

MEDITERRANEAN AND BLACK SEAS HYDROGRAPHIC COMMISSION

21st CONFERENCE

ROMANIA NATIONAL REPORT

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AGENDA:

	<i>Page No.</i>
1. HYDROGRAPHIC OFFICE	... 4
2. SURVEYS	... 4
Coverage of new surveys	... 4
Survey platforms and equipments	... 5
New technologies and /or equipment	... 6
New ship	... 7
3. CHARTS	... 7
ENCs	... 7
RNCs	... 9
INT Paper Charts	... 9
National Paper Charts	... 10
Special Naval Charts	... 12
Cartographic Production	... 12
4. NAUTICAL PUBLICATIONS	... 13
MHD Official Nautical Publications	... 13
New Publication/Edition Of Nautical Publications	... 14
5. MARITIME SAFETY INFORMATION (MSI)	... 14
Existing infrastructure for transmission	... 14
NAVTEX	... 14
NAVAREA Contact Information	... 17
MSI Equipment	... 17
New infrastructure in accordance with GMDSS Master Plan	... 17
Problems encountered	... 17
6. CAPACITY BUILDING	... 17
Training received through capacity building program	... 17
Training received outside the capacity building program:	... 18
Training needed	... 18
7. OCEANOGRAPHIC ACTIVITIES	... 19
8. OTHER ACTIVITIES	... 19
9. CONCLUSIONS	... 21

1. HYDROGRAPHIC OFFICE

According to the Law no 395/2004, Romanian Maritime Hydrographic Directorate is the national authority in the field of hydrography and marine cartography. Romanian Maritime Hydrographic Directorate has also the statute of Lighthouses Authority.

Maritime Hydrographic Directorate operates under the leadership of the Naval Forces within the Romanian Ministry of National Defence.

The Directorate is committed to bilateral arrangements, developed in co-operation with other international government hydrographic authorities, regarding data exchange.

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2. SURVEYS

Coverage of new surveys

Hydrographic surveys were executed in the coastal area up to the 20 m bathymetric and at this time we have completed up to 40% of the Romanian coast, and several surveys were done for military exercises.

In 2018 we have performed the following surveys:

- ✓ Topographic survey of the entire Romanian coastline (yearly activity). During this activity we verify the erosion process and the effects of sediments from Danube River;
- ✓ Hydrographic and oceanographic surveys for military harbors from Danube River and Black Sea;
- ✓ UXO surveys in the Black sea and on the Danube River;
- ✓ Shoreline surveys for military exercises;
- ✓ Hydrographic surveys, in order to update the national database in the following areas:
 - Eforie North;
 - Constanta North;
 - Vadu;
 - St. Gheorghe;
 - Sulina.

Also, in 2018 we performed the specific measurements for expanding and updating the database managed by the "Department for Data Analysis and Evaluation for Anti-Mine Warfare" in order to increase the safety of navigation in the Romanian territorial waters.

Other surveys done by other national authorities based on Romanian national law:

- Surveys of Mangalia, Constanta and Midia Ports- done by Port Authority (the data has been provided to RO MHD);
- Navigation Channel surveys for the Danube River- done by Romanian Danube Administration;

During 2018 several hydrographic and oceanographic surveys were conducted by private companies in order to support the development of the oil platforms. The data and the relevance is validated by the directorate in order to update the national database.

Survey platforms and equipments

The surveys were done using the following platforms and equipment:

The Romanian Hydrographic ship Cpt.Cdor ALEXANDRU CĂTUNEANU



Equipment: EM 3000 Multibeam

EA 400 Singlebeam

Engetech 4200 side scan sonar

Magnetometer – Marine Magnetics

Gradiometer- Marine magnetics

Survey Launch Cpt. Cdor . ALEXANDRU CĂTUNEANU II



Equipment: EM 3002 Multibeam
EA 400 Singlebeam
MS 1000 underwater scanner
Engetech 4200 side scan sonar
Magnetometer – Marine Magnetics

Survey Launch Hidrografica 3



Equipment: EA 400 Singlebeam
Magnetometer – Marine Magnetics

New technologies and /or equipment:

In 2018 we acquired software solutions to help interoperability in the Directorate (Caris HIPS & Sips, ArcGis topographic modules).

We also started the procedures in order to change:

- the survey equipment for the Romanian Hydrographic ship - we will update it with a deep sea multibeam system;
- update the tide gauge system with 3 new systems;
- the RTK network with 3 new portable RTK base stations.

New ship:

This year we will finalize the procedures in order to acquire 2 new survey platforms that will be fitted with hydrographic and oceanographic equipment (single beam, multibeam, ADCP, SVP probe, CTD).

3. CHARTS

MDH produces official standard nautical charts (SNC) and electronic navigational charts (ENCs) covering the waters within the national responsibility. For details see: <https://www.dhmf.ro/en/>.

ENCs

From 2013 to 1st of April 2019, MHD has produced 13 ENC cells based on existing paper charts (Figures 1-4). One ENC cell, band 2, was validated in February 2019 and is awaiting release for distribution. Since January, MHD managed to release 2 new ENC editions and 6 updates.

MHD intends to produce and send for distribution this year, 4 new ENC cells band 3 and 5.

Usage band	Navigation purpose	No of cells released	No of cells planned for production(this year)
1	Overview	N/A	N/A
2	General	Awaiting release	N/A
3	Coastal	To be produced	2
4	Approach	6	N/A
5	Harbor	3	2
6	Berthing	4	N/A
Total		13	4

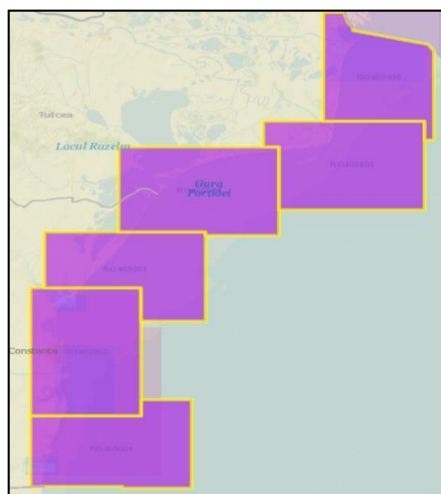


Figure 1. Approach band, scale 1:45000, covering Romanian Coast

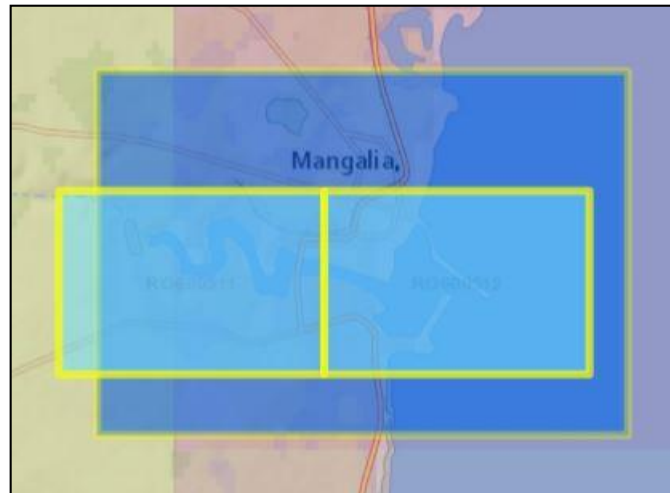


Figure 2. Harbour and berthing bands - Port of Mangalia

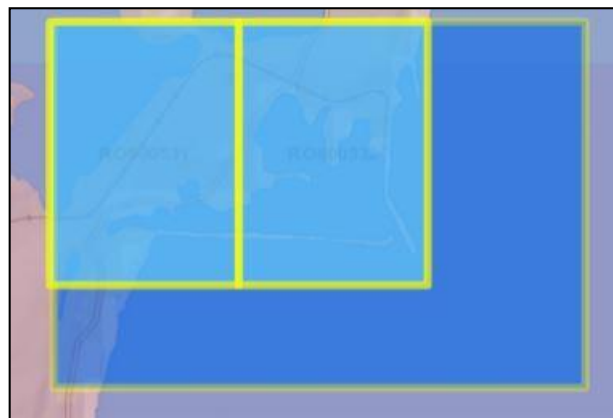


Figure 3. Harbour and berthing bands - Port of Midia



Figure 4. Harbour band - Port of Sulina

ENC distribution method

MHD distributes its ENCs through IC-ENC RENC. First Romanian ENC was released in 2013.

RNCs

Romania does not produce RNCs.

INT Paper Charts

Romania has in its portfolio 6 INT numbers which cover the entire Romanian coast of the Black Sea and the Romanian ports.

INT No.	National No.	MAIN TITLE	CHART LIMITS			
			South	North	West	East
3820	1.300.01	<i>From Kaliakra to Danube Delta</i>	43°14.50'N	45°46.50'N	28°17.00'E	30°40.00'E
3902	1.010.11	<i>Port of Mangalia</i>	43°46.60'N	43°50.00'N	28°31.00'E	28°37.90'E
3904	1.010.31	<i>Port of Midia</i>	44°18.00'N	44°21.40'N	28°37.00'E	28°43.90'E
3905	1.030.02	<i>Port of Constantza and approaches</i>	43°58.00'N	44°12.75'N	28°36.40'E	28°51.00'E
3907	1.050.06	<i>From Gura Sf.Gheorghe to Gura Musura</i>	44°50.80'N	45°15.00'N	29°35.00'E	29°58.80'E
3908	1.030.09	<i>Port of Sulina and approaches</i>	45°02.00'N	45°12.00'N	29°56.50'E	29°36.80'E

The current status of INT charts produced by MHD is:

INT No.	SCALE	MAIN TITLE	STATUS
3820	1:300000	<i>From Kaliakra to Danube Delta</i>	Produced / Printed
3902	1:10000	<i>Port of Mangalia</i>	Produced / To be printed
3904	1:10000	<i>Port of Midia</i>	In progress
3905	1:30000	<i>Port of Constantza and approaches</i>	Produced / Printed
3907	1:50000	<i>From Gura Sf.Gheorghe to Gura Musura</i>	Produced / To be printed
3908	1:30000	<i>Port of Sulina and approaches</i>	Produced / To be printed

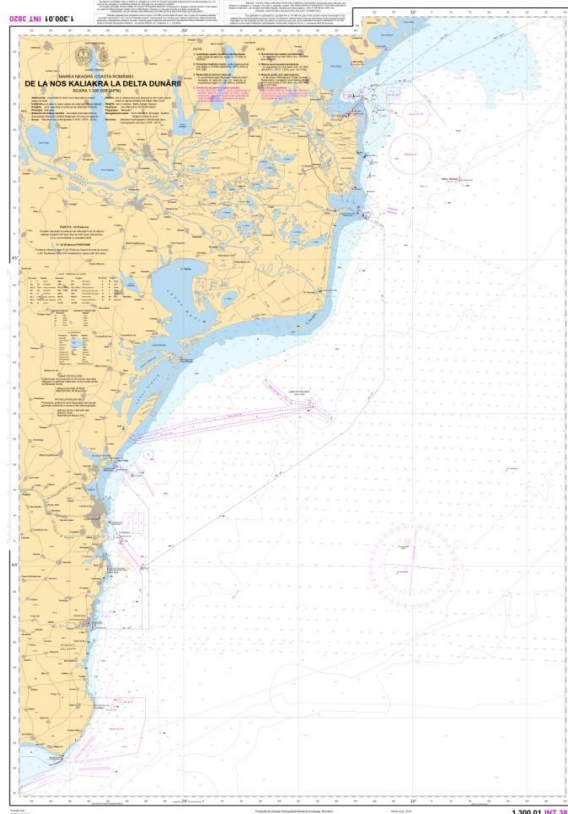


Figure 5. INT3820 Chart

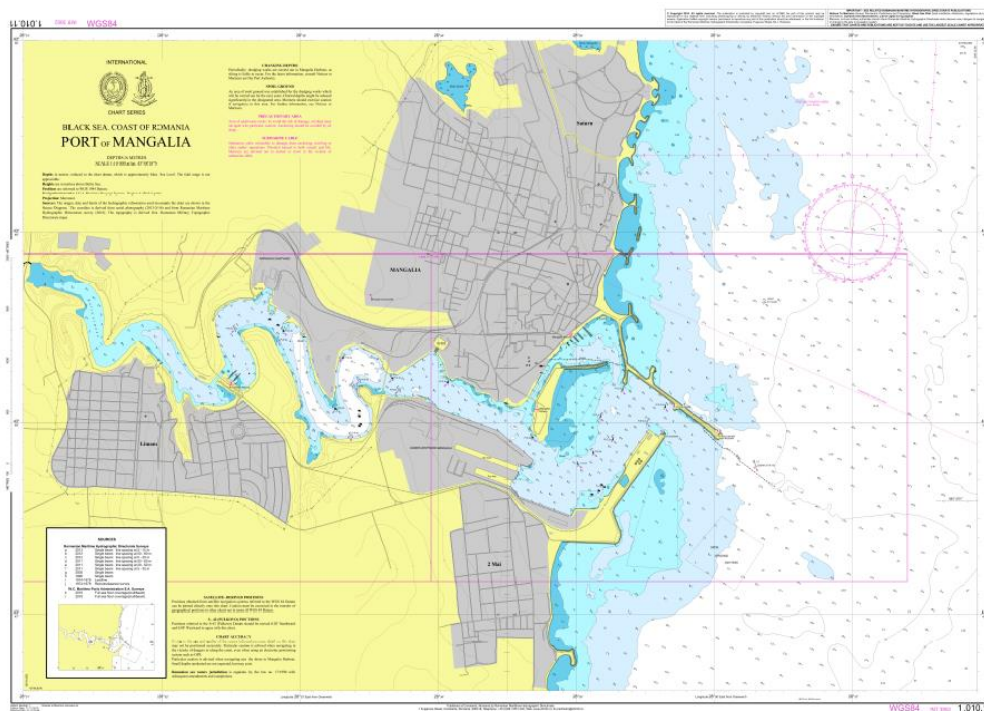


Figure 6. New INT3902 Chart

Details on MHD INTs (title, chart limits, current status etc.) are accessible for all chart users in INTeRnational Chart Web Catalogue, at <http://chart.iho.int:8080/iho/main.do> (Region: F, Nation: RO) – Figure 7.

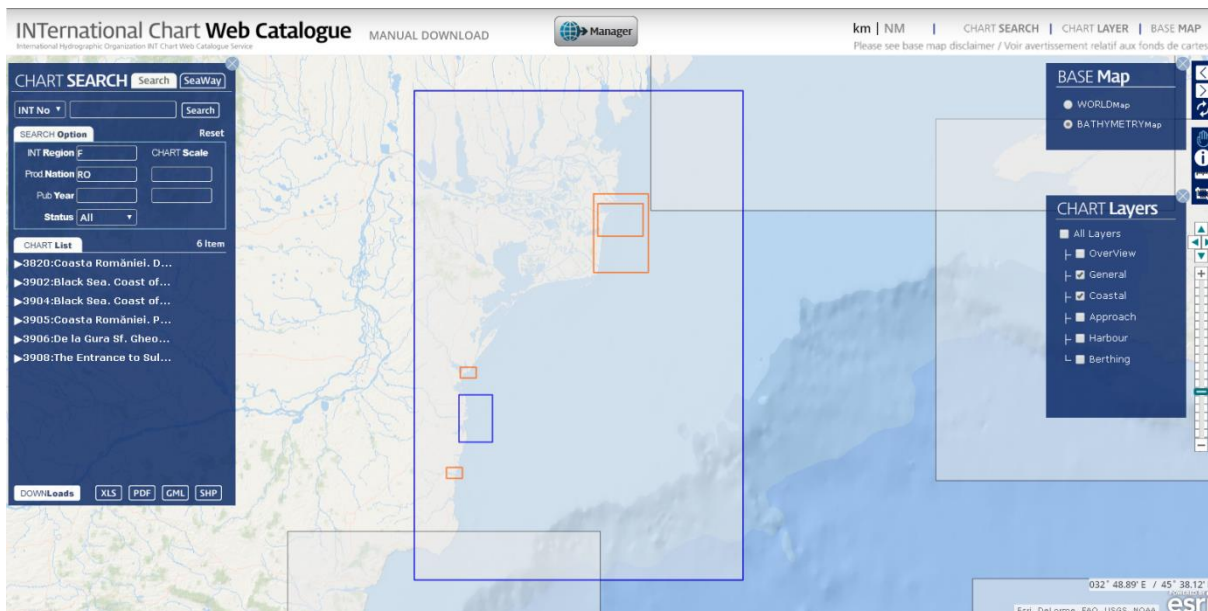


Figure 7. INT Paper Charts Status on IHO INTOGIS manager

National Paper Charts

The Romanian national folio of paper charts consists in: 30 paper charts edition 2007 (reprinted 2009) and 5 paper charts edition 2014.

The datum of all charts is **WGS84**.

SCALE	NO. OF CHARTS	SCALE	NO. OF CHARTS
MEDIUM-SCALE	15	LARGE-SCALE	20
Landfall Charts	4	Port Approach Charts	6
1:750000	2	1:50000	6
1:500000	2		
Coastal Navigation Charts	11	Harbour Charts	6
1:300000	1	1:30000	1
1:250000	1	1:25000	1
1:150000	2	1:10000	4
1:100000	4		
1:75000	3	Berthing Charts	8
		1:5000	8

The charts issued by MHD cover all Romanian Exclusive Economic Zone and the Black Sea (Figure 8).

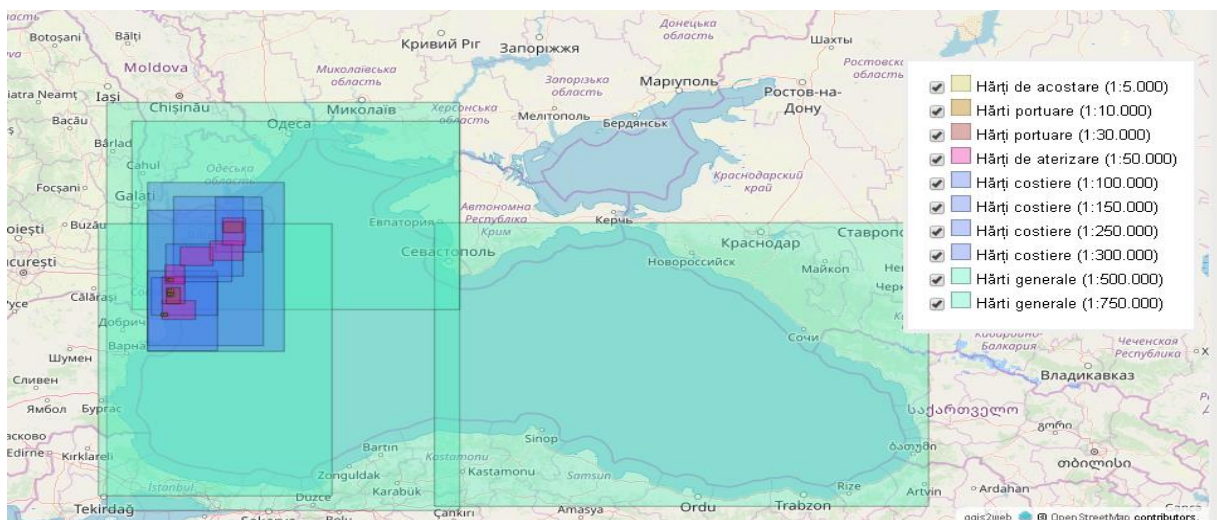


Figure 8. MHD Chart Folio coverage of Black Sea

An intensive work is carried on by the cartographic staff of MHD to transform the chart folio from CARIS GIS format into the CARIS Paper Chart Composer format. Several charts have been transformed and are ready to be printed as new editions and some are in final stage of preparation.

Charts ready to be printed:

1.010.31	(INT3904)	1:10000	Port of Mangalia
1.050.06	(INT3907)	1:50000	From Gura Sf.Gheorghe to Gura Musura.
1.030.09	(INT3908)	1:30000	Port of Sulina and approaches.
1.005.11		1:5000	Port of Mangalia
1.005.12		1:5000	Port of Mangalia
1.005.21		1:5000	Port of Constanta
1.005.22		1:5000	Port of Constanta
1.005.23		1:5000	Port of Constanta
1.005.24		1:5000	Port of Constanta

Charts in final stage of preparation:

1.010.11	1:10000	Port of Midia (INT3902)
1.010.21	1:10000	Port of Constanta
1.010.22	1:10000	Port of Constanta

Special Naval Charts

A permanent task of MHD is to produce special naval charts for the Romanian Naval Forces. Therefore, we produce many types of thematic paper charts to fulfill RO NAVY needs and also additional military layers, according to NATO standards.

Cartographic Production

The production of paper charts with CARIS Paper Chart Composer is fully established. For ENC we use CARIS S57 Composer.

Since 2017, MHD is using a large format plotter capable of printing high-quality paper charts (Figure 9).

MHD intends to introduce the **Print on Demand (PoD) system**, using the new A0 format print system (Figure 10). This is capable of prints with high image durability and exposure to light over extended periods.



Figure 9. Plotter system



Figure 10. Digital printing system

Problems Encountered

1. Shortage in specialized human resources.
2. A few small overlaps on Ukranian/Romanian ENCs are under consideration and deliberation.

4. NAUTICAL PUBLICATIONS

MHD Official Nautical Publications

Notification of the failure of lighthouses or buoys, notification of temporarily prohibited areas and all changes affecting charts in Marmara and Black Sea area are provided, monthly, to users of the marine environment through *Notices to Mariners* (Figure 11), in Romanian and English languages.

MHD publishes every year (Figure 12):

- Special Edition of Notices to Mariners
- Annex to Special Edition of Notices to Mariners
- Cumulative List of Notice to Mariners

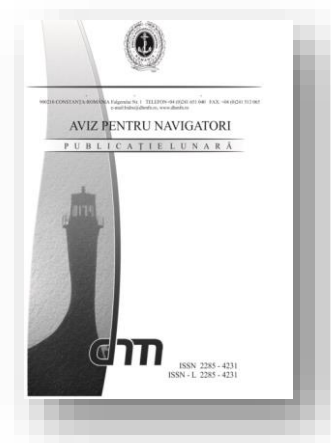


Figure 11. Notices to Mariners



Figure 12. MHD annual nautical publications

MHD nautical publications portfolio includes the following documents:

- *Black Sea Pilot*
- *List of Lights and Fog Signals*
- *Charts and Nautical Publications Catalogue*
- *Maritime Buoyage System*
- *Symbols and Abbreviations used on Romanian Paper Charts (according to INT1)*
- *Nautical Tables*

All publication are printed in Romanian language and are available in hard copy format (Figure 13).



Figure 13. MHD official nautical publications

New Publication/ Edition of Nautical Publications

Since the 20th MBSHC Conference no publication has been issued.

In the second part of 2019 are to be printed:

- Charts and Nautical Publications Catalogue
- Instruction For How To Keep Romanian Nautical Charts And Publications Up-To-Date

5. MARITIME SAFETY INFORMATION (MSI)

Existing infrastructure for transmission

The National NAVTEX service on 490 kHz, in Romanian language, is provided through Constanta Radio NAVTEX station.

Maritime Hydrographic Directorate is the national authority which promulgates navigational warnings and Constanta Radio is the National NAVTEX service provider.

NAVTEX

MSI Services are provided on 7/24 basis. Constanta Radio NAVTEX station is transmitting MSI warnings in Romanian language on 490 kHz and English on 518 KHz through Varna Radio KHz. Other communication systems (VHF, MF and HF) are also available to promulgate MSI warnings if needed.

NAVTEX Coverage:

National NAVTEX service is performed through Constanta Radio.

Coordinates – 44-06 N, 28-38 E;

NAVTEX coverage – 400 nautical miles;

MMSI - 002640570;

B1 character – [L];

Language – Romanian;

Frequency – 490 kHz.

Coverage of NAVTEX service:



Figure 14. NAVTEX coverage

Graphic (UTC)	Weather Bulletins	Navigation and Storm Notices
01:50	•	•
05:50	•	•
09:50	•	•
13:50	•	•
17:50	•	•
21:50	•	•

International NAVTEX service is performed through Varna Radio (on behalf of Romania – as agreed by IMO`s INTERNATIONAL NAVTEX COORDINATING PANNEL).

Coordinates – 43-04 N, 27-46 E;

NAVTEX coverage – 350 nautical miles;

MMSI - 002070810;

B1 character – [J];

Language – English;

Frequency – 518 kHz.

Graphic (UTC)	Weather Bulletins	Navigation and Storm Notices
01:30		•
05:30	•	•
09:30*	• *	•
13:30		•
17:30	•	•
21:30*	• *	•

* - Forecast on behalf of Romania, received from Constanta Radio

Number of Coastal and NAVAREA Warnings disseminated last year by MHD are listed below:

Year	NAVTEX Warnings	NAVAREA-III Warnings
2018	95	95

NAVAREA Contact Information:

3, Ecluzei Str.

907015 Agigea

ROMANIA

Tel: +40241737102

Fax: +40241737103

e-mail: office@constanta-radio.ro; radionavx@gmail.com;

operatori.radionav@constanta-radio.ro

NAVAREA Website: www.constanta-radio.ro

MSI Equipment

MHD owns a NAVTEX receiver (NAV6/NAVTEX) from 2018, through which it can verify the promulgation of all the MSI messages, from area of responsibility (Figure 15).

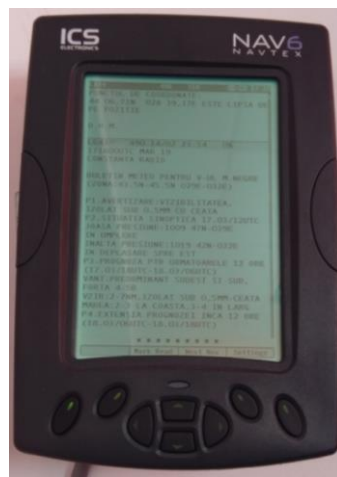


Figure 15. NAVTEX receiver

New infrastructure in accordance with GMDSS Master Plan

Ntr.

Problems encountered

Ntr.

6. CAPACITY BUILDING

Training received through capacity building program

Since the last meeting of MBSHC, several MHD employees received training through IHO Capacity building program.

Domain / International Training	Period	Organizer	Country	No. of employee
CARTOGRAPHY				
<i>Workshop on ENC Production and Distribution</i>	Oct 2017	IHO	Turkey	1
<i>Maritime Boundary Delimitation Workshop</i>	Nov-Dec 2017	IHO	Turkey	1
HYDROGRAPHY				
<i>Shallow water survey</i>	Oct 2018	IHO	Italy	1
<i>Hydrographic course Cat A</i>	Aug-2017- Aug 2018	IHO	USA	1



Figure 16. Participants of the Workshop on ENC Production and Distribution



Figure 17. MHD personnel receiving the diploma after attending the Maritime Boundary Delimitation Workshop in Turkey

It is the intention of the MHD to enroll another personnel in hydrographic and cartographic training in the next years.

Training received outside the capacity building program:

- One person attended CAT B hydrography training course at FOST(UK) in 2018;

- One person attended Marine Cartography and data Assessment Course (Cat-B) organized by UKHO;
- Two persons attended International ENC Validation Training Course organized by IC-ENC.

Training needed:

- Law of the sea practical course;
- Nautical cartography and hydrography courses, cat A and cat B;
- Oceanography course;
- S-100 product specification course.

We have only a few specialized personnel in hydrography and marine cartography. At this time we have only 3 people that hold certification in hydrography and 2 people in marine cartography.

We have no persons specialized in oceanography.

7. OCEANOGRAPHIC ACTIVITIES

Tide gauge network:	4 water level monitoring systems in Constanta, Midia, Sulina and Mangalia
Equipment:	Pressure gauge Valeport tidemaster
Oceanographic measurements:	Oceanographic measurements were performed for: Midia, Mangalia, coastal route Constanta – Mangalia and the pouring mouth of Danube in Black Sea through Sulina and Sf. Gheorghe.
Problems encountered:	Lack of training courses for the oceanography personnel

8. OTHER ACTIVITIES

Meteorological data collection

The meteorological data collection is done by the Meteorological Department from the RO MHD. The data is stored into a database and it's used for forecasts, mainly in support of Romanian Navy operations.

Geospatial studies

- *Erosion of the Romanian coast* (in Romanian language).

Participation in IHO Events

MHD participated in the following IHO events since 20th MBSHC meeting:

- BASWG - 14th meeting (Constanta, Romania – 02-04 May 2018) – host country

- S-100 Working Group (2018 and 2019 meetings).

Participation in IC-ENC Events

Through the years passed from last MBSHC meeting, representatives of MHD attended IC-ENC meetings (Figures 18 and 19):

- Technical Conference 2017 (TC02) – Copenhagen, Denmark
- Steering Committee 2017 (SC19) – Taunton, UK
- Technical Conference 2018 (TC03) – Bristol, UK
- Steering Committee 2018 (SC20) – Bristol, UK



Figure 18. TC meetings. Left: TC02, Copenhagen, May 2017. Right: TC03, Bristol, 22-25 October 2018



Figure 19. SC03 meeting, Bristol, 16-19 July 2018

Participation in Other Events

MHD participated with a delegation in the International Conference “Delimiting Maritime Boundaries - Challenges and Outlook for 2018”, that took place in the capital of France, Paris, between 6th and 7th Decembre 2018. – Figure 20.



Figure 20. Aspects from the International Conference “Delimiting Maritime Boundaries - Challenges and Outlook for 2018”

MHD personnel also participated in numerous NATO working groups such as: Geospatial Maritime WG, Naval Mine Warfare WG, Military Meteorology WG, Shipping WG, etc.

Starting up with 2019, MHD intends to participate at the following IHO Working Groups: ENCWG, NCWG, S-101PT, S-121PT and ABLOS Conference.

9. CONCLUSIONS

The cooperation with Hydrographic Services and national research institutes regarding the hydrographic activity represent a key point in improving the quality of hydrographic products and services in the near future in Romania. Maritime Hydrographic Directorate will continue to strengthen the cooperation in the field of hydrography and cartography with similar organizations within and outside the Black Sea.

The cooperation in the field of hydrography, cartography and oceanography conducted to good results on the coverage of the responsibility areas, reducing the financial and human effort involved in such activities.