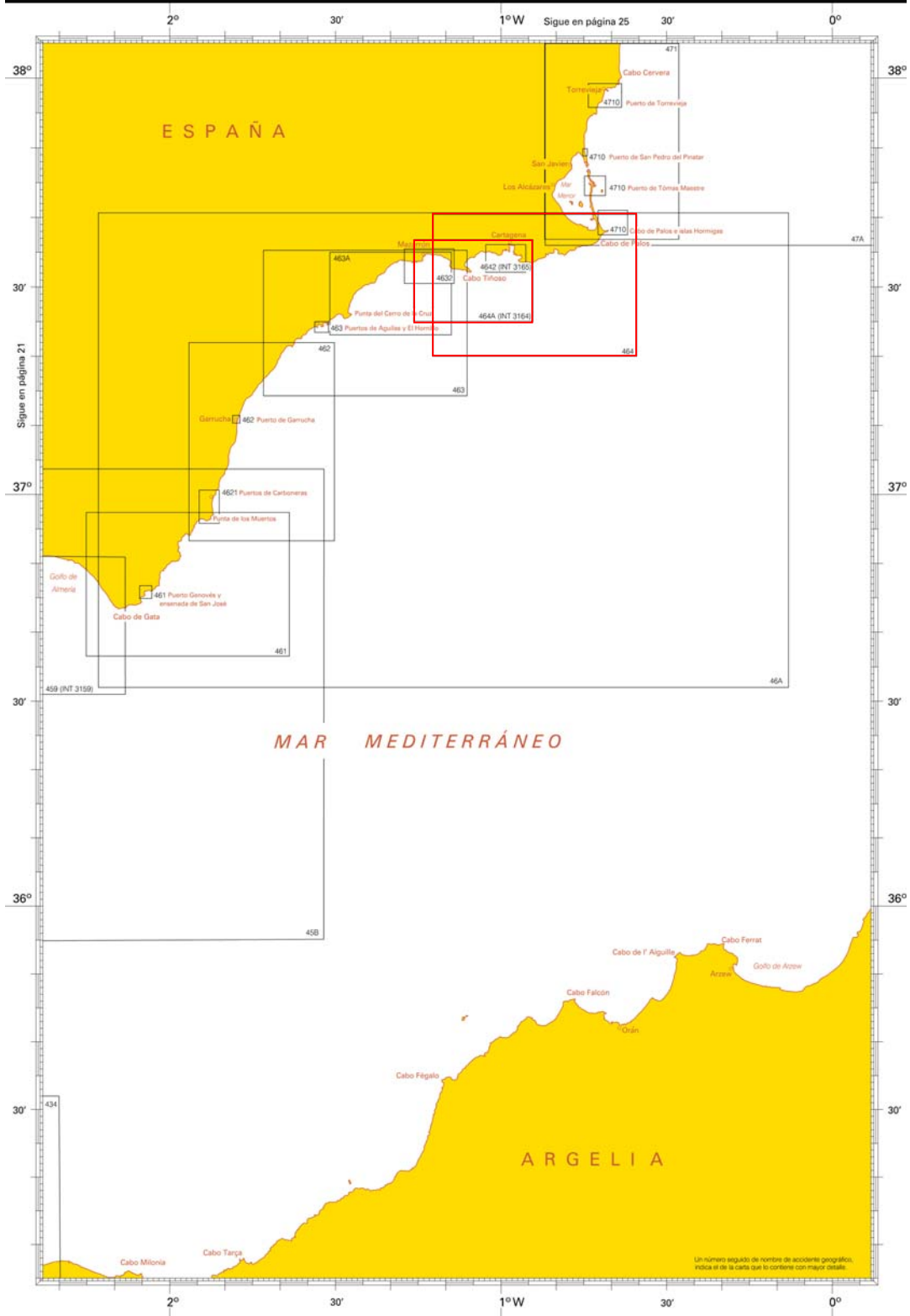


Graphic 3.5.- Area of the paper chart 2B (Iberian Peninsula)



Graphic 3.6.- Alboran Sea (Chart 4331 and 4451)

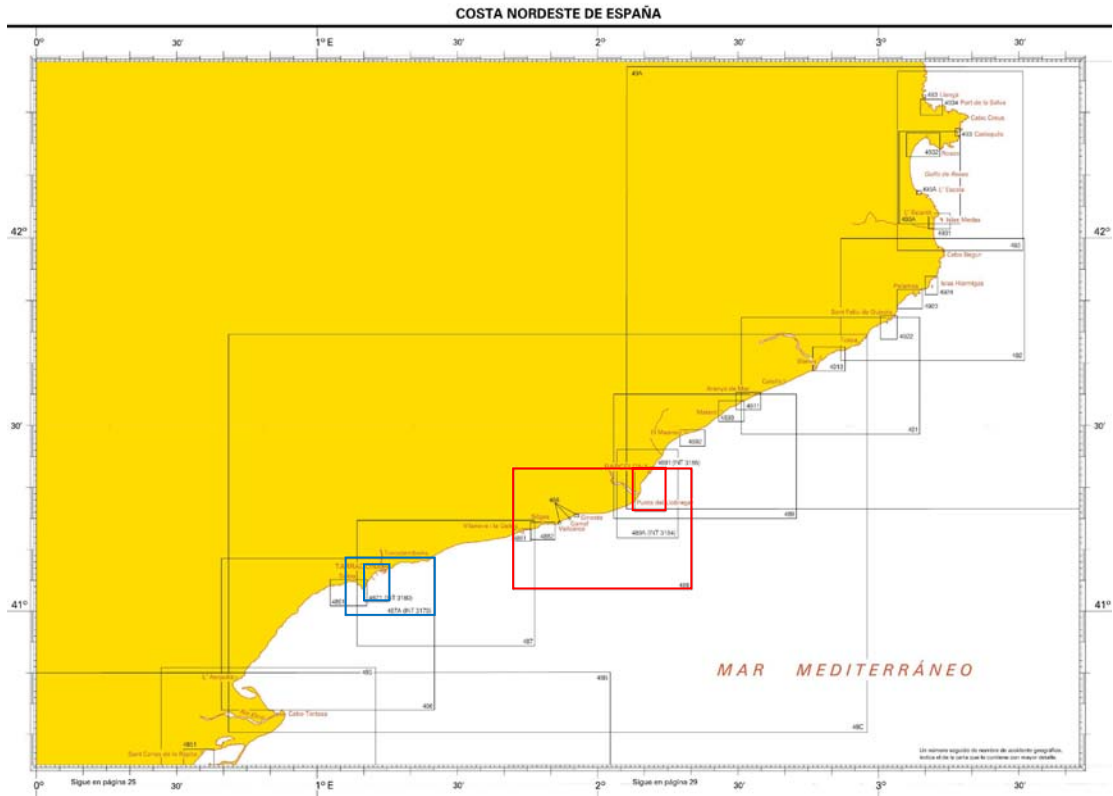
COSTA SUDESTE DE ESPAÑA Y NORTE DE ARGELIA



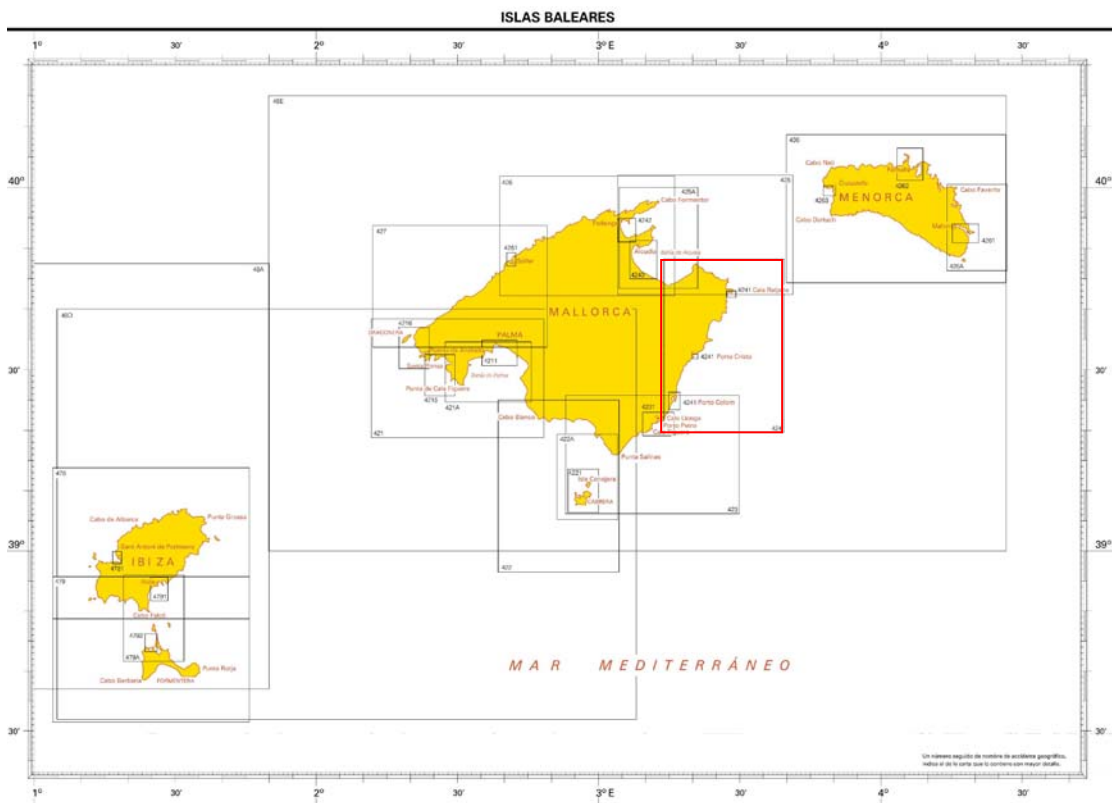
Graphic 3.7.- SE coast of Spain (Charts 464 and 464A)



Graphic 3.8.- E coast of Spain (Charts 472, 472A, 4731, 481, 481A, 4811, 4812, 4821, 482A, 48A, 4831)



Graphic 3.9.- NE coast of Spain (Charts 4891, 4871, 487A and 488)



Graphic 3.10.- Balearic Islands (Chart 424)

4. NEW PUBLICATIONS AND UPDATES

4.1. New Publications

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4.2. Updated Publications

New editions

2009

- Supplement N° 1 to Sailing Directions N° 2, volume I (Ed. 2005) (“Sailing directions, N° 1, Addenda 1”) Coast NW of Spain, from Estaca de Bares to Río Miño.
- Supplement N° 2 to Sailing Directions N° 3, volume II (Ed. 2003) (“Sailing directions, N° 3, Vol. II, Addenda 2”) Mediterranean Coast including Balearic Islands, North Coast of Morocco and Algerian Coast.
- Supplement N° 1 to Sailing Directions N° 4, (Ed. 2006) (“Sailing directions, N° 4, Addenda1”) W Coast of Africa, from cabo Espartel to cabo Verde, including Dakar, Islas Açores, Madeira, Selvagens, Canarias and Cabo Verde.
- International Regulations for Preventing Collisions at Sea COLREGs (1972), 2009 edition.

2010

- List of lights and fog signals, book I, 2010 edition. Coasts of Spain and Portugal on the Atlantic Ocean, Africa West Coast from Cabo Espartel to Cabo Verde including Dakar, Islas Azores, Madeira, Selvagens, Canarias and Cabo Verde.
- List of lights and fog signals, book II, 2010 edition. Gibraltar Strait, Balearic Islands and Mediterranean coasts of Spain, Morocco and Algeria.
- Sailing directions, N° 3 Vol. I” (Ed. 2010) Mediterranean Coasts, including: N & S Coasts of the Straits of Gibraltar, and Eastern Coast of Spain from Punta Europa to the French border.
- Sailing directions, N° 3 Vol. II” (Ed. 2010) Mediterranean Coast including Balearic Islands, North Coast of Morocco and Algerian Coast.

2011

- List of Lights and Fog Signals, Book I, edition 2011.

- It's planned to publish the 2011 edition of List of lights and fog signals, book II, Sailing Directions N°2 Vol. II (Ed. 2011) Coast of Portugal and SW Coast of Spain, from Miño river to Trafalgar Cape, and Supplement N°1 to Sailing Directions N°1 (ed.2008) N Coast of Spain, from Bidasoa River to Estaca de Bares.
- It's planned to publish the 2011 edition of "Catalogue of Nautical Charts and other Publications" in June.
- It's planned to publish the fourth edition of "Symbols, abbreviations and terms used on charts" in September of 2011.

4.3. Means of delivery.

All our nautical publications are available in hard copy. The weekly bulletin of Notice to Mariners is available also over the internet, at the IHM website.

Some works to implement the List of Lights in digital format have been carried out. The updates system implementation must still be developed.

Regarding the Sailing Directions for ECDIS there is an important amount of work ahead. The results reached by the IHO SNPWG (Standardization of Nautical Publications Working Group) will be taken in high consideration.

4.4. Problems encountered.

NTR.

5. MSI

5.1. Existing Infrastructures for transmission

No changes happened during the two last years affecting our national infrastructure for MSI transmission.

The current situation of the dissemination of Maritime Safety Information can be summarized as follows:

5.1.1. Radio Navigational Warnings

Co-ordinator: SASEMAR (Spanish National Agency for Maritime Search and Rescue Operations, Ministry of Public Works) is the national Co-ordinator for coastal and local radio navigational warnings. The National Salvage Co-ordination Centre (CNCS) is located in Madrid.

The means available for Maritime Safety Information broadcasting are: NAVTEX Stations (under SASEMAR) in Valencia and Tarifa. MF and VHF

Stations (under ABERTIS) (See GMDSS Master Plan). They broadcast in English and Spanish.

5.1.2. SAR Organisation

Co-ordinator: SASEMAR through its National Centre (CNCS) and its Area, Regional and Local Centres.

Means: NAVTEX stations and communication stations at SASEMAR Centres, as well as coastal MF and VHF stations.

5.2. New infrastructure in accordance with GMDSS Master Plan

NTR.

5.3. Problems encountered.

NTR.

6. C-55

6.1. SPAIN. CHARTING REGION F

Date of validity of information: 01 May 2011

6.1.1. HYDROGRAFIC SURVEYING

Survey coverage, where:

A = percentage which is adequately surveyed.

B = percentage which requires re-survey at larger scale or to modern standards.

C = percentage which has never been systematically surveyed.

	A	B	C
Dephts < 200 m	97	3	0
Dephts > 200 m	41	9	50

6.1.2. NAUTICAL CHARTING

Status of nautical charting within the limits of the EEZ

A = percentage covered by INT series, or a paper chart series meeting the standards in M-4.

B = percentage covered by Raster Navigational Charts (RNCs) meeting the standards in S-61.

C = percentage covered by ENC's meeting the standards in S-57.

Purpose/ scale	A	B	C
Offshore passage/ Small	100	0	100
Landfall and Coastal passage/ Medium	100	0	100
Approches and Ports/ Large	100	0	70

Table 6.1.

6.1.3. MARITIME SAFETY INFORMATION (MSI).

NAVIGATIONAL INFORMATION (S-53)

SERVICE	Yes	No	Partial	Notes
Local Warnings	X			
Coastal Warnings	X			
NAVAREA Warnings	X			
Port Information	X			Agreements with all Port Authorities

Table 6.2.

GMDSS IMPLEMENTATION (IMO Publication 970–GMDSS Handbook)

SERVICE	Yes	No	Partial	Notes
Master Plan	X			
Area A1	X			
Area A2	X			
Area A3	X			
NAVTEX	X			
SafetyNET	X			Only for NAVAREA warnings

Table 6.3.

7. Capacity Building

7.1. Offer of and/or demand for Capacity Building

The Spanish Hydrographic Office offers both Level A and Level B IHO/FIG/ICA Hydrography Courses. These courses are 9 month long and are taught in Spanish.

A list with the attendees to these courses follows:

Level A Course:

Period 2010-2011

2 Officers Spanish Navy
1 Officer from Argentina
1 Officer from Honduras

Period 2009-2010

4 Officers Spanish Navy
1 Officer from Dominican Republic
1 Officer from Morocco
1 Officer from Tunisia

Period 2008-2009

3 Officers Spanish Navy
1 Officer from Argentina
1 Officer from Uruguay

Level B Course:

Period 2010-2011

2 Chief petty officers Spanish Navy
1 Chief petty officers Dominican Republic Navy

Period 2009-2010

1 Chief petty officers Spanish Navy

Period 2008-2009

3 Chief petty officers Spanish Navy
1 Chief petty officers Dominican Republic Navy

Countries willing to have students attending these courses should contact the Spanish Ministry of Foreign Affairs through their respective Embassies in Spain.

7.2. Training received, needed, offered

CARIS enterprise has taught the corresponding courses for training our staff in the use of its software, used to produce ENCs.

7.3. Status of national, bilateral, multilateral or regional development projects with hydrographic component. (In progress, planned, under evaluation or study)

Technical agreement in progress with Rumanía.

7.4. Definition of bids to IHOCBC

NTR.

8. Oceanographic activities

8.1. General

A database containing tidal data for all ports and harbours in the peninsula and islands is being produced.

Long-term evolution of tidal parameters is being studied, using data from the network of permanent tide gauges.

Long-term evolution of sea level parameters is being studied.

All information regarding bottom quality is being digitised and geo-referenced.

Software for current analysis and prediction based on data from current meters Doppler Nortek is being developed

Along of universities and other national Departments and Organitations, the IHM is conducting studies on the dynamics of current in the Strait of Gibraltar and Alboran Sea.

8.2. GEBCO/IBC's activities

NTR.

8.3. Tide gauge network

There is information online at the IHO website regarding the Spanish network of tide gauges at:

http://www.iho-ohi.net/mtg_docs/com_wg/IHOTC/IHOTC_Misc/TideGaugeInventory.pdf

8.4. New equipment

NTR

8.5. Problems encountered

NTR.

9. Other activities

9.1. Participation in IHO Working Groups

Requested by the IHO, IHM as NAVAREA III Coordinator participated in a technical visit to the HO of the Republic of Georgia in December 2010. The technical visit was made at the request of the Georgia HO with a view to the possibility of entry as a member of the IHO.

IHM takes part in several working groups of the IHO:

- Definition and Length of Coastline Working Group.
- Tidal and Water Level WG (TWLWG).
- Chart Standardization and Paper Chart Working Group (CSPCWG).
- ENC Updating Working Group (EUWG).
- World Wide Navigational warning Service Sub-Committee (WWNWS).
- Marine Spatial data Infrastructure WG (MSDIWG).

IHM takes part in several working groups of the NATO:

- Geospatial Maritime Working Group (GMWG).
- AML Co-Production (Additional Military Layers).
- Military Oceanographic WG
- NATO Undersea Research Center
- Interservice Geospatial WG

9.2. Meteorological data collection

NTR

9.3. Geospatial studies

NTR

9.4. Disaster prevention

NTR

9.5. Environmental protection

NTR

9.6. Astronomical observations

NTR

9.7. Magnetic/Gravity surveys

NTR

9.8. MSDI Progress

Within SDI's, this IHM is a participant in the GT-IDEA (Working Group on Infrastructure of Spatial Data of Spain), tasked with the integration via internet of geographic data, metadata, services and information produced in Spain, to help users locate, identify, select and access such resources via the IDEA geoportal (<http://www.idea.es>).

Also, the Spanish Central Archive of Cartography (Instituto Geográfico Nacional) has been provided with digital information, including the Spanish coastline at scale 1:50000.