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PORTUGUESE REPORT

10th Conference

Eastern Atlantic Hydrographic Commission



Instituto Hidrográfico
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INTRODUCTION

This report describes the main technical activities and developments at the Portuguese Hydrographic Institute (IHPT) during the period from December 2006 to December 2008. It was elaborated in order to be presented to the 10th Conference of the EAtHC, and covers specially the following areas: Hydrography, Cartography, Information Technologies and GIS, Marine safety, IBCEA project and Technical Assistance and Training.

1- HYDROGRAPHIC OFFICE

This information is presented in Annex A.

2- SURVEYS

The hydrographic surveys within the IHPT are carried out with both singlebeam and multibeam echosounders, using GPS for positioning (in either Differential or RTK/OTF mode).

The singlebeam echosounders with digital output (ATLAS DESO 20/22/25, MARIMATECH E206, KONGSBERG EA600, and KNUDSEN 320 M) are used with automated data acquisition systems (currently the HYPACK). The values of sound speed in the water column are collected by sound speed profilers (APPLIED MICROSYSTEMS SVP-16 and SVP PLUS). ATLAS calibration transducers are also used. The heave is measured with inertial motion sensors (TSS 320/333/335, SEATEX MRU5 or MRU H).

Data processing is carried out with the same application used for the data acquisition (HYPACK). The data is transferred to CARIS GIS for presentation and archive purposes. The CARIS files are the layout used to store the hydrographic data that can be readily used for cartographic production.

The IHPT is presently operating several multibeam echosounder systems (MBES): two portable systems for shallow waters (KONGSBERG EM 3002), one for coastal waters

(KONGSBERG EM 7100) and two for deep waters (KONGSBERG EM 120) on the hydrographic ships NRP “D. Carlos I” and NRP “Almirante Gago Coutinho”.

All the referred multibeam systems include one SEATEX SEAPATH 200 or SEAPATH 200 RTK (for positioning, heading, pitch, roll and heave measurements), one sound speed sensor at the transducer draft (APPLIED MICROSYSTEMS SMART PROBE) and a sound speed profiler (APPLIED MICROSYSTEMS SVP-16 or SVP PLUS). Data processing is carried out with the Hydrographic Information Processing System (CARIS HIPS).

The coastal topography and horizontal control is achieved, for the most part, with geodetic GPS methods, including kinematic positioning and RTK/OTF (with TRIMBLE 4000/5700/5800 series). Sometimes hydrographic surveys are complemented with GPS surveys on-shore, done by walking surveyors or with a moto-quad. Nevertheless, to complement GPS observations, topographic total stations (LEICA TC 305 and LEICA TC 1800) are also used. Data processing is performed with TRIMBLE software (TRIMBLE Geomatics Office), AutoCAD MAP and in-house software COORD (for pure traditional measurements - angles and distances).

GPS RTK/OTF techniques for tide measurements are on evaluation. For the areas that are surveyed on a regular basis, the local geoidal height was computed, in order to have a geoid model with an adequate accuracy.

The procedures (planning, execution and processing) of hydrographic surveys within the IHPT are in accordance with the IHO Special Publication S-44 (currently the 5th Edition, 2008). Special attention has been paid to the development of procedures for Quality Control (QC) and Quality Assurance (QA) of hydrographic data. These include: error budgets, analysis of the digital terrain model from the raw data, statistical analysis per beam, and analysis of the spatial and temporal variation of sound speed profiles on depth measurement and positioning.

A new side scan sonar system (KLEIN 5000) was also acquired, including a digital processing software package (TRITON ELICS).

During the last two years, most of the hydrographic surveys for cartographic update were done in specific coastal areas and in harbours and their approaches. The geological continental shelf of Continental Portugal is completely surveyed with echo sounders and

electronic positioning systems, as well as the more critical areas of the Archipelagos of Açores and Madeira. So, the next systematic resurvey of Portuguese coastal waters will be done with MBES and GPS positioning.

Both the hydrographic ships “D. Carlos I” and “Almirante Gago Coutinho” are being employed on surveys for the project of the Extension of the Portuguese Continental Shelf to be presented to United Nations Organization. So far, more than 1 million square kilometres on deep sea were already surveyed, with full bottom search.

Nevertheless, the hydrographic ships have also been used in several research projects in cooperation with national and international universities and other research institutions.

Some surveys, for environmental studies and coastal protection, were also carried out. In these surveys, hydrographic and topographic integrated methods were used and, commonly, simultaneous wave, tidal and current data were acquired. In some cases, these surveys included light seismic geological methods and sediment and water chemical analysis.

The in-house Hydrographic Data Warehouse (HDW), using an ORACLE database management system, is being uploaded with all the bathymetric data available. The older survey fair sheets are being vectorized to integrate the HDW too.

3- NEW CHARTS AND UPDATES

The paper chart production in the IHPT is fully done by the Computer Assisted Cartography system (CAC), since mid 2004. All charts are stored in digital files, which are then used for Electronic Navigational Chart (ENC) production.

The CAC is based on CARIS GIS, running in WINDOWS workstations. Some topographic data processing and import/export are also done using AutoCAD MAP. Developments using the several CARIS modules were done, as for instance the automatic chart correction and several scripts for QC and spatial data assimilation, these using specially the Visual Basic, C and TCL/TK programming languages.

The IHPT also produces nautical charts for special purposes, for instance: charts for fishermen, charts for pleasure crafts and special charts for training purposes. All those

charts are in accordance with IHO specifications and were very well accepted from end users.

All the IHPT new charts and new editions are bilingual (Portuguese and English) and follow the INT specifications, whether or not they belong to the INT series. A list of the paper charts produced by the IHPT since 2007 is presented in Annex B.

The production of ENC cells started with some CARIS software modules (HOM) but the main work is done using software produced by Seven-C's (ENC Tools) and HydroServices (dKart Inspector). The IHPT cells format is S-57/Edition 3.1. Each of the IHPT ENC is broadly equivalent to a paper chart both in terms of its area of coverage and its content.

The final validation of the ENC cells is made with the ECDIS software ECPINS-M. The Portuguese Navy ships equipped with ECDIS continuously verify the IHPT ENC cells in real navigation conditions.

The IHPT is a member and participates actively in the works of the International Centre for ENC's (IC-ENC), including in their Technical Experts Working Groups. Presently, 66 Portuguese ENC cells are available for distribution through IC-ENC, charting all the oceanic and coastal waters of Portugal, as well as the main harbours and their approaches.

The issuing of Notices to Mariners (NtM), which affect the paper charts and the corresponding ENC cells, is coordinated with the issue of the ENC CDs by the IC-ENC. It should be noted that the number of ENC updates increased enormously and so the production and validation of updates continues to be one of the major works of the IHPT ENC production team.

A list of the ENC cells produced by the IHPT is presented in Annex B.

During the last two years a major effort was done by IHPT to implement the second generation of the Computer Assisted Cartography, the CARIS – Hydrographic Production Database (HPD), which allows a full integration of the cartographic production, both paper charts and ENC cells. The HPD works with an ORACLE 9i database management system and provides a single and seamless database for all the cartographic information

available in the IHPT. All Portuguese ENC cells were already uploaded on CARIS HPD. IHPT intends to implement CARIS-HPD for Nautical Chart (NC) and ENC production in the beginning of the coming year..

Following the full digital cartographic process, since middle 2005, the IHPT is using the Print-on-Demand system to print the nautical charts, as well as their sub products, upon request by the users.

The IHPT participates in the COASTCHART project, funded by the European Space Agency, as well as UKHO, SHOM-FR and IHM-ES. This project aims to get the digitized coastline of central and western Africa with the access to satellite imagery. Nevertheless, until present date, no work has been requested on this project.

4- NEW PUBLICATIONS AND UPDATES

Since January 2007, the IHPT published the following nautical publications:

- Annual Group of Notices to Mariners (2007);
- Annual Group of Notices to Mariners (2008);
- International Regulations for Preventing Collisions at Sea, annotated and with amendments through 2007 – 7th edition (2007);
- Sailing Directions of Portugal – Continental Portugal – “Cabo de São Vicente ao Rio Guadiana” – 3rd Edition (2008);
- Aids to Navigation – List of Lights, Buoys, Beacons and Fog Signals – 8th edition (2008);
- Sailing Directions of Portugal – Madeira Archipelago – “Arquipélago da Madeira” – 4th Edition (to be released by the end of 2008).

Annually, the IHPT also publishes the Tide Tables for the main harbours of Continental Portugal and of the Archipelagos of Açores and Madeira. During the last years some of the tidal constituents continued to be recalculated using more recent tidal observations. In 2002 IHPT started a project to automate the tidal stations, in order to provide remote access to their data from the IHPT web site.

5- MARTIME SAFETY INFORMATION

The IHPT, as national coordinator for the Maritime Safety Information, provides a 24h service of Navigational Warnings, in cooperation with the NAVAREA II coordinator.

NAVTEX broadcast is made both in English and Portuguese and it is transmitted from Monsanto (near Lisbon) and from Horta (in the Açores Archipelago) stations. Madeira Archipelago NAVTEX will be established in the near future.

The GMDSS coverage is yet not completed due to some delays on the establishment of the Digital Selective Call capability, which are expected to be solved in a near future.

Monthly the IHPT publishes a Group of Notices to Mariners, containing all the permanent, preliminary, and temporary warnings in force for the corresponding period. This information, covering all navigation charts and publications of Portugal, Angola, Cabo Verde, Guiné and São Tomé e Príncipe, is also available on the web site (<http://www.hidrografico.pt>).

The IHPT built a friendly on-line application - ANAVnet, supported by robust and secure databases, capable of providing either entire NtM publications, or single NtM affecting individual documents; allowing in any case consultation and printing, including entire correction pages of nautical publications and graphical annexes to glue on charts.

In matters of Navigational Warnings, ANAVnet allows consultation of warnings broadcasted by any of the Portuguese NAVTEX stations (coastal and local), both in Portuguese and English languages.

Regarding the Broadcast Stations (BS) from the national differential GPS network, the Continental Portugal component consists of two DGPS BS, with redundancy and integrity monitoring, located at Cape Carvoeiro and Sagres.

There are also two BS in the Portuguese Archipelagos: One in the Açores Archipelago (Horta station) and another one in Madeira Archipelago (Porto Santo station).

AIS coastal stations are operational since the summer of 2006 both in Açores and Madeira Archipelagos. For the continental coast of Portugal, this system started this year in parallel with the coastal VTS. It is expected that the new mandatory ship reporting system "Off the Coast of Portugal - COPREP" be approved by the Maritime Safety Committee from the International Maritime Organization (IMO-MSC) by the end of 2008.

6- S55

Updates are listed in Annex C.

7- CAPACITY BUILDING

The IHPT continues to compute and publish annually the Tide Tables for the Portuguese Speaking African Countries, including, within the EAHC area, Cabo Verde, Guiné-Bissau and S. Tomé e Príncipe.

In 2007, under the existing Cooperation Agreement Portugal – Cape Verde, IHPT carried out hydrographic surveys in Baía da Palmeira and Baía de Sta Maria (Sal Island);

Several foreign students from Moçambique, Tunisia and Cabo Verde attended the Specialization Course in Hydrography (FIG/IHO Category A) at the IHPT. In this academic year, 2008/2009, there is one petty officer attending the Specialization Course in Hydrography (FIG/IHO Category B) from São Tomé and Príncipe Coast Guard.

8- OCEANOGRAPHICS ACTIVITIES

a. GEBCO/ IBCEA

The 2nd Edition of IBCEA Sheet 1.01 (Portugal - Continental Portugal) and the 1st Edition of the IBCEA Sheet 1.03 (Portugal - Archipelago of Açores) were published in April 2006.

The IBCEA Sheet 1.02 (Portugal - Archipelago of Madeira) is under compilation of bathymetric information at the scale of 1:250000.

The work for IBCEA Sheet 1.05 (Cabo Verde) was not initiated yet.

b. Tide Gauge Network

The Portuguese tide gauge network consists of 19 tidal stations spread over continental Portugal, Açores and Madeira Archipelagos. All stations but Cascais and Lagos belong to the IHPT. The IHPT is in charge of their installation, maintenance and data collection. Cascais and Lagos stations are property of the Portuguese Geographic Institute. Mainly the tide gauges in our network are floating and stilling well (A.OTT), acoustic (Next Generation

Water Level Measurement System) and pressure type (Minitroll, Valeport and Druck).

Recently there was an acquisition of several Krohne radar tide gauges which are being installed at this time.

Annex D depicts the Portuguese tide gauge network, with its major stations.

Portugal is a member of the Global Sea Level Observing System (GLOSS) contributing with mean sea level data from Cascais, Ponta Delgada, Santa Cruz das Flores and Funchal.

9- OTHER ACTIVITIES

a. Information technologies and GIS

The IHPT has an Internet site (www.hidrografico.pt) presenting information about its organization, main activities, products offered and specific on-line data.

The Notices to Mariners and Navigational Warnings issued by the IHPT are also available in the IHPT Internet site, as well as general information on the Portuguese Nautical Charts and Nautical Publications.

Databases and related applications are being developed using ORACLE spatial. They include not only hydrographic and cartographic applications but also environmental and coastal management products. The basis of these is SIGAMAR (Geographic Information System for the Marine Environment). SIGAMAR is a geographic information system for the marine environment under development at IHPT and deals with technical and scientific data within IHPT. The main SIGAMAR's development objectives are to improve the internal production processes and to support the operational, planning and strategic decision-making. Its core is an Oracle Spatial database management system that is explored in several ways producing tables, charts, web pages and reports, and feeding several GIS packages.

This system is also being used to support IC-ENC by providing a world ENC availability catalogue (independent of maker or distributor) for mariners to use.

ANNEX A

HYDROGRAPHIC OFFICE GENERAL INFORMATION PORTUGAL (PORTUGUESE REPUBLIC)

INSTITUTO HIDROGRAFICO Rua das Trinas – 49 1249-093 LISBOA	
Department of which the Hydrographic Office is part <i>Ministère dont dépend le Service Hydrographique Ministerio del que depende el Servicio Hidrográfico</i>	Ministry of National Defense – Navy.
Principal functions of the H.O. - <i>Attributions principales du S.H. Principales funciones del S.H.</i>	Hydrographic Surveys, Analogue and Digital Nautical Charts, Sailing Directions, Lights and Radio Signals Lists, Notices to Mariners (monthly), Immediate Navigational Warnings, Tide Tables, Tidal Currents, Magnetic Compass Certification and Adjustment. Aids to Navigation Plans. DGPS, AIS projects. Oceanography. Provision of geophysical and environmental information for scientific and defense issues
National day - Fête nationale – Fiesta nacional	10 June
Telephone : Fax : E-mails : WEB site:	+ 351 21 094 3000 + 351 21 094 3299 dirgeral@hidrografico.pt dirtecnica@hidrografico.pt hidrografia@hidrografico.pt http://www.hidrografico.pt
Date of establishment and Relevant National Legislation – <i>Date de fondation et législation nationale concernée – Fecha de establecimiento y Leyes nacionales dereferencia</i>	22 September 1960 • Territorial Sea: Law n° 34/2006 • Baseline: Laws n° 2130/66 and 495/85 • EEZ: Laws n° 34/2006, n° 119/78 and n° 52/85
Name and rank of the Director or Head - <i>Nom et grade du directeur – Apellidos y graduación del Director</i>	Vice-admiral José Augusto de Brito, General Director
Tonnage – Tonelaje	2007 = 1,271,004
Total Budget - Budget total – Presupuesto Total	7 million Euros
Staff employed - Effectifs – Plantilla	For details, consult the WEB site: http://www.hidrografico.pt
N° of charts published - Nombres de cartes publiées – <i>N° de cartas publicadas</i>	227
N° of INT charts published – Nombres de cartes INT publiées - N° de cartas INT publicadas. N° of ENC cells published – Nombres de cellules ENC publiées - N° de células ENC publicadas.	34 67
Type of publications produced (e.g. Tide Tables, Sailing Directions, List of Lights etc.) – Type de publications produites (par ex: Tables des marées, Instructions nautiques, Livres des Feux, etc. - Tipo de publicaciones producidas (por ej: Tablas de mareas, Derroteros, Libros de Faros etc.)	- Catalogue of Charts and Nautical Publications; - Catalogue of Nautical Charts of Portugal; - Tide Tables – Volume I – Portugal; - Tide Tables – Volume II – African Portuguese Speaking Countries; - List of Radio Aids and Services; - List of Lights – Volume I – Portugal; - List of Lights – Volume II – African Portuguese Speaking Countries; - Sailing Directions – Continental Portugal – Volumes I to III; - Sailing Directions – Azores Archipelago; - Sailing Directions – Madeira Archipelago;

	- Sailing Directions - Angola and São Tomé e Príncipe Ports Pilot; - Sailing Directions - Cabo Verde – Volumes I to V; - Sailing Directions (Pleasure Craft) – Continental Portugal (Portuguese/English);		
Surveying vessels/ Aircraft – Bâtiments <i>hydrographiques/aéronefs – Buques</i> <i>hidrográficos/ Aeronaves</i> Almirante GAGO COUTINHO D. CARLOS I ANDRÓMEDA AURIGA ATLANTA CORAL FISÁLIA	Displacement 2285 2285 245 245 38.7 38.7 38.7	Date Launched 1985 1989 1985 1987 1981 1981 1981	Crew 49 49 24 24 3 3 3
Other information of interest – Autres informations utiles - Otra información de interés.	Own coast and harbours plus main traffic routes linking the Portuguese speaking countries in Africa. Hydrography and Oceanography level A and B course		

ANNEX B

Nautical and Electronic Navigational Charts Published by Portugal since 2007

NAUTICAL CHARTS					
Number	INT	Title	Edition	Reprint	Date
24206	1818	CABO DE SÃO VICENTE À FOZ DO GUADIANA	3 ^a	-	JAN07
26308	1880	BARRA E PORTO DE SETÚBAL	3 ^a	1 ^a	MAI07
24201	1813	CAMINHA A AVEIRO	2 ^a	-	JUN07
26402	1871	APROXIMAÇÕES A LEIXÕES E À BARRA DO RIO DOURO	2 ^a	-	JUN07
24P01	-	CAMINHA A AVEIRO	1 ^a	-	JUL07
37501	-	PORTOS DA ILHA DA MADEIRA	1 ^a	-	OUT07
36402	1920	PONTA GORDA À PONTA DE SÃO LOURENÇO	2 ^a	-	OUT07
25R06	-	CABO CARVOEIRO AO CABO DA ROCA	2 ^a	-	JAN08
25R08	-	CABO ESPICHEL À LAGOA DE STO. ANDRÉ	2 ^a	-	JAN08
25R09	-	LAGOA DE STO. ANDRÉ AO CABO SARDÃO	3 ^a	-	JAN08
25R11	-	PONTA DE SAGRES A VILAMOURA	3 ^a	-	JAN08
113	-	ILHA GRACIOSA E PLANOS DE PORTOS	3 ^a	1 ^a	FEV08
36403	-	PAÚL DO MAR À PRAIA FORMOSA	1 ^a	-	MAR08
90	-	ENSEADA DE ALBUFEIRA	2 ^a	2 ^a	ABR08
24202	1814	AVEIRO A PENICHE	2 ^a	-	JUL08
26405	-	PENICHE E ILHAS BERLENGAS	2 ^a	-	JUL08
25R04	-	FIGUEIRA DA FOZ A S. PEDRO DE MUEL	2 ^a	-	SET08
25R05	-	S. PEDRO DE MUEL A PENICHE	2 ^a	-	SET08
26308	1880	BARRA E PORTO DE SETÚBAL	4 ^a	-	NOV08
26309	1881	PORTO DE SETÚBAL (DA CARRACA À ILHA DO CAVALO)	3 ^a	-	NOV08
26303	1875	<i>BAÍA DE CASCAIS E BARRAS DO RIO TEJO (PORTO DE LISBOA)</i>	8 ^a	-	DEC08
26304	1876	<i>PORTO DE LISBOA (DE PAÇO DE ARCOS AO CANAL DO MONTIJO)</i>	7 ^a	-	DEC08
26305	1877	<i>PORTO DE LISBOA (DE ALCÂNTARA AO CANAL DO MONTIJO)</i>	5 ^a	-	DEC08
26306	1878	<i>PORTO DE LISBOA (DO CAIS DO SODRÉ A SACAVÉM)</i>	5 ^a	-	DEC08
66302	-	<i>PORTO DO PORTO GRANDE (CABO VERDE)</i>	1 ^a	-	DEC08

ELECTRONIC NAVIGATIONAL CHARTS

Number	NC	UB	Title	Edition	Date
PT 111101	11101	1	PORTUGAL CONTINENTAL E ARQUIPÉLAGOS DOS AÇORES E DA MADEIRA	4	12 FEV 07
PT 200401	401	2	CANAL DE MOÇAMBIQUE (PARTE SUL E CENTRAL)	1	12 MAR 07
PT 281101	401	2	CANAL DE MOÇAMBIQUE (PARTE SUL E CENTRAL)	1	05 AGO 08
PT 201003	1003	2	CABO VERDE AO SENEGAL	1	02 MAI 07
PT 233101	33101	2	ARQUIPÉLAGO DA MADEIRA	2	21 DEZ 07
PT 271101	300	2	ANGOLA – CABINDA À BAÍA DOS TIGRES	1	01 AGO 08
PT 324201	24201	3	VILA PRAIA DE ÂNCORA AO FURADOURO	3	04 JAN 08
PT 324202	24202	3	AVEIRO A PENICHE	4	14 DEZ 08
PT 324206	24206	3	PONTA DA ARRIFANA À ILHA CRISTINA (ESPANHA)	5	13 JUL 07
PT 336201	36201	3	ILHA DA MADEIRA E ILHAS DESERTAS	3	30 SET 08
PT 426402	26402	4	APROXIMAÇÕES A LEIXÕES E À BARRA DO RIO DOURO	4	31 OUT 07
PT 426405	26405	4	PENICHE E ILHAS BERLENGAS	1	15 DEZ 08
PT 436402	36402	4	ARQUIPÉLAGO DA MADEIRA – PONTA GORDA À PONTA DE S. LOURENÇO	3	28 MAR 08
PT 436403	36403	4	ARQUIPÉLAGO DA MADEIRA – PAÚL DO MAR À PRAIA FORMOSA	1	27 JUN 08
PT 446201	46201	4	ARQUIPÉLAGO DOS AÇORES – CANAL DE S. JORGE (ILHAS S. JORGE E PICO)	1	20 ABR 07
PT 526303	26303	5	BAÍA DE CASCAIS E BARRAS DO RIO TEJO (PORTO DE LISBOA)	6	11 JUN 07
PT 526307	26307	5	RIO TEJO (SACAVÉM A VILA FRANCA DE XIRA)	1	01 JUN 07
PT 526308	26308	5	BARRA E PORTO DE SETÚBAL	3	06 JUN 97
PT 528505	26402	5	PORTO DE LEIXÕES E BARRA DO RIO DOURO	4	04 JAN 08
PT 528510	26405	5	PORTO DE PENICHE	1	15 DEZ 08
PT 528513	26407	5	PORTO DE SESIMBRA	3	06 JUN 07
PT 528515	27502	5	ENSEADAS DE BELIXE, SAGRES E BALEEIRA	1	16 OUT 07
PT 528516	27502	5	PONTA DA PIEDADE À PRAIA DO VAU	1	06 AGO 07
PT 538502	37501	5	ILHA DA MADEIRA – PORTO DA CRUZ	1	28 MAR 08
PT 538503	37501	5	ILHA DA MADEIRA – PORTO DO MONIZ	1	08 FEV 08

ELECTRONIC NAVIGATIONAL CHARTS (Cont.)

Number	NC	UB	Title	Edition	Date
PT 538504	37501	5	ILHA DA MADEIRA – PORTOS DO CANIÇAL E MACHICO	2	08 FEV 08
PT 538505	36403	5	ILHA DA MADEIRA – CÂMARA DE LOBOS E PRAIA FORMOSA	1	27 JUN 08
PT 538506	36402	5	ILHA DA MADEIRA – PORTO DO FUNCHAL	2	28 MAR 08
PT 548502	46402	5	ILHA DAS FLORES – PORTO DE SANTA CRUZ DAS FLORES	2	01 AGO 08
PT 548503	46402	5	ILHA DAS FLORES – PORTO DAS LAGES DAS FLORES	2	01 AGO 08
PT 548515	46405	5	ILHA TERCEIRA – PORTO DA PRAIA DA VICTÓRIA	2	26 ABR 08
PT 548519	46406	5	ILHA DE S. MIGUEL – PORTO DE PONTA DELGADA	3	22 JUN 07
PT 548522	46407	5	ILHÉUS DAS FORMIGAS	1	20 DEZ 06
PT 566301	66301	5	ARQUIPÉLAGO DE CABO VERDE – PORTO DA PRAIA	1	30 MAI 08

ANNEX C

UPDATES TO S55

Status of Hydrographic Surveys

		A	B	C
Portugal (Continental Portugal)	depths < 200 m	100	0	0
	depths > 200 m	98	0	2
Portugal (Madeira Archipleago)	depths < 200 m	62	0	38
	depths > 200 m	66	1	33
Portugal (Açores Archipelago)	depths < 200 m	53	46	1
	depths > 200 m	18	1	81

Status of Nautical Charting

		A	B	C
Portugal (Continental Portugal)	Offshore passage / Small	100	0	100
	Coastal passage / Medium	100	0	100
	Approaches Ports / Large	100	0	100
Portugal (Madeira Archipleago)	Offshore passage / Small	100	0	100
	Coastal passage / Medium	100	0	100
	Approaches Ports / Large	100	0	100
Portugal (Açores Archipelago)	Offshore passage / Small	100	0	100
	Coastal passage / Medium	100	0	100
	Approaches Ports / Large	100	0	100

The other items have no changes

ANNEX D

Portuguese Tide Gauge Network

