



“NETWORK OF DANUBE WATERWAY ADMINISTRATIONS”

South-East European Transnational Cooperation Programme

STATUS QUO REPORT ON ENC ACTIVITIES

RO - ACN

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1 LIST OF ABBREVIATIONS

ABBR.	Abbreviation
ECDIS	Electronic Chart Display and Information System
ENC	Electronic Navigational Chart
IENC	Inland Electronic Navigational Chart
ACN	Administration of the Navigable Canals
RIS	River Information Services
VTMIS	Vessel Traffic Management and Information System
ISRS	RIS INDEX

2 SCOPE OF DOCUMENT

Activity 5.2 is related to the harmonisation of activities in the field of Inland ENC production and distribution.

According to description of work SWP 5.2 (Task 5.2.3) every partner shall identify and describe the status quo on ENC activities and what are the problems. The status quo shall at least contain relevant information about:

- IENC coverage of the national stretch (incl. reasons and solution if this is not achieved so far)
- Availability of depth information within the Inland ENCs
- The IENC production process from raw GIS data into IENC objects, involved persons or organisations, used equipment and software tools
- IENC publication process (distribution of updates and new releases)
- Sources (data basis) and accuracy for IENC charts
- Create and maintain IENCs according to the Inland ECDIS Standard
- Cooperation
- Updates, updating circle

3 IENC COVERAGE

Currently, ENCs are only partially available, with at least the minimum required content, in accordance with the Inland ECDIS standard, i.e. the shore line, nature of the shore (eg the natural shore, pier, hydro buildings, etc.), partial delineation of fairway limit, hazards to navigation in sailing line or off fairway, namely bridges (height, depth and width of the passageway), hydro constructions, cables (subterranean or aerial), partial signalling (fairway, the axis of the fairway, buoys, coastal signs and kilometric indicators) ports, landing areas, locks etc

3.1. Cells

It was decided to build 7 cells altogether which covers sectors of 10-15 riverine kilometres, each of which provides full coverage of both canals.

- 5 cells on main branch of the Canal (Danube – Black Sea Canal) and
- 2 cells on Poarta Alba – Midia Navodari branch



Here it is a screenshot of the Basarabi port:



3.2. Waterways Classification

The Danube-Black Sea canal, through its construction characteristics, is classified as a category VI c inland waterway and is a component of the pan-European transport corridor no.VII.

The Porta Alba-Midia Navodari canal, by its construction characteristics, is classified as a category V inland waterway.

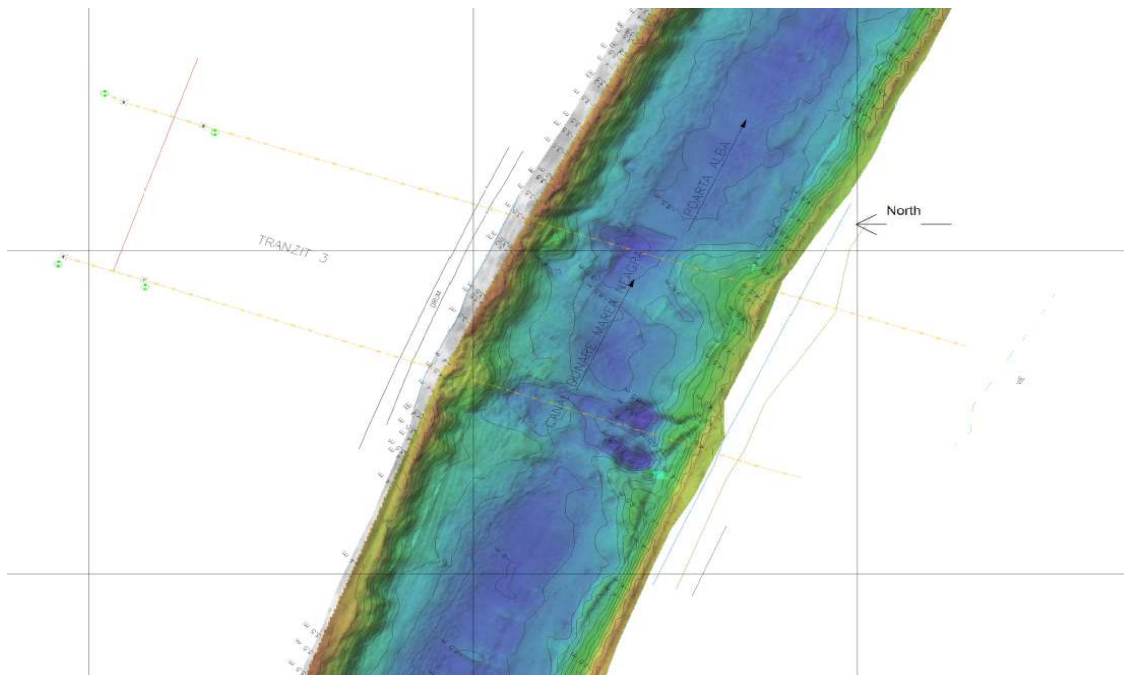
3.2.1. Availability

Still IENCs are under development and for the moment will not be released, not even for internal purposes.

4 COVERAGE OF DEPTH INFORMATION

In this stage, depth data used are the ones from canals' construction design and also from topographical and cadastral data.

Bathymetric data are available in DXF digital format, in form of bathymetric maps made in 2002 and updated in 2007-2008, after each dredging operation.



ACN signed on 24.11.2008 a contract to acquire a new hydro topographical survey ship for both canals coverage.

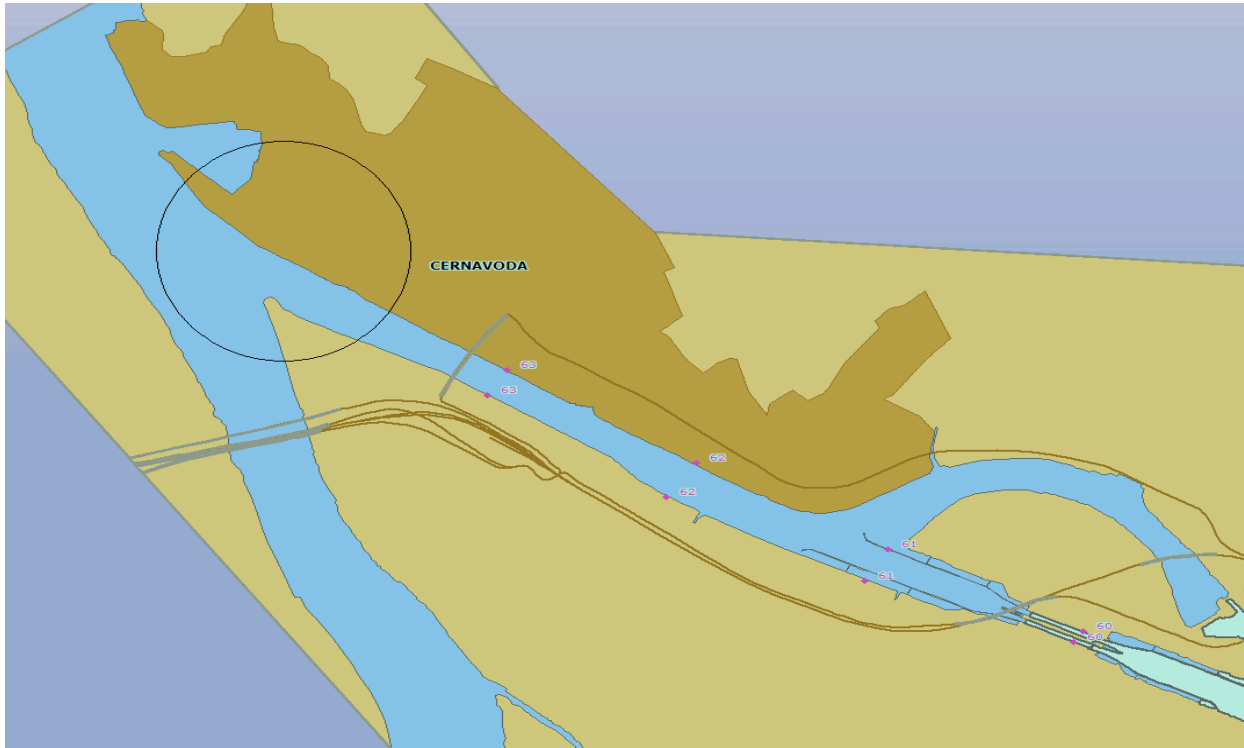
Among equipment and SW to be installed are to be mentioned as interesting for depth survey:

- Hydroacoustic mono-beam system with 3 channels ODOM ECHOTRAC,
- Precision positioning system OmniSTAR 8200HP
- Probe program Odom Echotrac CV300
- Hydrographic research program HYPACK 2008

Until current time, the following contractual requirements have been finalized: the ships design, started hull construction, in August 2009 engines received, till end of 2009 was partially installed radio-navigation and survey equipment. The survey ship is scheduled to be delivered in June 2010.

Bathymetric information in the IENCs

Since our resources are quite limited, our intention is to add bathymetric information at a later stage. There are no navigational problems along the canals and we do not consider this issue a great importance, exception being the entrance from Danube River into the canal at Cernavoda.



Canal Administration has a Cadastral Dept which is responsible for topographical and depth information and keep strict records of topo and geographical data and also for all bathymetric data. ACN will own a special designed survey ship and conduct own depth surveys. All data will be provided for ENC production to River Administration. From summer 2010 Romanian River Administration will take over ENC production for Canals.

5 IENC PRODUCTION PROCESS

Starting 2002 when ACN implemented VTMISS on both canals, were used electronic charts in raster format.

For RIS implementation according to Inland ECDIS standard, ACN outsourced IENC development for quality testing purposes to a private company involved in IENC and RIS activities (ULTRANS TM). From summer 2010 Romanian River Administration will take over ENC production for Canals.

Software used for IENC production

For IENC production acc 1.02 standard the following SW were used: ENC Manager version 2.2.9, ENC Designer 4.3.1, ENC Referencer 1.9, NTX converter 2.1.11. from SevenCs.

From 2010 -2011 bathymetric data will be processed with Hypack.

Versions of software

From summer 2010 Romanian River Administration will take over ENC production for Canals. Versions of software which will be used are the latest versions of ENC Designer(4.4.4), ENC Optimizer (2.4.1) and ENC Analyzer (2.8.0) from SevenCs.

Involvement in the production process

Production process is involving both ACN (Cadastral and Technical departments) and Ultrans TM from Constanta, which has the producer code 2U.

By the end of the RIS implementation project, the ACN aims to test and finalize electronic charts that are in early forms, focusing on the quality of input data whose responsibility will be vested in a RIS department of the ACN. From summer 2010 Romanian River Administration will take over ENC production for Canals.

How does the internal processing look like?

Work on the ENC's began in 2008, between 2008 to 2009 works were developed in three stages, namely: first stage containing field data collection made during the period 2007 to 2008, the second stage consisted in processing during 2008 and stage three phase electronic paper data entry and completion late 2008, early 2009 until now.

The first phase took into account both primary data collection resulted from measurements of the field and existing data collection at that time. Stage two was the purpose both primary processing and processing of existing data at that time. In the third stage of data entry processing is done on electronic navigation chart.

Information in addition to the minimum content available in the charts

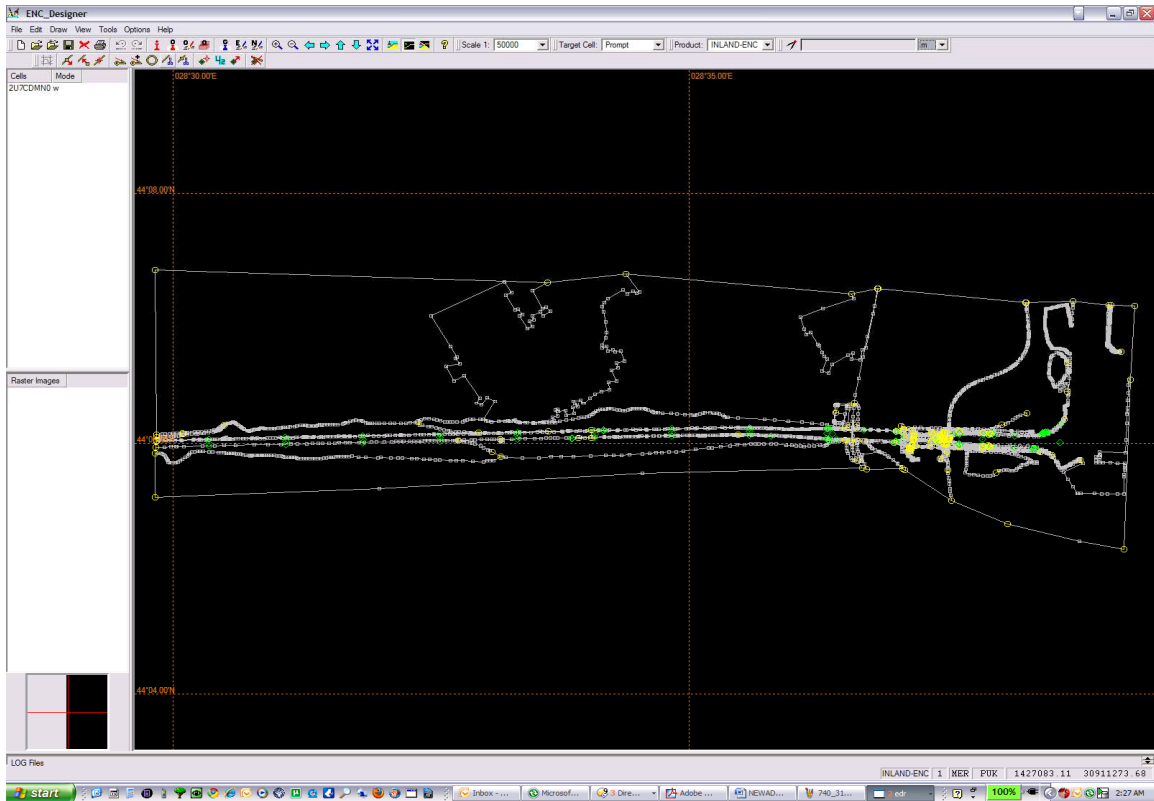
- Topographic information is processed and made available in charts as follows: Graphical or numerical representation of surfaces measured, maps and topographical plans are drawn, a detailed description of an area of land and its configuration is made, how they are arranged in space elements of a set of points or lines. Also, topographic information is obtained by vectoring digital orthophoto images.



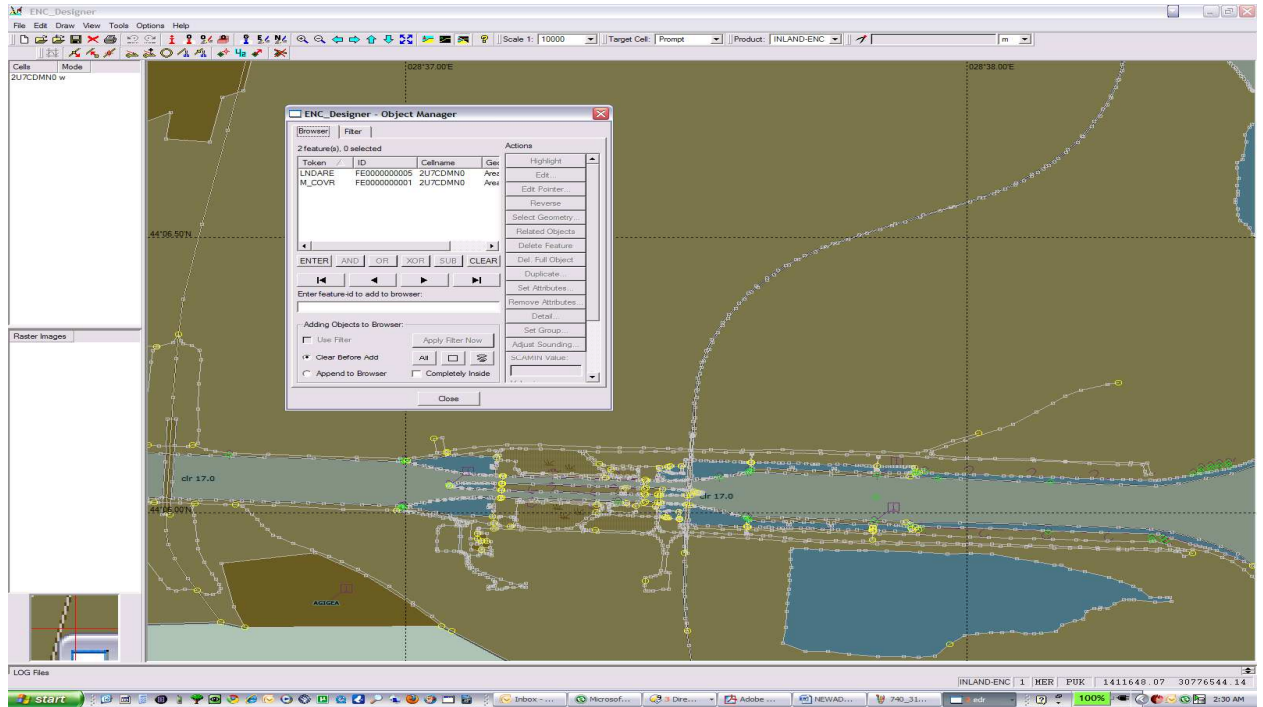
Data basis for ENC – Aerial photo in Cernavoda area

- Depth information: ENCs do contain depth information according construction design drawings, by the end of 2010 we intent to add bathymetric information

after 2010 surveys.



- Information for voyage planning (Notice marks): They are available in the map, using the details taken from future signaling projects designs on both canals.



Data responsibility for ENC production

Canal Administration has a Cadastral Dept which is responsible for topographical and depth information and keep strict records of topo and geographical data. ACN will own a special designed survey ship and conduct own depth surveys.

Responsible for information for voyage planning

Responsible for information for voyage planning (Notice marks) is ACN through future RIS Center.

Data layers

The information used is made in two layers - signaling elements (buoys and coastal signals) and geographical information (location, roads, ports, kilometers, pipes, cables bridges, locks)

6 IENC PUBLICATION PROCESS

Charts are currently not available due to ACN policy, which aims to release them after completion of the RIS system in 2011.

We consider that ENCs will be published in S57, but it was not yet decided the distribution policy

Charts are not yet published because are not yet finished, nor tested.

Distribution and availability will be clarified latest 2011.

7 IENC SOURCES AND ACCURACY

7.1. Sources for the IENCs?

Sources for Canals IENCs are:

Aerial Romanian national system coordinated orthophoto images from Cadastral Authority



Project Construction and Cadastral drawings (own material)

Signalisation design of the fairways (own material)

7.1.1. Planned for the future

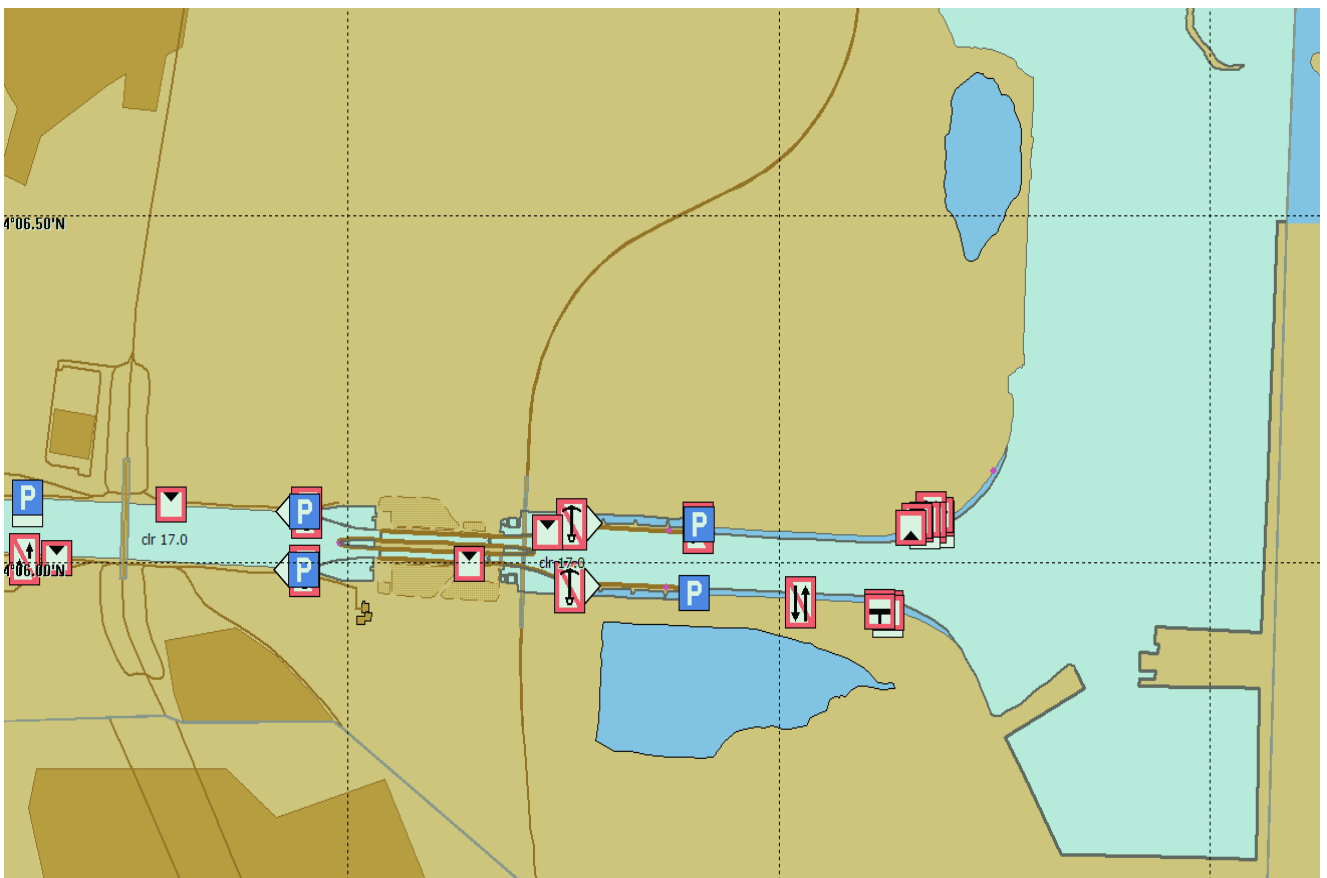
Better bathymetric information from surveyed data are planned to be in next versions.

7.2. Accuracy of IENC objects

1:5000 scale orthophoto images offer an 1.5 - 2 m accuracy for IENC objects

8 INLAND ECDIS STANDARD

We produced electronic navigation charts according Inland ECDIS, version 1.02, using ENC Designer software from SevenCs.



After completion of current cells, we will proceed to update those using the last version of the official standard.

When IENCs will be available for distribution, all versions for main standard versions will be issued according to user's requirements.

8.1. IENC quality control checks

IENC quality control checks are planned to be made when charts will be completed, for the moment, in cooperation with River Administration Hydrographic Dept. There are plans to acquire own ENC Optimizer and ENC Analyzer, in order to perform on site the quality control checks.

9 UTILISATION OF LOCATION CODES AND RIS INDEX

9.1. Objects in IENCs

As mentioned, the cells are produced according Inland ECDIS Standard, Edition 1.02. The 20 digit ISRS Code is used in IENC built according 2.0 or 2.1 Standard.

9.2. RIS Encoded objects

The objects primarily encoded with the 20 digit ISRS Location Code will be locks, lock chambers, bridges, ports, terminals)

During these days, the supplier of the RoRIS ACN will be awarded. One of the deliverables of the contract is the RIS Index of the Canals. The operation is supposed to be finished till 31st of March 2010.

9.3. Responsibilities for the provision of the Minimum Data

ACN will provide all necessary data for:

- waterway axis with kilometre indication,
- restrictions for vessels or convoys in terms of length, width, draught and air draught,
- operation times of restricting structures, in particular locks and bridges,
- location of ports and transshipment sites,

— reference data for water level gauges relevant to navigation.

The RIS Index for our area of responsibility will be provided according the RIS Index Encoding Guide available on the website of the NTS Expert Group.

9.4. RIS Indexed fairways

RIS Indexes will be provided for both canals: Danube- Black Sea and Poarta Aba- Midia Navodari.

9.4.1. Update of the RIS Index

After first edition, updates will be provided each 6 months.

9.4.2. RIS Index and the objects in the IENCs

Objects RIS indexed are the same as presented in the ENC.

10 COOPERATIONS

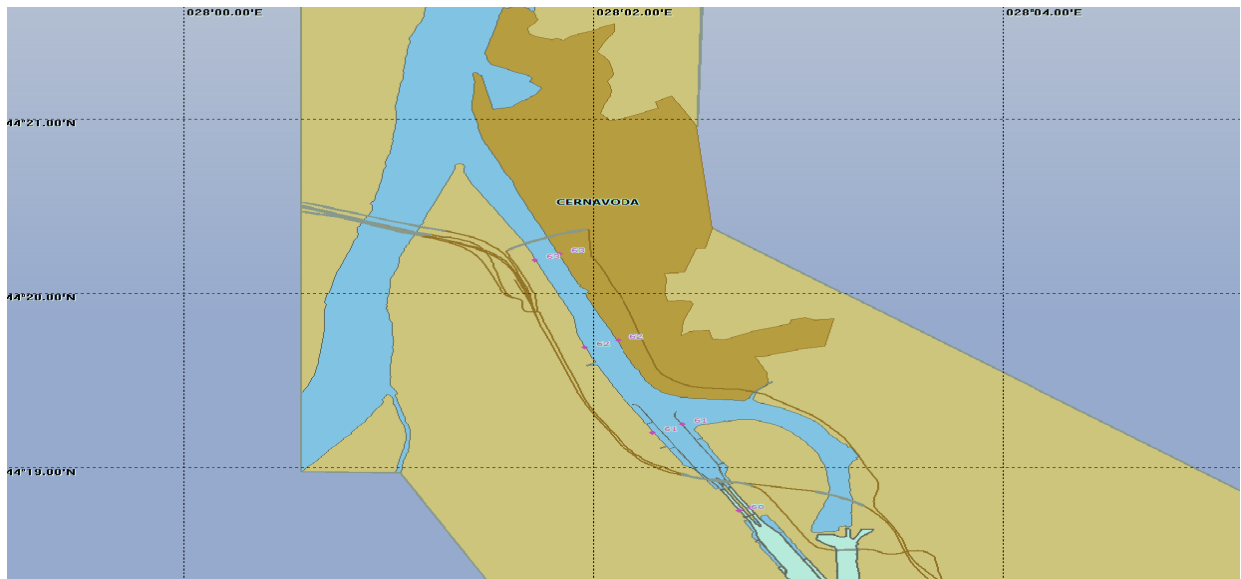
Danube – Black Sea Canals are internal waterway and Danube is international waterway and for crossing Cernavoda point is a case of international cooperation.

Agreement concerning ‘area of responsibility’

ACN area of responsibility was governed by Order of the Minister of Transport and extends to the Danube until its right side fairway. There is a cooperation with AFDJ (River Administration) to define the areas of responsibility for ENC production. Cells of both organizations will have to overlap at Cernavoda. Administration of the Canal will be responsible for data till the fairway axis of the Danube. From summer 2010 Romanian River Administration will take over ENC production for Canals.

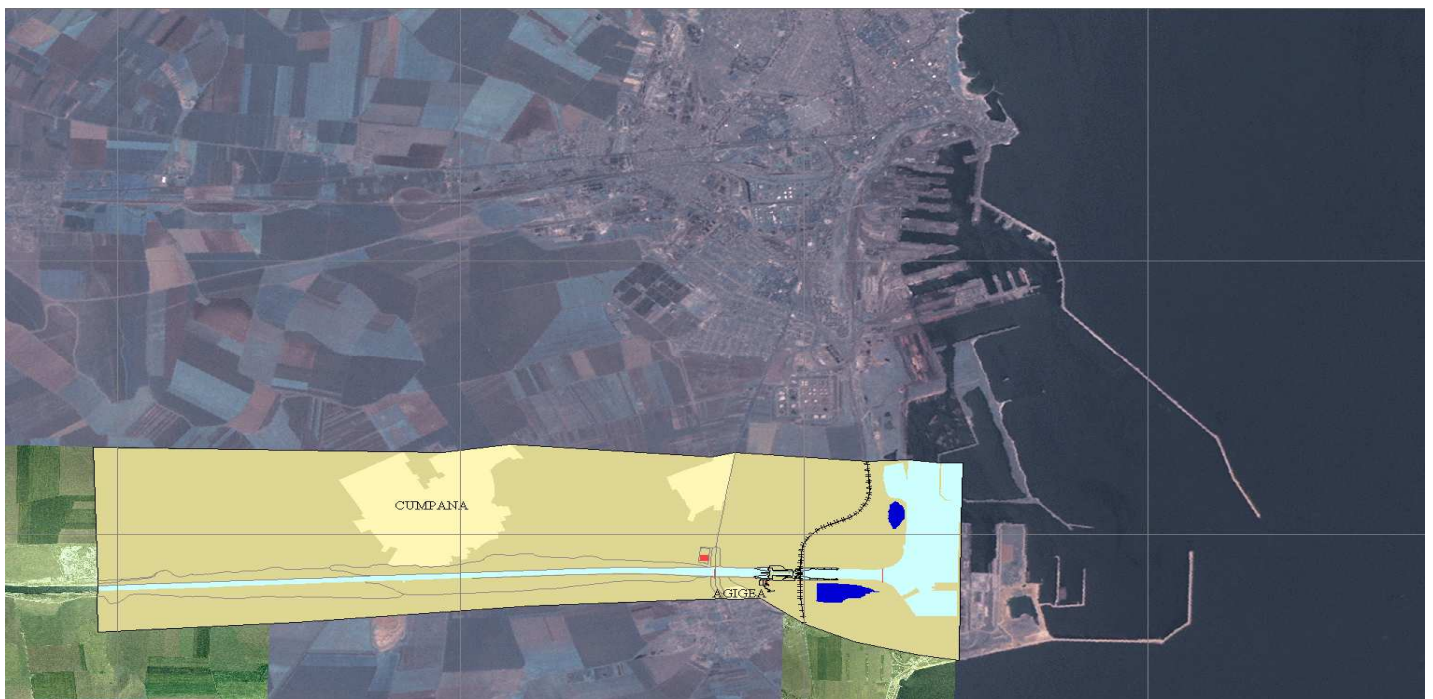
11 CHART UPDATES, UPDATING CIRCLE

Next edition will be issued during late fall 2010. From summer 2010 Romanian River Administration will take over ENC production for Canals.



Considering the morphological stability of canals banks and bottom, annual updates are planned at the most. They will also be influenced by the degree of clogging of the sector now river banks or any eventual landslides. We will also have considered the emergence of new bridges that are predicted to be:

Highway Bucharest- Constanta – km 29 and internal bridge within Constanta Port premises at km 0.



Also new editions/ updates will be produced for new IENC standards versions.

From summer 2010 Romanian River Administration will take over ENC production for Canals.

- End of document -