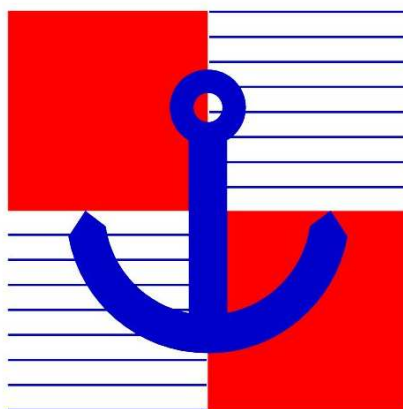


MEDITERRANEAN AND BLACK SEAS HYDROGRAPHIC COMMISSION

XVI CONFERENCE

CONTRIBUTION BY CROATIA

HRVATSKI HIDROGRAFSKI



INSTITUT

**UKRAINE, Odessa
22-24 September 2009**

CONTENTS	1
1. HYDROGRAPHIC OFFICE	2
2. SURVEYS	2
2.1. Survey status	2
2.2. New technologies	2
2.3. Problems encountered	2
3. CHARTS	3
3.1. ENC's	3
3.2. ENC Distribution method	3
3.3. WMS for ENC's.....	3
3.4. INT ENC scheme	4
3.5. RNC's	4
3.6. INT paper charts.....	4
3.7. National paper charts.....	5
3.8. Problems encountered	5
4. PUBLICATIONS	5
4.1. National navigational publication series	3
4.1. Issued navigational publication.....	3
5. MARITIME SAFETY INFORMATION	6
5.1. Problem encountered.....	6
6. S-55 IHO PUBLICATION	7
7. CAPACITY BUILDING	7
7.1. Training	7
7.2. Bilateral agreements.....	7
7.3. Bilateral projects	7
8. OCEANOGRAPHIC ACTIVITIES	8
8.1. Oceanographic projects.....	8
8.2. Oceanographic publications	9
9. OTHER ACTIVITIES	10
Annex 1 - CHI position in structure of Croatian administration	11
Annex 2 - Status of hydrographic surveys.....	12
Annex 3 - Croatian ENC priority plan.....	13
Annex 4 - Recognized HSC routes.....	14
Annex 5 - ENC's release status	15
Annex 6 - INT ENC scheming – HR views	16
Annex 7 - INT paper charts 1:250 000 gaps in Adriatic Sea – HR consideration.....	18
Annex 8 - INT paper chart schemes – new demand submitted by SI – HR response.....	19

1. HYDROGRAPHIC OFFICE

Hydrographic Institute of the Republic of Croatia carries out scientific-research, development and professional works concerning the safety of navigation, hydrographic-geodetic survey of the area of national responsibility, marine geodesy, design and production of charts and nautical publications, oceanographic research, submarine geology research and finally publishing and printing activities. Hydrographic activities are regulated by law. The CHI position in the structure of Croatian administration is shown in Annex 1. For details see www.hhi.hr.

2. SURVEYS

2.1. Survey status

Hydrographic surveys conducted along the Croatian coast since the XIV MBSHC Conference was limited to selective parts of the coast and ports. Numerous hydrographic profiles have been surveyed in order to elaborate underwater marine installations. Annex 2 summarizes the status of hydrographic surveys

2.2. New technologies

Through the joint Croatian – Norwegian Hydrographic Information Project a new spatial data management and chart production system (SDMCPS) was procured. The system is designed to meet all functional and technical requirements for SDMCPS.

In addition, through the same project a new MBES on r/v Hidra and Palagruža was installed and made operational (Fig. 1). A new flat scanner (A0 format) with one work station was installed and made operational (Fig. 2).



Figure 1. Installation of MBES onboard r/v "Palagruža"

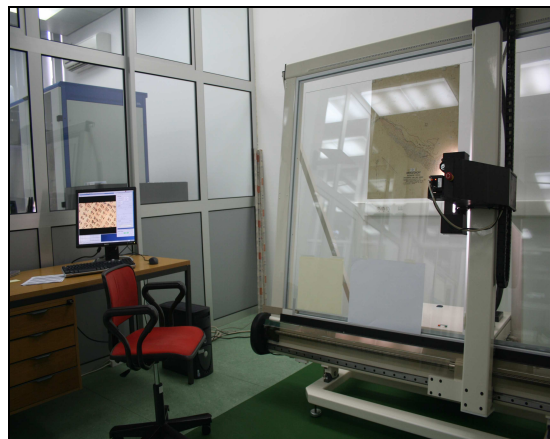


Figure 2. A new flat scanner

2.3. Problems encountered

Due to some reasons which are not hydrography related, the joint IT/SI/HR hydrographic survey of the North Adriatic area (*Rec. MBSHC15*) planned to be supported by IHO CBC budget was not released.

3. CHARTS

3.1. ENC's

Croatian ENC's are based on the existing paper charts, and what has been produced so far are 107 ENC cells, all navigational purpose, covering the Croatian area of responsibility.

The CHI is planning to achieve adequate coverage, availability, consistency and quality of ENC's by 2010 as it is stated in the response to IHO CL 35/2009. The current status of the CHI ENC production is shown in the following table:

User band	Navigational purpose	1 November 2007		1 August 2009	
		No of Cell	Area coverage (%)	No of Cell	Area coverage (%)
1	Overview	1	100%	1	100%
2	General	1	35%	4	100%
3	Coastal	0	0%	15	100%
4	Approach	10	60%	11	77%
5	Harbour	25	70%	33	80%
6	Berthing	17	70%	21	77%
	TOTAL	54	56%	85	89%

Annex 3 shows Croatian ENC priority plan. Annex 4 shows recognized HSC routes which are covered by ENC's from 1 July 2008 as it was planned. Annex 5 shows ENC's release status.

3.2. ENC's distribution method

CHI distributes its ENC's through the PRIMAR RENC. The first Croatian ENC's were released in February 2007. In the period between two conferences 91 ER's were released.

3.3. WMS for ENC's

CHI as a member of Primar Stavanger actively participated in the project WMS for ENC's together with a few other PS member states in the project defining phase as well as in the pilot testing of the new WMS service phase. At the moment, CHI and a few Croatian maritime governmental organizations (MRCC, Maritime Directorate, HM Offices) use WMS for ENC's for administrative purposes (Fig 3).

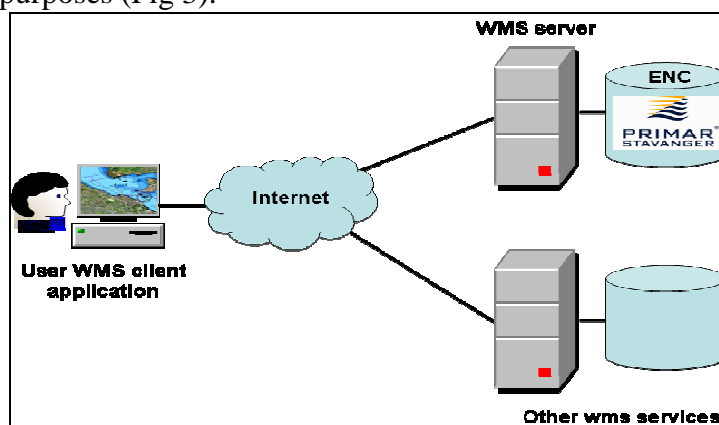


Figure 3. Primar WMS for ENC's

3.4. INT ENC scheme

The CHI view about INT ENC scheming as a response to MEDINT CHART Coordinator CL No 35 and 36 is attached as Annex 6 of this report.

3.5. RNCs

RNCs covering Croatian area of responsibility are available from ARCS according to bilateral agreement.

3.6. INT paper charts

MEDINTCHART Catalogue should be updated in accordance with following tables:

Index 1

INT No.	Producer <i>Producteur</i>	National No.	Date		Scale/Echelle		Format	Printer <i>Reproducteur</i>
			Publication	N. Edition	1:	Latitude		
301	IT	340	1972	1996	2 250 000	41°30'	A0	FR, DE, ES, GB, US, PT, HR
302	IT	350	1982	1997	2 250 000	41°30'	A0	FR, DE, ES, GB, US, HR

Index 3.1

INT No.	Producer <i>Producteur</i>	National No.	Date		Scale/Echelle		Format	Printer <i>Reproducteur</i>
			Publication	N. Edition	1:	Latitude		
3410	HR	3410	1988	1999	250 000	45°00'	A0	FR(7244 – 04)
3412	HR	3412	1991	2000	250 000	42°50'	A0	FR (7326 – 92)
3414	HR	3414	1998		250 000	41°55'	A0	FR

Index 3.1

<u>3472</u>	HR	100-16	1973	2008	100 000	44°50'	B1	
<u>3473</u>	HR	100-18	1977	1996	100 000	44°55'	B1	

Index 3.2

<u>3474</u>	HR	15	2004		10 000	45°18'	A0	
Plans: A – Luka Rijeka 1:5000; B – Rijeka - Lucica Torpedo 1:1500; C – Petrolejska Luka 1:2 500; D – Rijeka - Brajdica Kontejnerski Terminal 1:5000								
<u>3476</u>	HR	100-21	1973	1996	100 000	43°35'	B1	
Plan: A – Splitska vrata 1:15 000								
<u>3477</u>	HR	47	2002		15 000	43°30'30''	A0	
Plans: A – Split-Gradska luka 1:5000; B – Bazen Vranjic 1:4 000; C – Bazen Solin 1:5000								
<u>3480</u>	HR	100-25	1972	1995	100 000	42°55'	B1	
<u>3482</u>	HR	154	1955	1975	200 000	42°35'	B1	
<u>3484</u>	HR	100-27	1970	1999	100 000	42°51'	B1	
Plans: A – Luka Polace 1:20 000; B – Luka Slano 1:15 000								
<u>3485</u>	HR	83	2001		10 000	42°40'	A0	
Plans: A – Dubrovnik – Luka Gruz 1:5 000; B – Dubrovnik – Stara luka 1:2 000; C – Marina Dubrovnik 1:2 500								

3.7. National paper charts

In the period between the two MBSHC Conferences Croatian Hydrographic Institute published the following charts:

New charts

Pakleni kanal	50	1:18 000
---------------	----	----------

New editions

Small Craft Charts	1-29	1:100 000
Grado – Rovinj	100-15	1:100 000
Ploče	63	1:8 000

New printing

Jadransko more	101	1:800 000
Rijeka – Venezia	151	1:200 000
Pula - Kvarner	100-16	1:100 000
Lošinj – Molat	100-17	1:100 000
Rijeka – Kvarnerić	100-18	1:100 000
Dugi otok – Zadar	100-20	1:100 000
Šibenik – Split	100-21	1:100 000
Pelješac – Mljet	100-27	1:100 000

3.8. Problems encountered

Some overlapping issues exist among HR, IT and GR Overview and General ENC's, and they should be discussed and solved. Some inconsistencies observed between national paper charts and ENC's are also under consideration and deliberation.

The CHI view about a few gaps in the Adriatic Sea covered by INT paper charts series scale 1:250 000 is attached as Annex 7 of this report.

The CHI comment on the SI initial proposal of the new INT chart in the North Adriatic is attached as Annex 8 of this report.

4. NAVIGATIONAL PUBLICATIONS

4.1. National navigational publication series

CHI navigational publication series includes the following documents:

- 1 Sailing Directions (u pripremi novo izdanje, tisak kraj godine)
- 1 Sailing Directions for Yachts (two volumes in four languages)
- 1 Lists of Lights
- 1 Radio Service
- 1 Nautical Almanac
- 1 Nautical Tables
- 1 Symbols and abbreviations (INT)
- Notices to mariners (monthly edition)
- Catalogue
- 1 Tide Tables
- 1 Special Publication for Croatian Navy Ships

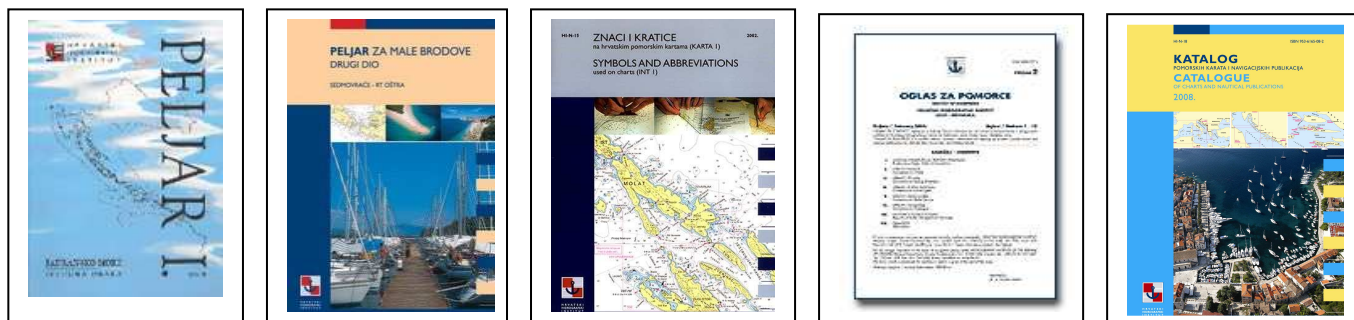


Figure 4. Navigational publications

4.2. Issued navigational publications

The publications issued since the XV MBSHC Conference are listed hereinafter:

Tide Tables:

- Tablice morskih mijena 2008
- Tablice morskih mijena 2009

Nautical Almanac:

- Nautički godišnjak 2008
- Nautički godišnjak 2009
- Nautički godišnjak 2010 (in preparation)

List of Lights:

- Popis svjetala i signala za maglu Jadransko more istočna obala, new ed. 2009

Radio Service

- Radio služba 2006 (new print 2008)

Catalogue:

- Katalog pomorskih karata i navigacijskih publikacija, New edition 2008

Electronic version of Notices to Mariners is under preparation

5. MARITIME SAFETY INFORMATION (MSI)

The Croatian NAVTEX Station has been installed in Hvar Is. (Q) since 1999 (previously Split), covering the area of the Adriatic Sea, being maintained by the coastal station Split Radio. This station broadcasts every four (4) hours. Correctness in the promulgation of information is controlled on the NAVTEX receiver in Nautical Department of the CHI. No failure occurred during ordinary operation. Schedule of radionavigational warnings is shown in the following table:

NAVWARNINGS	2007	2008	2009 (until 28.08.09)
NAVAREA	5	21	10
COASTAL	60	39	21
LOCAL	262	233	174

The most important maritime safety information – Notices to Mariners (monthly edition), 10-day's bulletin of radionavigational warnings and the list of Temporary (T) and Preliminary (P) Notices – are available on www.hhi.hr.

5.1. Problem encountered

Although the newest Navtex areas of responsibility have been defined, CHI still promulgates Slovenian NAVAREA warnings through HR Navtex station.

6. S-55 IHO PUBLICATION

Updating information is provided as necessary.

7. CAPACITY BUILDING

7.1. Training

Within implementation of the three-year CRONO HIP project, instruments and equipment for the new digital production line are obtained. CHI personnel have been trained in various ENC construction issues and Quality Control and Validation procedures. Cartographic Department personnel have also attended seminars in dKart software (ENC tools) and HydroCap vectorisation software. Hydrographic Department personnel have completed MBES training course.

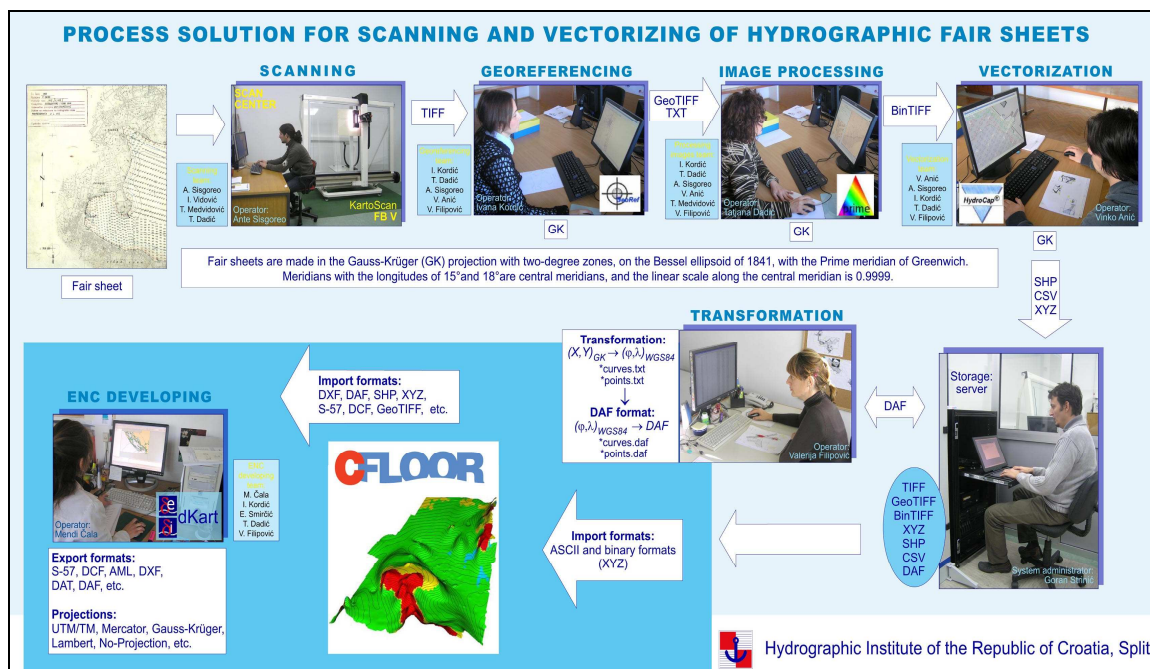


Figure 5. Process solution for scanning and vectorisation of hydrographic fair sheets

7.2. Bilateral agreements

During the period 2007-2009, the following Bilateral Arrangements were compiled and are now under affirmation between Croatia and the following countries: Greece and Italy. Croatia signed Bilateral Arrangements with the following countries: Germany, UK, France and Norway.

7.3. Bilateral projects

Phase II of the Joint Croatian - Norwegian project (CRONO HIP) has successfully finished. It is expected to be continuing with Phase III. The project aims to integrate the total system from data collection to ENC and chart compilation and production. All involved CHI staff will gain experience in the new production system. The result will contribute to CHI's portfolio of nautical products, and written procedures as foundation of a future ISO 9000 quality system.

8. OCEANOGRAPHIC ACTIVITIES

8.1. Oceanographic projects

Oceanographic Department participates in several projects: Research of the Adriatic Sea as the Basis for the Sustainable Development of the Republic of Croatia - Project Adriatic (RASSDC), European Sea Level Service - Research Infrastructure (ESEAS-RI, 2002-2005), Dynamics of the Adriatic in Real Time (DART 06/07) ending in December 2007, Internal Tidal Hydrodynamics and Ambient Characteristics of the Adriatic (ITHACA) and Mediterranean Network for Systematic Sea-level Monitoring in the Mediterranean and Black Seas - regional subsystem of GLObal Sea Level Observing System (MedGLOSS).

Through the project "Adriatic tides and sea level on-line" managed by the OCO-HHI, several web applications were created, giving tidal predictions at 7 standard and 9 secondary ports along the Croatian coast of the Adriatic Sea. During 2005 tide gauge station (Split) was collocated with (CGPS – Continuous Global Positioning System) providing the real-time information about absolute measured sea level for the years 2007, 2008 and August 2009. Operational tide gauges (see Figure 6) are equipped with analogue-to-digital converters (a/d) having continuity in the long-term observation.



Figure 6. Schematic Adriatic Sea map with tide gauges operational in 2007-2009 (filled circles) and the last 50 years (blank circles) along the Croatian coast of Adriatic Sea.

During 2008/2009 oceanographic department participates within "JADRANSKI PROJECT" which included monitoring of oceanographic parameters like CTD and current meter measurements as shown in Figure 7.

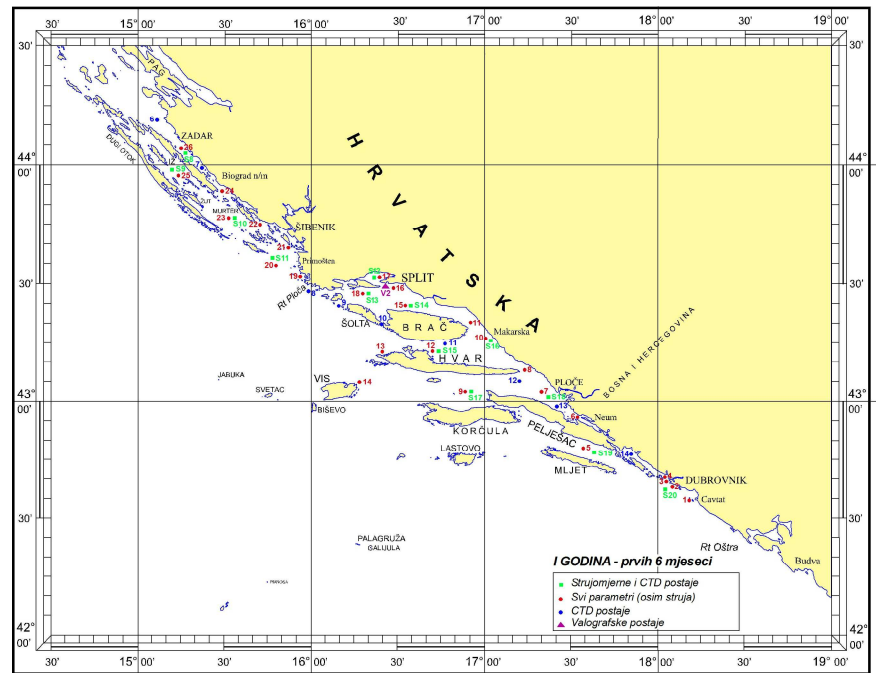


Figure 7 Schematic presentation of measurements sites within JADRANSKI PROJECT (2008/2009)

In May 2009 oceanographic department deployed DATAWELL waverider buoy for monitoring wave heights, wave periods and wave direction generated by wind in front of Rijeka harbour within the RIJEKA GATEWAY PROJECT titled “Wave Condition Monitoring within Port of Rijeka – Zagreb Pier” (Figure 8). The waverider is going to measure continuously wave parameters during two years period 2009-2011.

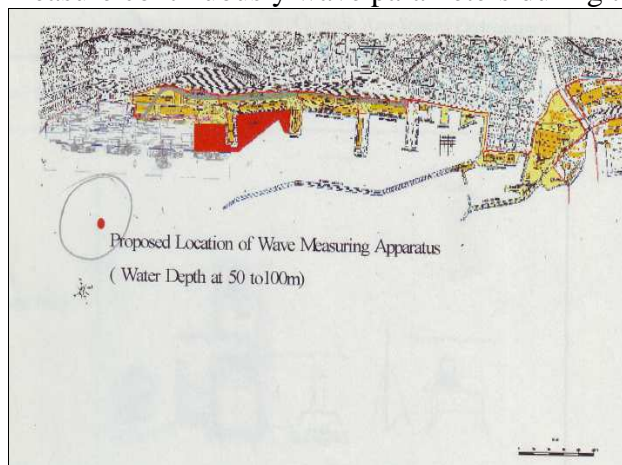


Fig. 8. Location of Datawell waverider in front of port Rijeka (North. Adriatic)



Fig. 9. Deployment of waverider buoy on 6 May 2009

8.2. Oceanographic publications

Annual publications "Tide tables – Adriatic sea, East coast" and "Report on tide-gauge measurements along the east Adriatic coast" are also presented in a digital format for the years 2007, 2008 and 2009.

9. OTHER ACTIVITIES:

CHI personnel participated in several IHO Committees and WG such as ABLOS, CPRNW, WEND, MBSHC, 4th EHC and Primar RENC Advisory Committee and Joint Primar – IC-ENC TEWG.

CHI personnel participated in several international scientific and technical conferences presenting hydrographic and oceanographic papers.

CHI was coordinator of the Croatian project Places of refuge for ships in need of assistance. One of the project results is Adria_GIS computer application representing GIS product for decision making support. Application contents are completely aligned with Directive 2002/59/EC and IMO Resolution A.949(23) which deal with Places of Refuge for ships in need assistance issues. Application ensures rapid access and analysis of relevant safety, economic, ecological, logistic, and technical-technological parameters for the MRCC duty officer and other persons responsible for final decision making about the request for a place of refuge. Croatian ENC is one of the crucial data layers of the application, which is obtained from PRIMAR WMS for ENC (Fig.10)

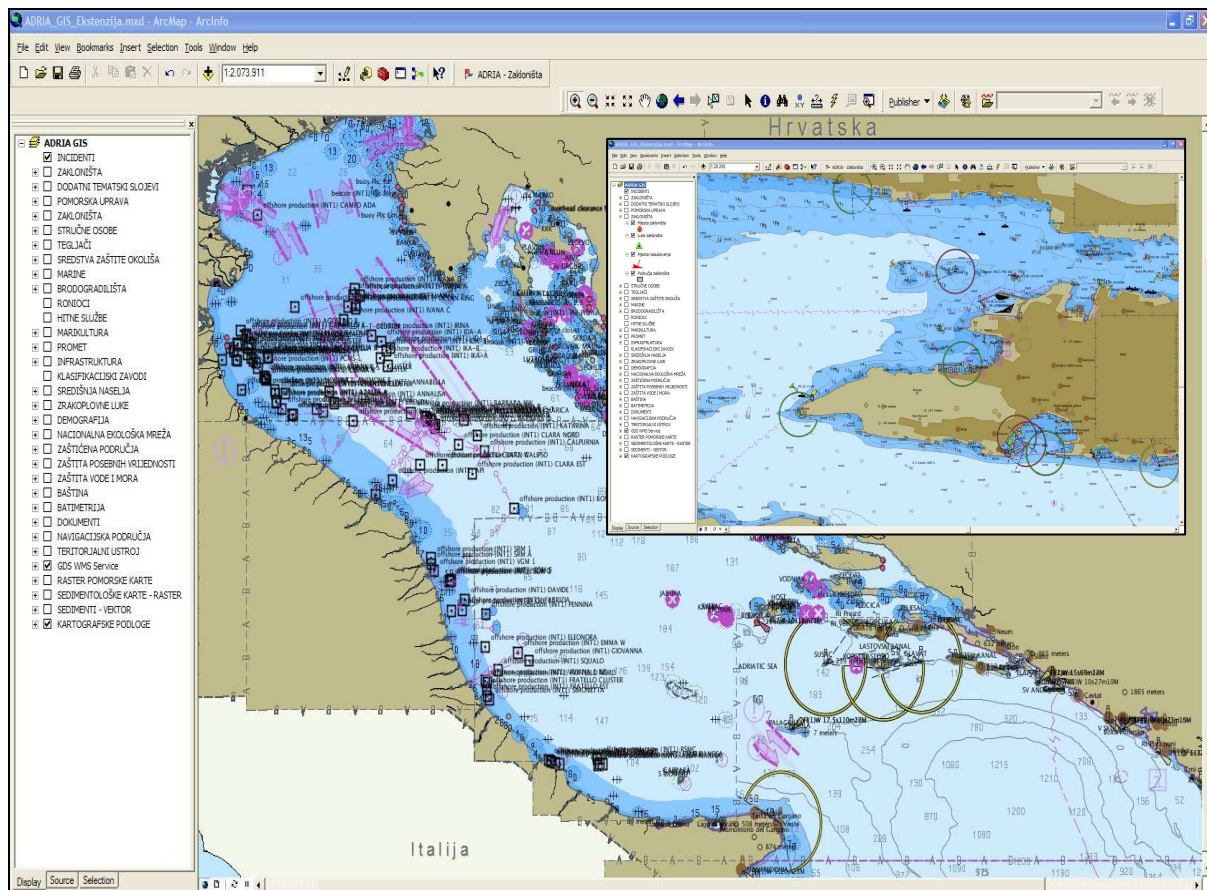
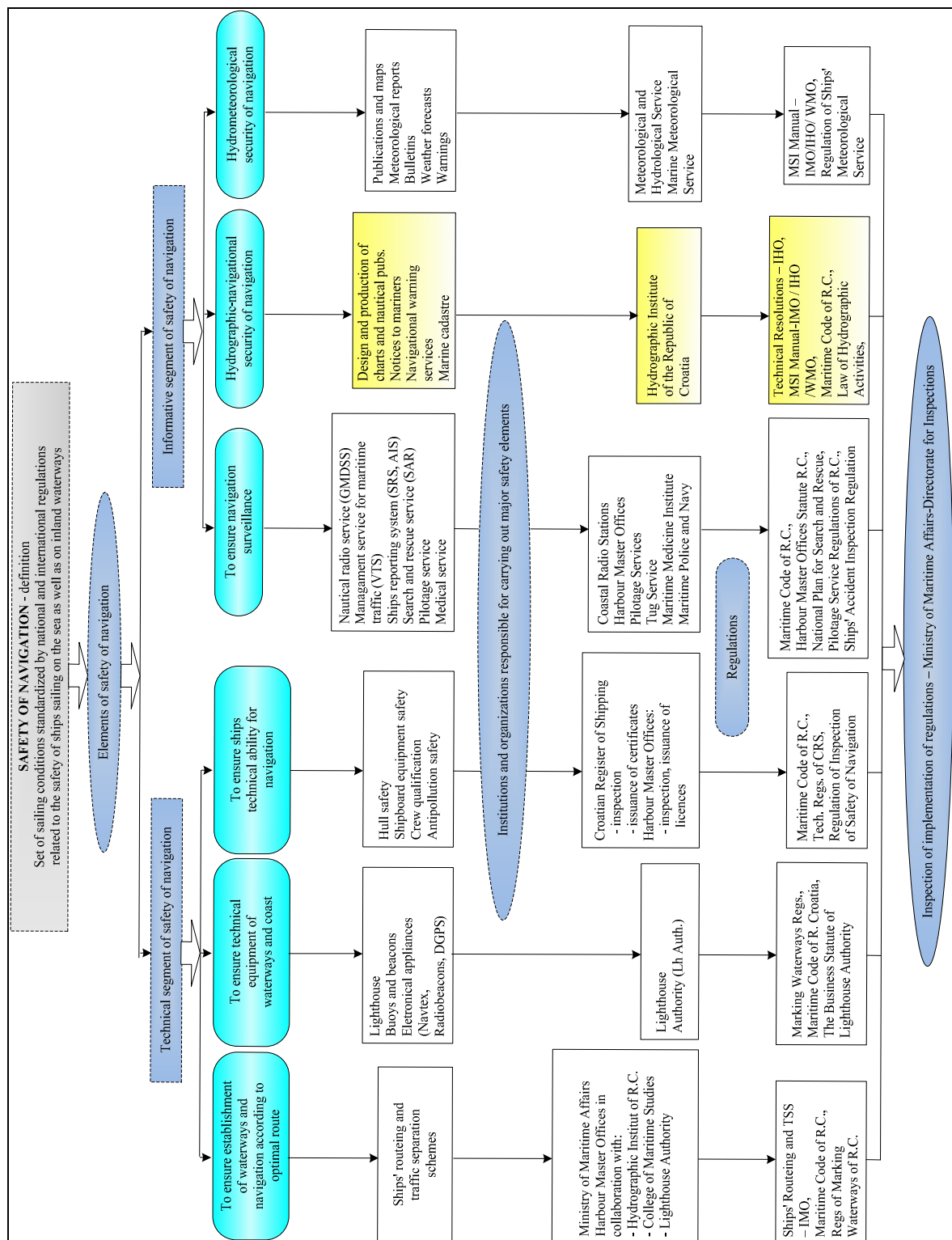
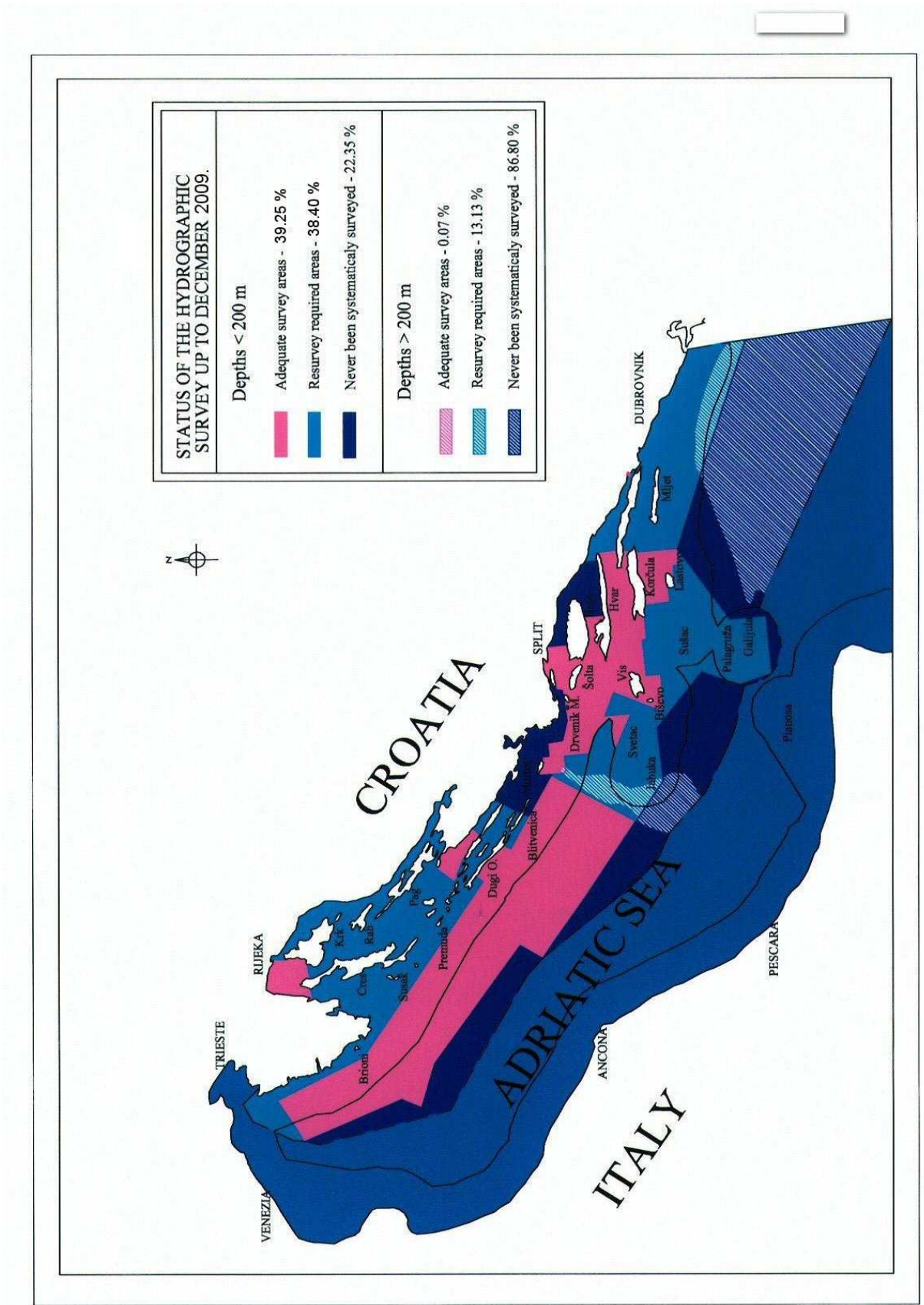


Figure 10. Display of maritime information in ADRIA GIS application on the layer of ENC's using WMS through PRIMAR's WMS for ENC's – an example of using ENC for non navigational purpose

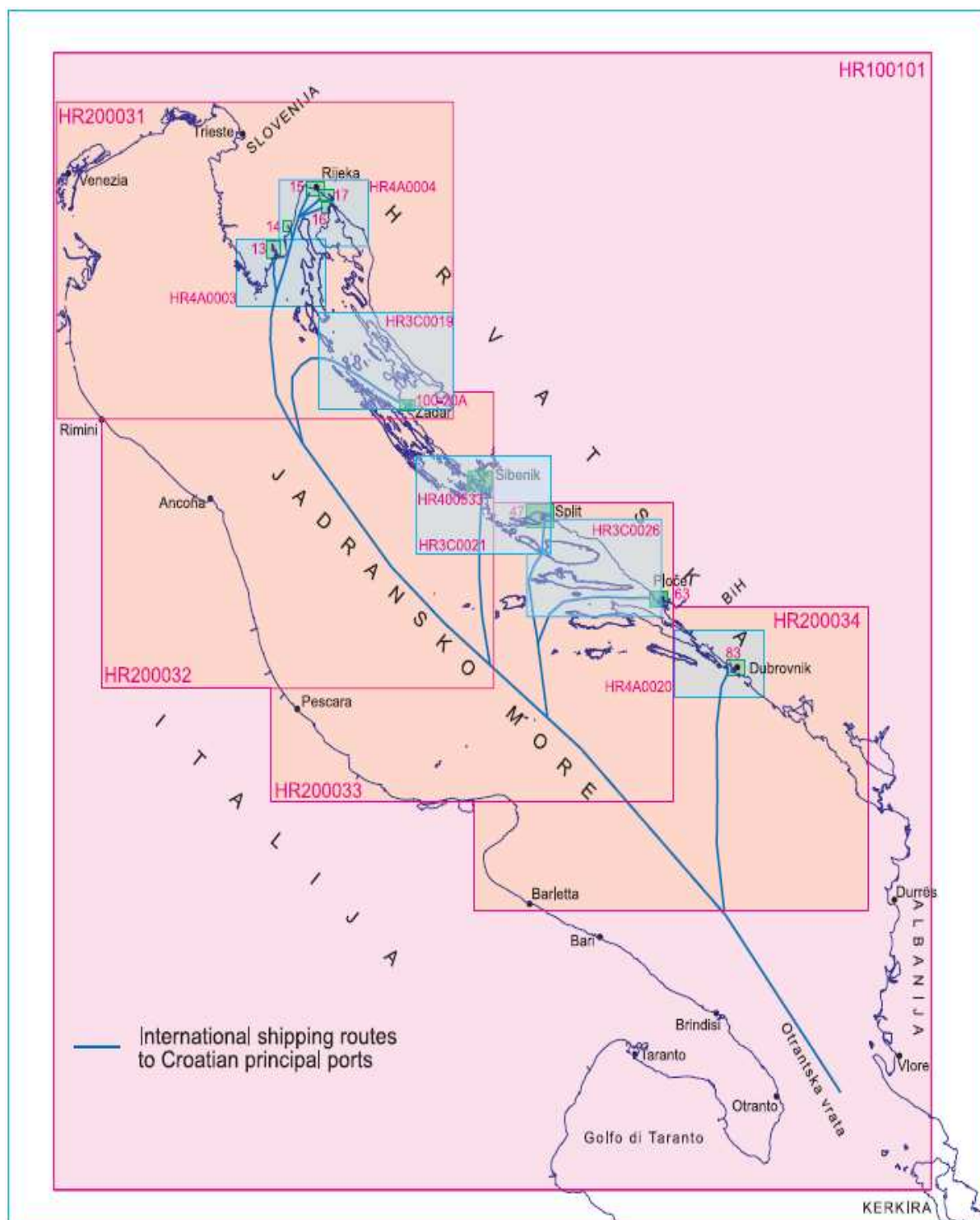
ANNEX 1 CHI POSITION IN STRUCTURE OF CROATIAN ADMINISTRATION



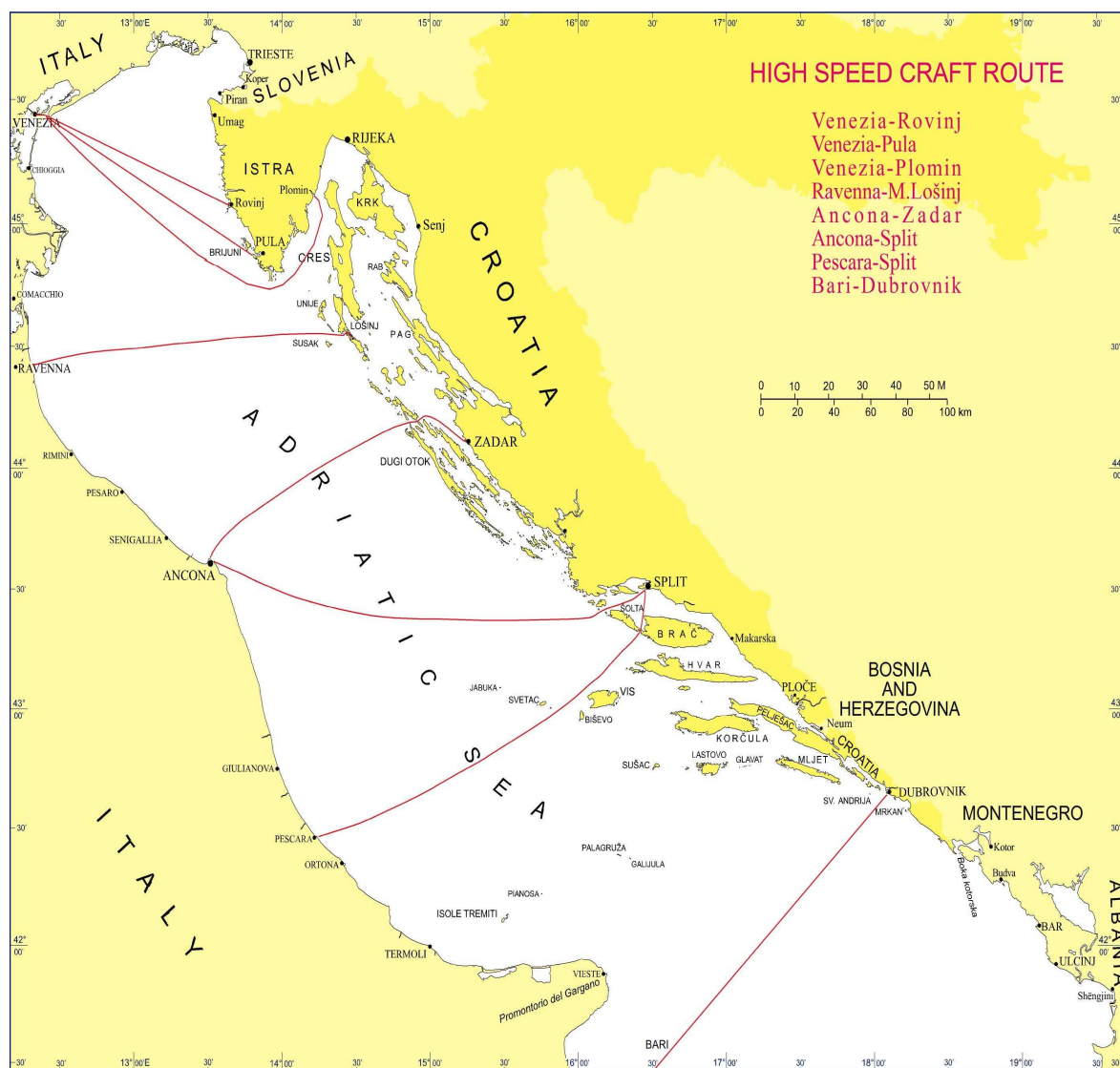
ANNEX 2 STATUS OF HYDROGRAPHIC SURVEYS



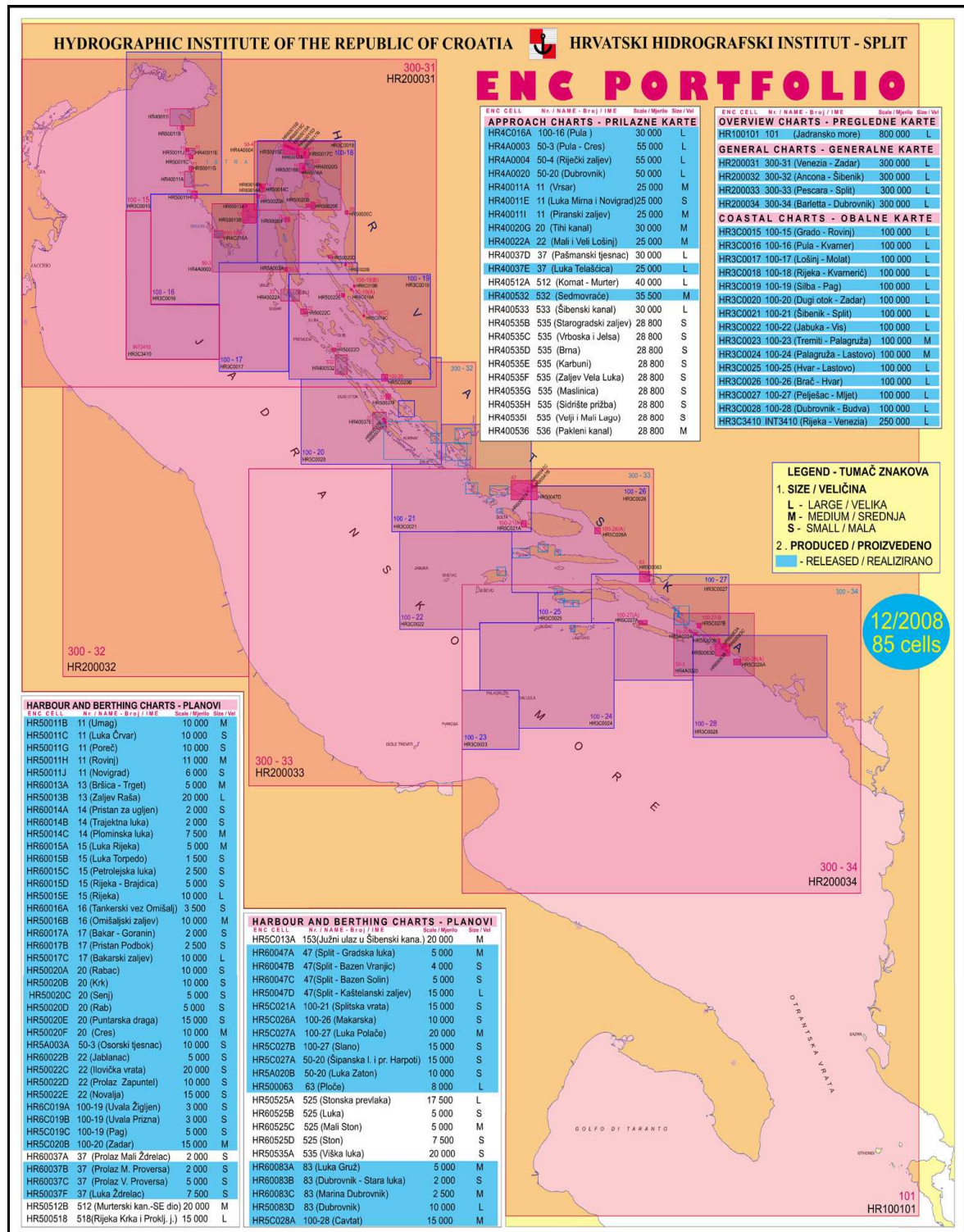
ANNEX 3 CROATIAN ENC PRIORITY PLAN



ANNEX 4 RECOGNIZED HSC ROUTES



ANNEX 5 ENC'S RELEASE STATUS



ANNEX 6 INT ENC SCHEMING – CROATIAN VIEWS

Subject: ENC production in MBSHC

Reference: Circular Letter MEDINTCHART No 35 and 36

In reply to the above references, please note the Croatian views on the proposed scheming for MBS ENC, for scale categories Overview (1), General (2) and Coastal (3), as follows:

1. Overview

1. Charts IT100340 and IT 100360 (scale 1:1 500 000) overlap with Croatian national paper chart 101 and ENC HR100101 (scale 1:800 000).

It is proposed that the data coverage limit be the continental shelf boundary (the middle of the Adriatic),

This would imply a co-production ITA/CRO instead of the production of Italian data.

2. General

2. Charts IT200435 and IT200434 (scale 1:700 000) overlap with Croatian national paper charts 300-31, 32, 33, 34 and Croatian ENC: HR1B0031, HR1B0032, HR1B0033, HR1B0034 (scale 1:300 000).

It is proposed that the data coverage limit be the continental shelf boundary (the middle of the Adriatic).

This would imply a co-production ITA/CRO instead of the production of Italian data.

3. Coastal

3. Croatian paper charts: 100-15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28 (scale 1:100 000) and Croatian ENC: HR2C0015 to HR2C0028, have been supplemented with the data from CRO INT charts: INT 3410, INT 3412, INT 3414 (scale 1:250 000), so that the entire Croatian part of the Adriatic will be covered with cells of usage band 3 (COASTAL).

Overlaps with neighbouring ENC producing countries will be solved through mutual technical arrangements.

4. Additional considerations:

- Consideration of the paper INT chart scheme as a possible solution for INT ENC scheme may not be the best approach, and the question arises whether such consideration is necessary at all.

In other words, ENC by itself is an INT chart and has its rules for the construction of content, format, and coverage (limits), which is closely linked with the INT ENC scheming. If we follow the ENC “no data limit” concept, every ENC producing nation should represent within its ENC only the area of its national jurisdiction, omitting the data of the neighbouring countries, which are normally shown on the paper INT charts according to the paper INT chart concept.

Croatia, in the production of its ENC's, provides coverage only of the area within its national jurisdiction. The issue yet to be solved is the above mentioned problem of overlapping between neighbouring countries which should be resolved and harmonised so as to avoid inconsistency of data in boundary areas. In other words, by solving the overlapping problem, the use "no data limit" concept will be provided for end users.

The issue concerned could be summarised as follows:

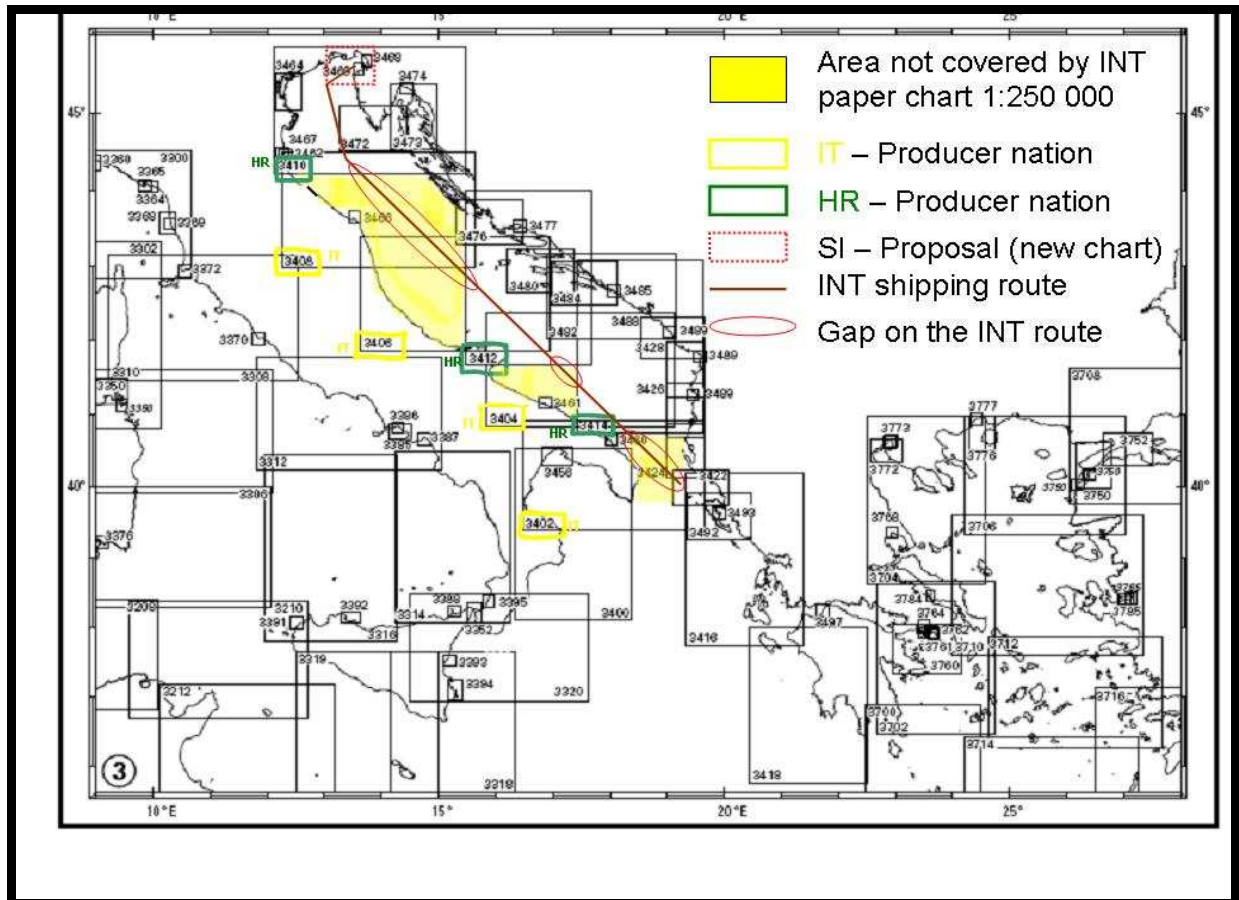
- the ENC by itself has an INT character,
- it is important to cover a wider area (MBS area) with such (INT) ENC's of different navigational purposes (Overview , General, ...Harbour, Berthing),
- each ENC producing nation should produce ENC's only for the area within its national jurisdiction,
- the problem of overlapping between neighbouring ENC producing nations, and in the whole MBS area, should be solved in co-operation with the INT Chart Coordinator.

If the above mentioned conditions are fulfilled, INT ENC scheme will become irrelevant to end users for the navigation in a certain area (MBS area).

Yours sincerely,

D.Sc. Zvonko Gržetić
Director CHI

ANNEX 7 INT PAPER CHARTS 1:250 000 - GAPS IN ADRIATIC SEA – CROATIAN CONSIDERATION



Questions:

1. Is there any mariner who will sail across the Adriatic Sea using only three available INT charts having gaps between them?
2. Can the situation be improved if only one Approach chart is produced for the golf of Trieste in the North Adriatic?
3. How to explain the necessity for keeping updated the existing three INT charts (HR producer nation) if others do not exist?
4. How to improve the overall situation in the Adriatic Sea?

Draft of Proposals:

1. Medintchart Coordinator to inform Commission about the situation in the Adriatic Sea.
2. Medintchart Coordinator to inform Commission and the producer nation about the possible action according to M-11 (3.11.3 and 3.11.4).
3. Make proposal for to be approved by Commission
4. ...??

**ANNEX 8 INT PAPER CHART SCHEMES – NEW DEMAND SUBMITTED BY
SLOVENIA - CROATIAN RESPONSE**

Republic of Slovenia
Ministry of Transport
Maritime Directorate
Langusova 4,
Slovenia
1535 Ljubljana

Subject: INT paper chart schemes – new demand submitted by SI
Croatian comment

Ref.:

1. MBSHC15 Report, Annex 7, Decision MBSHC15-MEDINTCHART 1
2. Doc. No. 3730-4/2007/2-0005761, dated 16 July 2007, issued by Maritime Directorate, Ministry of Transport of the Republic of Slovenia, submitted to CHI through diplomatic channels between the Republic of Slovenia and the Republic of Croatia

Dear Sirs,

With reference to the above mentioned documents, pursuant to the provisions of IHO Publication M-11, Part A, Guidance for the Preparation and Maintenance of INT Chart Schemes, Croatia, having considered the proposal of Slovenia, supports such proposal under the following conditions:

- that producer nations be SI/HR/IT, by reference to the provision 3.11.2, as the chart area covers the areas of responsibility for chart production of the three countries – binding condition
- that the chart scale be 1:100 000, by reference to the provision 3.4, the proposed scale of 1:75 000 is intermediate between Approach Chart (1:30 000 – 1:75 000) and Coastal Chart (1:75 000 – 1:350 000), and by reference to the provision 3.4.3., as the proposed scale is larger than the source scale (1:100 000) – condition to be discussed and agreed on.

It is necessary to accept the conditions as listed above before Croatia gives consent to the initial proposal, whereupon, in accordance with the provision 3.10.1 of IHO publication M-11, the final proposal could be prepared jointly, specifying in detail the chart concept and all the elements of chart contents, under the provisions of IHO Publication M-4 „Chart Specification of the IHO and Regulations for International (INT) Charts“.

Dr. Sc. Zvonko Gržetić
CHI Director

Copies:

- MEDINTCHART Co-ordinator - France
- CSPCWG Chairman – UK
- IIG – Italy
- MFA – Croatia
- MSTI - Croatia