



Leaflet

Inland ECDIS

Leaflet Edition 2014

Inland ECDIS

“Electronic Chart Display and Information System“ for Inland Navigation

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1. Basis

1.1 Purpose

Inland ECDIS is a system for the display of electronic inland navigation charts and additional information. Its purpose is to contribute to the safety and efficiency of inland navigation and thus also to the protection of the environment. Inland ECDIS is used simultaneously to reduce the workload when navigating the ship as compared to traditional navigation, and for information methods. Inland ECDIS also provides the basis for other River Information Services (RIS), e.g. Inland AIS.

1.2 Terminology

DGNSS means Differential Global Navigation Satellite System.

ECDIS (*Electronic Chart Display and Information System*) means the international standard for the electronic nautical chart and its display, as defined by the IMO, the IHO and the International Electrotechnical Commission (IEC) for the electronic nautical chart and its display.

IALA is the abbreviation for International Association of Marine Aids to Navigation and Lighthouse Authorities.

IHO is the abbreviation for International Hydrographic Organization.

IMO is the abbreviation for International Maritime Organisation.

Inland ECDIS means the standard for ECDIS on inland shipping routes as established by the Central Commission for the Navigation of the Rhine (CCNR), the Danube Commission (DC), the European Community (EC) and the United Nations Economic Commission for Europe (UN/ECE). Inland ECDIS uses the stipulations of the maritime ECDIS and supplements them, but does not amend them.

Inland ECDIS application is either an independent device or a software running on a standard personal computer (PC). An Inland ECDIS application conforms to this standard and is used for the display of Inland ENCs.

Inland ENC means the electronic inland navigation chart in ECDIS. It contains all essential chart information and additional information that may be of use to shipping (feature data).

Inland SENC means the producer-specific electronic inland navigation chart. It is created by converting the Inland ENC into a producer-specific format. The Inland SENC can be copy-protected.

1.3 ECDIS features

The electronic chart developed according to the ECDIS standard differs fundamentally from a paper chart. Its presentation on a screen has some advantages over a paper chart.

These are based on the following principles:

- Object oriented presentation with area objects (e.g. land surfaces), line objects (e.g. banks) and point objects (e.g. buoys).
- Arrangement of the objects in a database, making it possible to assign feature data (attributes) to each object.
- Vector presentation instead of raster presentation; lines thus retain their thickness and point objects retain their size when zooming. The vector data files are small in comparison to raster data.
- There are at least three levels of information density: all, standard, minimum (and user defined).
- A scale is allocated to each object type so that the object disappears when zooming out. This prevents charts being overloaded with information.
- Text is always displayed upright independent of the chart orientation.
- The radar image can be combined with the chart.
- When navigating the chart can be positioned and oriented automatically in accordance with the ship's heading. For this purpose, satellite positioning either with correction data (DGNSS) or without correction data (GNSS) can be used.
- Restrictions of depth, width or vertical clearance, network data and operating times of infrastructure can be used by voyage planning applications.
- Information which is distributed in accordance with the standard for Notices to Skippers can be connected to the affected objects in the charts, displayed and used for voyage planning. Standardized location codes are used to connect the different types of information.
- Information which is distributed in accordance with the standard for Inland AIS (e.g. position of other vessels) can be displayed.

1.4 Supplementary features of Inland ECDIS

Compared with the maritime ECDIS the Inland ECDIS comprises supplementary features:

- Objects specific to inland shipping such as aids to navigation (e.g. notice marks).
- Display of notice marks e.g. in a separate window of the object report (pick report).
- Display of the notice marks on bridges in accordance with the aspect angle to the bridge.
- Two new operation modes, namely the "navigation mode" and the "information mode" instead of the "route monitoring" and "route planning" modes in the maritime ECDIS,
- Display of depth information related to the actual water level (if provided in a standardized data exchange format).

The electronic display of the chart is only one aspect of ECDIS. Inland ECDIS is also an information system, which enables its users to recall other information about the displayed objects besides their graphics presentation.

2. Inland ECDIS standard

2.1 Purpose

The Inland ECDIS standard provides a uniform basis for the use of electronic inland navigation charts and for the use of telematics applications such as Inland AIS transponders or other methods of identifying, tracing and tracking of vessels on inland waterways. It contains the operational and performance requirements, testing methods and required test results for Inland ECDIS applications.

2.2 Legal basis

- Resolutions of the Central Commission for the Navigation of the Rhine of 31 May 2001 and 23 November 2006 and 29 November 2012: “Standard Electronic Chart Display and Information System for Inland Navigation (Inland ECDIS Standard)” (protocol 2001-I-16, 2006-II-22 and 2012-II-20, point 5.2).
- Decisions of the Police Committee of 28 October 2011 adopting edition 2.3 of the Inland ECDIS Standard and of 16 October 2012 bringing it into force.
- Resolution No. 48 of the UN/ECE (ECE/TRANS/SC.3/156/Rev.1) as amended.
- Directive 2005/44/EC of the European Parliament and of the Council of 7 September 2005 on harmonised river information services (RIS) on inland waterways in the Community (Article 5 and Annex II, Paragraph 2 and Annex II, Paragraph 4).
- Commission Implementing Regulation (EU) No 909/2013 of 10 September 2013 concerning the technical specifications pertaining to the Electronic Chart Display and Information System for Inland Navigation (Inland ECDIS) referred to in Directive 2005/44/EC of the European Parliament and Council.
- Directive 2006/87/EC of the European Parliament and of the Council of 12 December 2006 laying down technical requirements for inland waterway
 - Annex II, Part II, Chapter 7, Article 7.06,
 - Annex IX, Part III, Chapter 1, Article 1.01,
 - Annex IX, Part V, Article 1,
 - Annex IX, Part V, Article 9.
- Recommendation of the 73rd Session of the Danube Commission DK/TAG 73/9.
- Police Regulations for the Navigation of the Rhine, Article 4.07, Paragraph 3 of the 1st December 2014 edition.
- Rhine Vessel Inspection Regulations
 - Article 7.06, Paragraph 1,
 - Annex M, Part I, Article 1,
 - Annex M, Part III, Articles 1 and 9.

2.3 Current edition

The current edition of the Inland ECDIS Standard contains the text in the English, Dutch, French and German languages and is published in the internet under www.ccr-zkr.org.

The current status of the Product Specification for Inland ENC's including the Inland ENC Feature Catalogue and the Inland ENC Encoding Guide and the Presentation Library, the symbols and lookup-tables are published in the internet under <http://ienc.openecdiss.org>.

While edition 1.02 of the Inland ECDIS Standard has been a purely European standard, edition 2.0 and later editions are international standards. The data standard is also applied in North and South America and the Russian Federation, and is open for use in other regions of the world.

2.4 Regulations for Inland ECDIS equipment

2.4.1 Inland ECDIS in navigation mode

For Inland ECDIS equipment, which can be operated in the navigation mode there are requirements concerning its design, its functionality and its operation. These requirements are

- parts of the Inland ECDIS Standard itself and
- the “Requirements for the installation and the functional tests of navigational radar equipment and rate of turn indicators in Rhine navigation” adopted by the CCNR concerning
 - the minimum requirements,
 - the required test results,
 - the installation and
 - the performance tests.

2.4.2 Inland ECDIS in information mode

With effect from 1st December 2014, the CCNR has made it compulsory for vessels to be equipped with and to use an Inland AIS device and an Inland ECDIS device in information mode or a comparable device for displaying charts.

Requirements and recommendations have been drawn up for Inland ECDIS devices used in information mode or for comparable devices for displaying charts on board (protocol 2014-I-12). These requirements and recommendations are spelled out in the document entitled “Minimum requirements regarding Inland ECDIS devices in information mode and comparable devices for displaying charts for the use of Inland AIS data on board vessels”. It can be downloaded from the www.ccr-zkr.org website.

These requirements and recommendations concern:

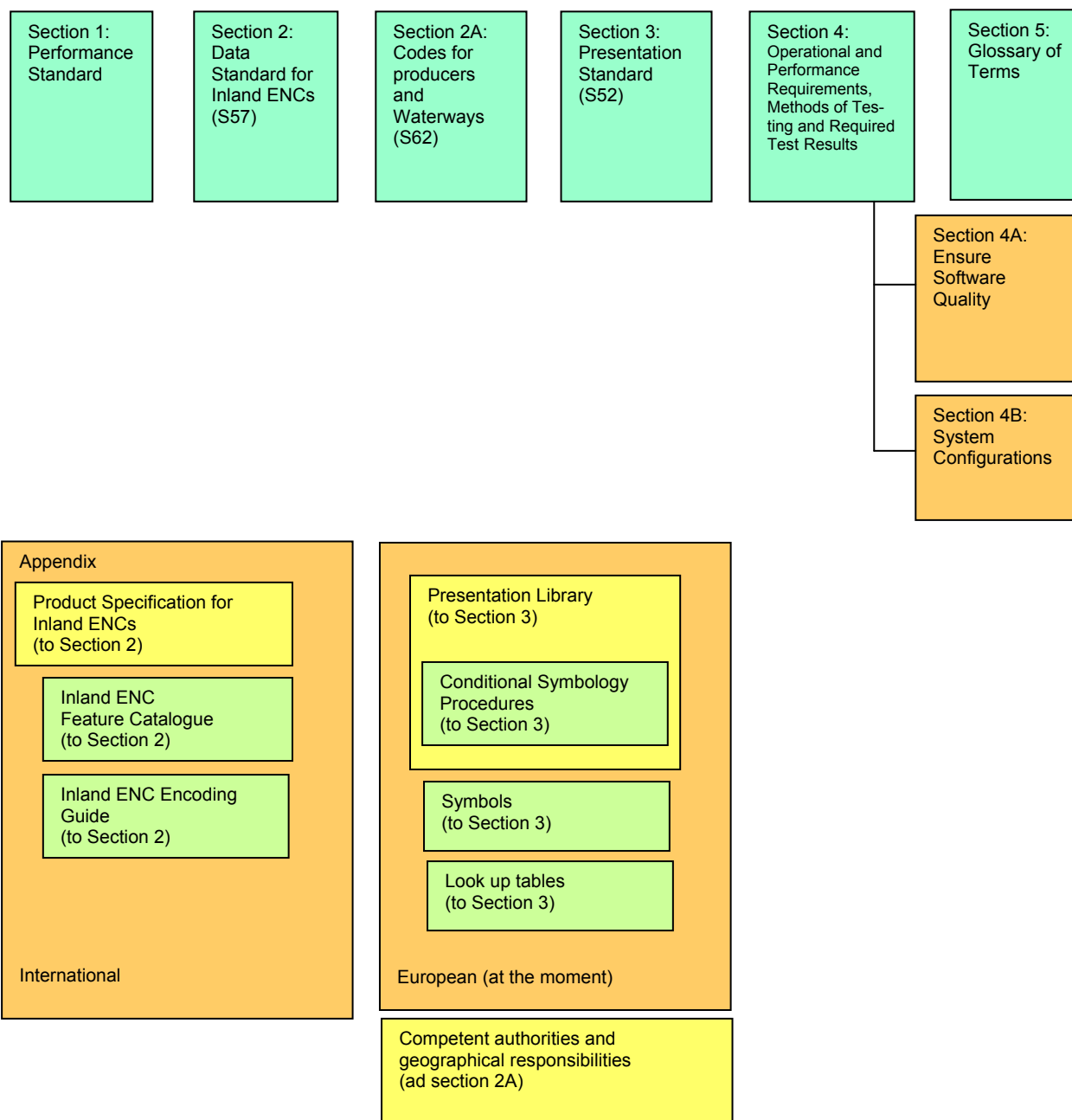
- electronic charts for inland navigation in use,
- devices for displaying electronic charts for inland navigation,
- the software for displaying electronic charts for inland navigation,

2.5 Structure of the Inland ECDIS standard

The Inland ECDIS standard comprises the following sections:

- Section 1 “Performance standard” – redrafted in accordance with IMO Resolution MSC.232(82).
- Section 2 “Data standard for Inland ENC’s” – complements IHO Standard S-57.
- Section 2A “Codes for producers and waterways” – complements IHO Standard S-62.
- Section 3 “Presentation standard” – complements IHO Standard S-52.
- Section 4 “Operational and performance requirements, methods of testing and required test results” – redrafted in accordance with IEC Guideline 61174.
- Section 5 “Glossary of terms” – redrafted in accordance with IHO Standard S-32, Appendix 1.

Structure of the standard



2.6 Compatibility with the maritime ECDIS

Maritime ECDIS and Inland ECDIS are based on the same software specifications, but use different Feature Catalogues, Lookup Tables, Symbol Libraries and Conditional Symbology Procedures. If both sets of these digital parts are installed in an application, it is able to display maritime ENC's and Inland ENC's. ECDIS applications that contain only the object catalogue and the presentation library of the maritime ECDIS do not display the object types that have been added for the inland waterways.

The Inland ENC Harmonization Group (IEHG), which is composed of representatives of European countries, the United States of America, the Russian Federation, Brazil, China and South Korea, international organisations, private companies, user groups and experts at the moment, is recognized as the competent expert group for Inland ENC standardisation by IHO and is participating in the working group of IHO for the development of future ENC standards.

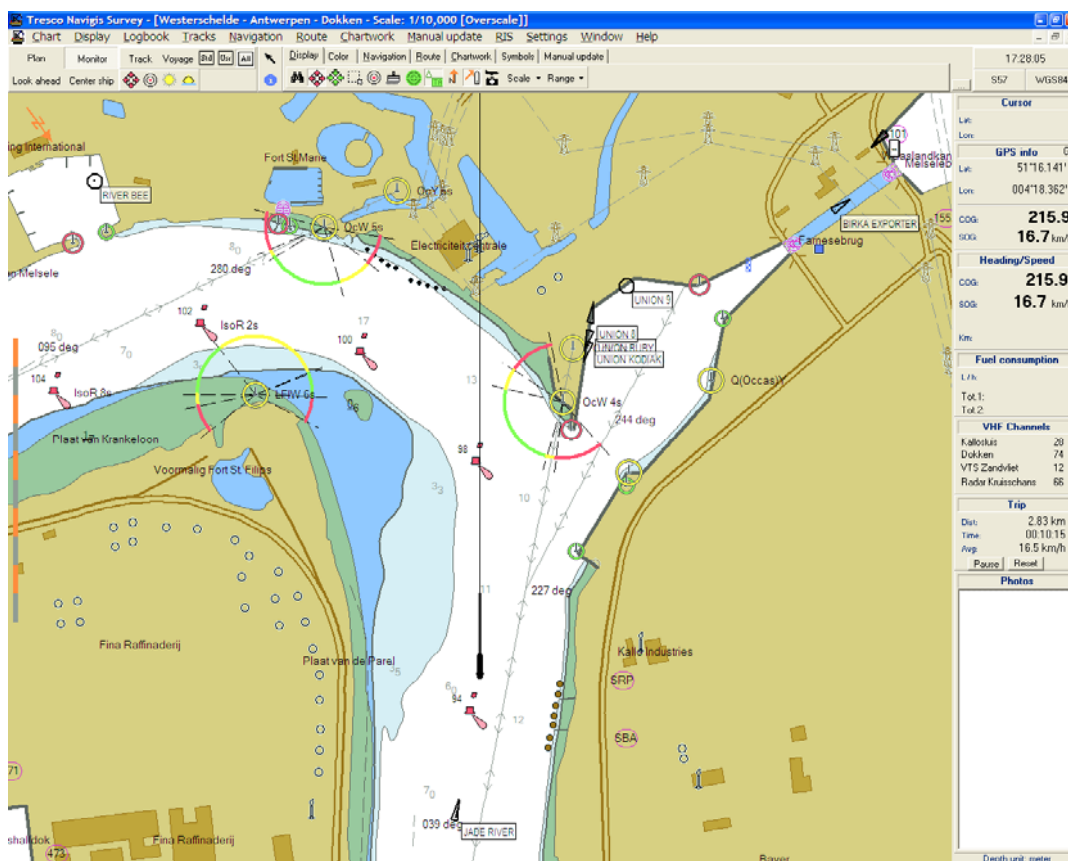
3. Operation modes

3.1 Information mode

In the information mode, Inland ECDIS equipment acts as an electronic atlas and serves to guide and to provide information about the waterway. It is not intended to navigate the vessel. When connected to a positioning sensor the chart picture can be adjusted automatically in a way that the ship's own position is fixed in the centre of the screen. It is also possible to display other vessels, which are equipped with Inland AIS, if the application is connected to an Inland AIS transponder.

For Inland ECDIS equipment and applications that are destined for the information mode only, the requirements of the Inland ECDIS standard are to be understood as a recommendation.

The CCNR has adopted (protocol 2014-I-12) minimum requirements regarding Inland ECDIS devices in information mode and comparable devices for displaying charts for the use of Inland AIS data on board vessels on the river Rhine. They can be downloaded from the www.ccr-zkr.org website

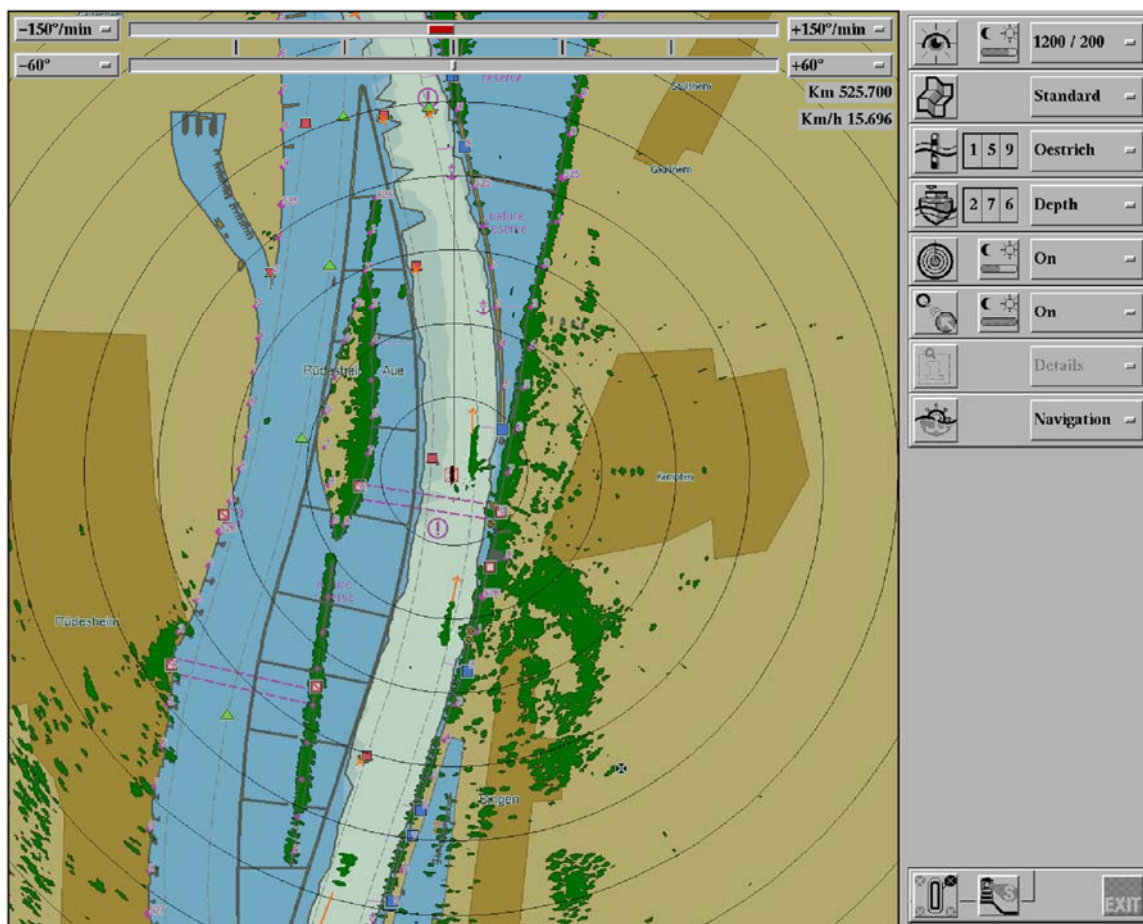


Example: Inland ECDIS in information mode

3.2 Navigation mode

Navigation mode means the use of the Inland ECDIS for conning the vessel by using radar and underlaid chart image. Inland ECDIS equipment being able to operate in the navigation mode means radar equipment as defined by the regulations concerning the minimum requirements and test conditions for radar installations used for Rhine navigation and requires type test and approval. The vessel's position must be derived from a continuous positioning system whose accuracy is consistent with the requirements of safe navigation. The position and heading determination must meet the requirements as defined in Section 4A, No. 2.1 of the standard.

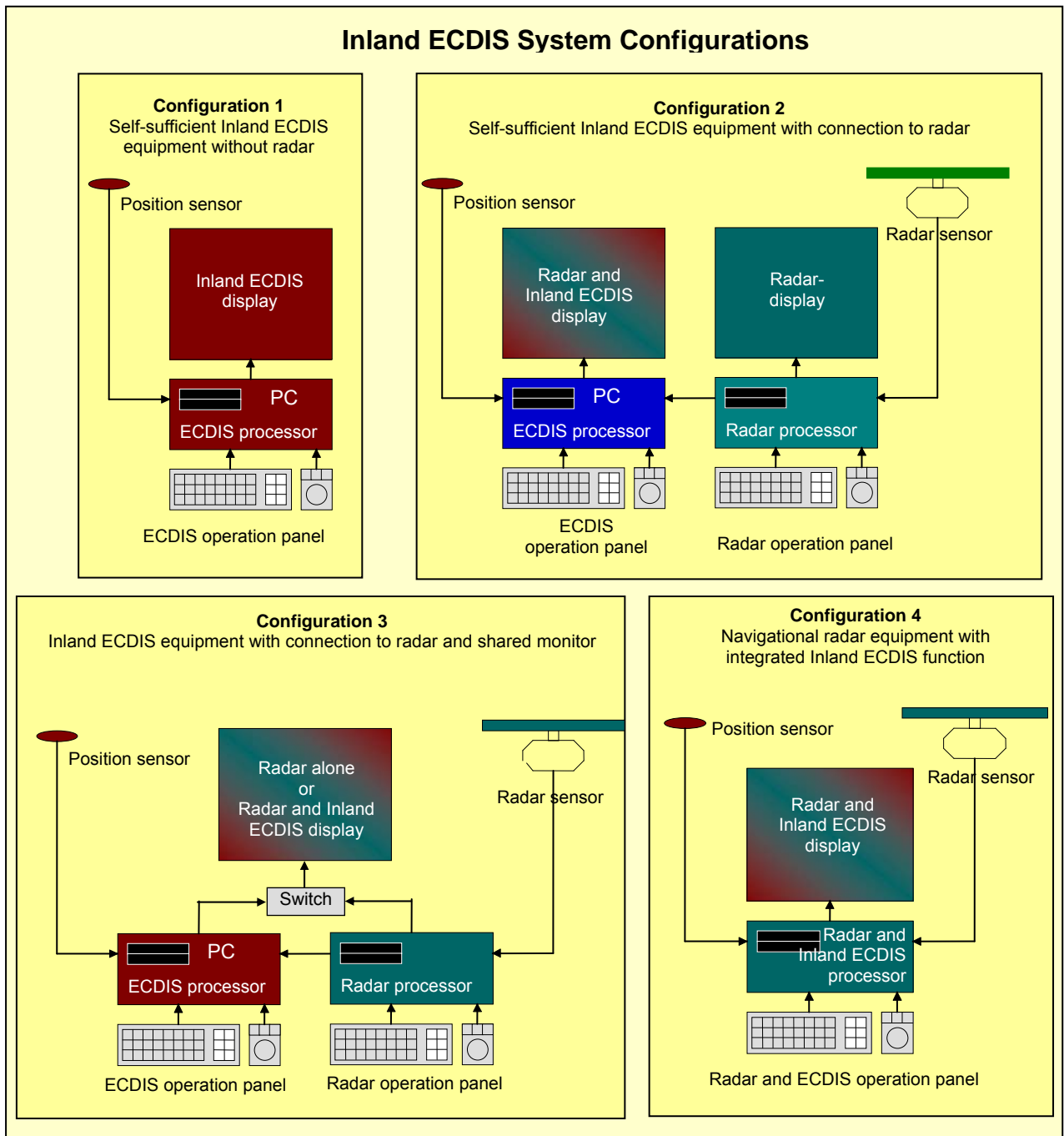
Anyone, who uses an Inland ECDIS device in the navigation mode, must have a radar license.



Example: Inland ECDIS in navigation mode (Rhine near Rudesheim)

4. Configurations of Inland ECDIS equipment

With regard to future developments, the standard includes four system configurations:



In configuration 1, only operation in the information mode is possible. In configurations 2 and 3, the Inland ECDIS equipment extends the functions of radar equipment. These configurations can be operated in the information mode as well as in the navigation mode. They differ only in regard to the number of displays. If only one display is used (configuration 3), the radar image can either be displayed alone or with an underlaid chart. In configuration 4, the functions of the Inland ECDIS are integrated into the radar equipment.

5. Conformity tests for Inland ECDIS equipment and applications

5.1 Inland ECDIS equipment for the information mode

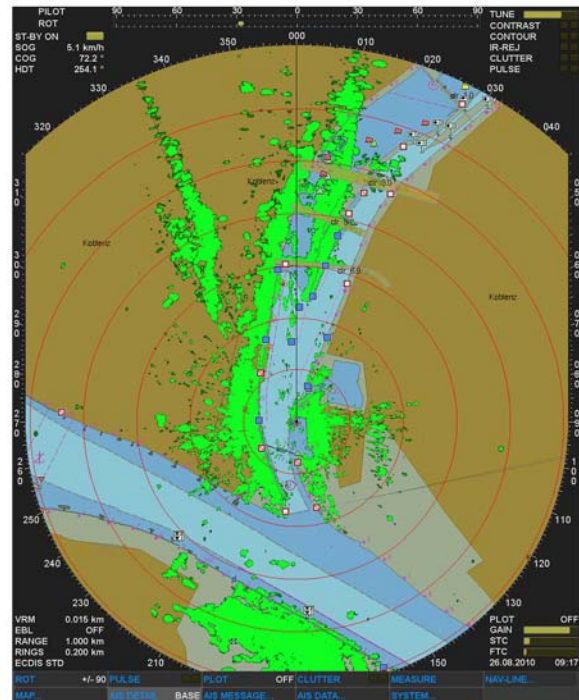
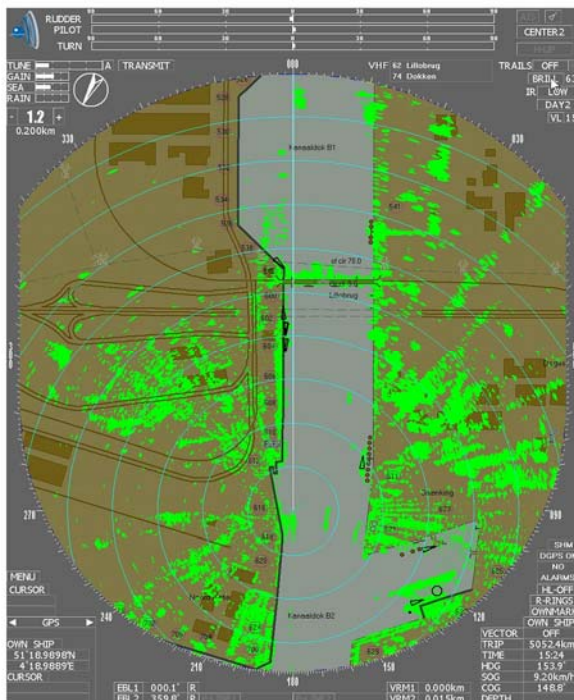
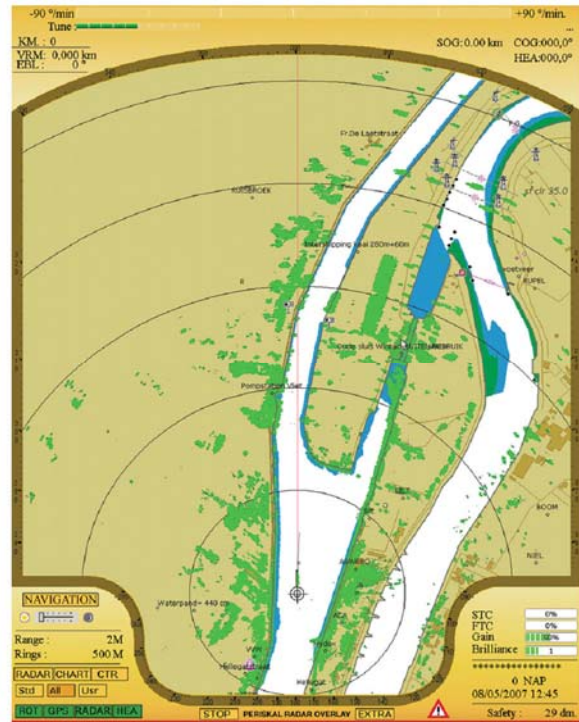
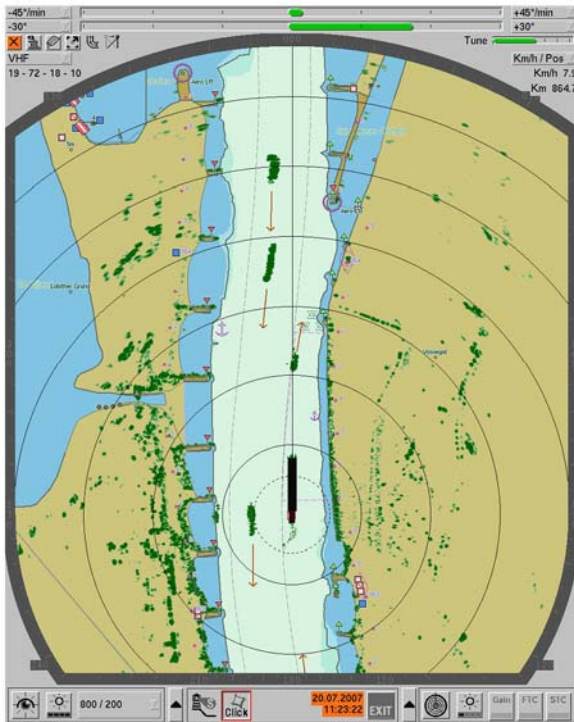
Inland ECDIS equipment and applications for the information mode (configuration 1) do not need type approval. The producer verifies on the basis of the Test-Inland-ENC included in the applicable Inland ECDIS standard whether all types of objects are displayed completely and correctly. The Wasser- und Schifffahrtsdirektion Südwest, Fachgruppe Telematik Binnen, and Rijkswaterstaat DVS provide support in this regard.

5.2 Inland ECDIS equipment for the navigation mode

Inland ECDIS equipment and applications for navigational use are tested and approved by the competent authority (type approval). They are published on the CCNR internet page, www.ccr-zkr.org.

Competent authority:

Fachstelle der Wasser- und Schifffahrtsverwaltung des Bundes für Verkehrstechniken,
Am Berg 3, D-56070 Koblenz, Germany, (www.fvt.wsv.de).



Examples of Inland ECDIS in navigation mode

6. Contents of the electronic chart (Inland ENC)

If the chart is intended to be used for the navigation mode, at least the following object types have to be included in the ENC:

- shoreline (at mean water level),
- shoreline construction (breakwater, longitudinal control dam),
- contours of locks and dams,
- boundaries of the fairway (if available),
- isolated danger spots in the fairway below and above water level, such as subways, bridges, overhead wires, etc.,
- buoys, beacons, lights, notice marks,
- waterway axis with kilometre and hectometre indications,
- location of ports and transshipment sites,
- reference data for water level gauges relevant to navigation,
- links to the external xml-files with operation times of restricting structures, in particular locks and bridges.

Moreover, the Inland ECDIS standard makes it possible to display numerous other object types and to describe them with feature data.

The CCNR has adopted (protocol 2014-I-12) minimum requirements regarding Inland ECDIS devices in information mode and comparable chart display devices for the use of Inland AIS data on board vessels. (They can be downloaded from the www.ccr-zkr.org) website. In particular this document defines the minimum requirements as they apply to electronic inland charts which cannot be used in navigation mode.

7. Producing and testing the Inland ENCs

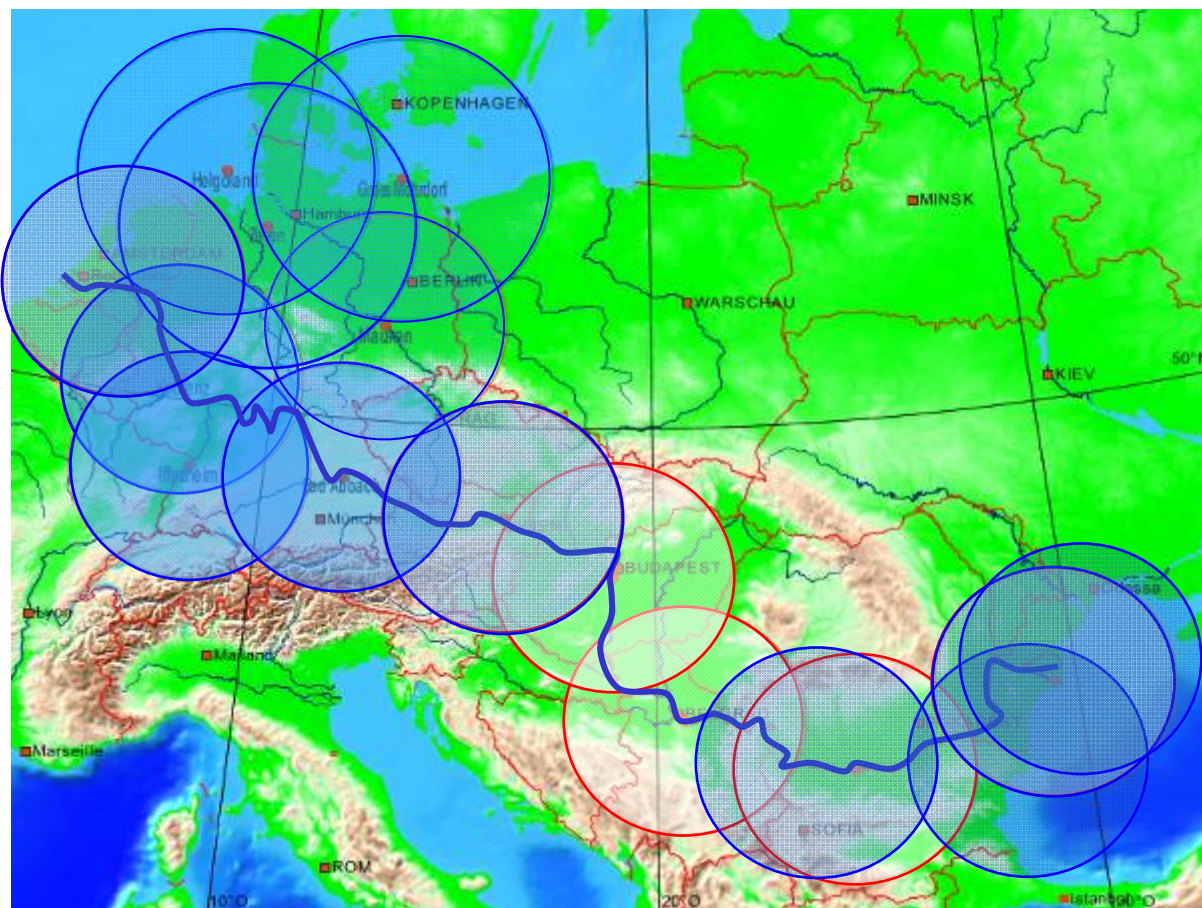
Inland ENCs can be produced, updated and published by commercial manufactures as well as by waterways administrations.

For use in navigation mode official Inland ENCs are required. Type approved Inland ECDIS equipment indicates the status of the Inland ENCs when used in navigation mode.

Commercially manufactured Inland ENCs for the navigation mode including their updates, must be tested and cleared for release by the competent authority prior to their publication. This authority decides for each waterway, which object types must be verified and declares, which Inland ENCs are suitable for the navigation mode.

8. The use of IALA DGNSS on inland waterways

In order to identify the position of one's ship and, thus, for the positioning of the electronic river chart, a satellite-based navigation system is required. At the moment, a GPS navigation system is available throughout Europe. Its accuracy is sufficient for strategic navigation and for the information mode of Inland ECDIS equipment. The accuracy of chart positioning is subject to more stringent requirements in the navigation mode, which cannot be complied with, without a differential service. Therefore the IALA DGNSS service is provided. IALA DGNSS reference stations along major inland waterways in Europe are planned or already provided.



IALA DGNSS beacon coverage (planned or already in service) along major inland waterways in Europe.

Blue Circles: IALA DGPS Reference station already in operation;
Red Circles: IALA DGPS Reference station planned.

The IALA service can only be used with special receivers. The correction signal can also be distributed via Inland AIS base stations. If the vessel is equipped with Inland AIS, it does not need an IALA receiver in an area with AIS base stations.

9. Inland ECDIS data production

9.1 Austria

Inland ENCs for the Austrian section of the Danube are published by the Federal Ministry of Transport, Innovation and Technology and via donau and are available (free download) on the homepage www.doris.bmvit.gv.at. The charts are based on edition 2.1 of the Inland ECDIS standard. Depth values are based on RNW 96 (low water level according to the recommendations of the Danube Commission). They represent the situation at the time of measurement. As the riverbed is subject to ongoing natural changes especially in the free flowing sections of the Danube, liability for the depths values cannot be assumed; depths data are intended for information purposes only.

As different offices are responsible for geographical data and traffic regulations, two files are made available for each section. The basic cell with geographic information and the overlay cell with traffic regulations can be displayed simultaneously in Inland ECDIS applications.

The charts cover the Austrian section of the Danube, the sections of the Traun, Enns and March, which are international waterways and the Danube Canal in Vienna.

Charts with detailed information about the infrastructure in ports were developed together with the port operators.

Updates are published under the internet address as stated above, where interested parties can also register for a free message service via e-mail.

All published Inland ENCs are appropriate for navigation.

9.2 Belgium

9.2.1 Flanders

The 5-miles zone:

The 5-miles zone of the Belgian Continental Shelf, bordering the shore, has been mapped at the level of the ports of Ostend and Zeebrugge up till the Dutch/Belgian border. The part of the Westerscheldt between the Dutch/Belgian border and the Rupel mouth is fully mapped. These activities are also linked to the IHO, based on the IMO-standards.

Inland waterways:

All charts for waterways (CEMT class IV or higher) in Flanders are converted into S57 charts and distributed since May 2010. NV De Scheepvaart and Waterwegen en Zeekanaal NV, have started further conversions of charts for some waterways (CEMT class III) into S57 charts. All charts will be updated in 2014 and will fulfil the minimum requirements.

Mixed Areas and Ports:

The Cell 'Inland ENC' of the Agency for Maritime and Coastal Services – Flemish Hydrography started in 2010 with the production of the specific charts for Inland navigation for its own jurisdiction (Canal Ghent-Terneuzen and Westerscheldt North and South). In addition, the Flemish Hydrography produces the IENC for the harbours Ghent, Zeebrugge and Ostend. All these charts are yearly updated.

Availability:

All Flemish charts can be downloaded free of charge from the website ris.vlaanderen.be.

Westerscheldt River: Flanders and the Netherlands co-operate in the nautical field for the Westerscheldt River area in order to ensure a safe and efficient navigation to and from ports along the (Wester)Scheldt. Management and exploitation is done by “Beheer & Exploitatie Team Schelderadarketen (BETSRK)”. This means, that the working area of the Westerscheldt River is under the authority of two countries and different authorities are involved. Therefore different competent authorities are involved in the production of Inland ECDIS charts. Afdeling Kust (Flanders) produces the Inland ECDIS charts for the Flemish part. Rijkswaterstaat does this for the Dutch part. The Dutch part IENC of the Scheldt River is available at www.vaarweginformatie.nl.

The depth information included in the charts are the following:

-1,0,1,2,3,4,5,6,8,10,15,20,25,30-metercontours.

Because the Westerscheldt River is a mixed zone consisting of maritime and inland navigation, special measures have been taken to keep consistency between the maritime ECDIS charts and the Inland ECDIS charts using the same chart limits at the borders.

The produced Inland ECDIS Charts for the Westerscheldt River area will be publicly available (free download), using a distribution system on the RIS (FIS) Portal www.vts-scheldt.net. Updates will also be published on this website. Notifications using a mailing list system will be foreseen.

Overview:

Waterways	# km
Ghent-Terneuzen canal (from Ghent to the Meulestede bridge)	2.268
Ghent-Terneuzen canal (from the border to the Meulestede bridge)	14.9
Handelsdok	1.625
Ring canal Ghent	21.683
Bovenshelde (from Oudenaarde to the Ring canal)	14.562
Moervaart	3.200
Ghent-Ostend canal (from the Ring canal to Schipdonk)	6.827
Ghent-Ostend canal (from Bruges to the new Plassendale bridge in Ostend)	16.864
Boven-Zeeschelde	29.990
Beneden-Zeeschelde	30.750
Rupel	11.980
Netekanaal	5.683
Canal Brussels-Scheldt	27.008
Dok van Vilvoorde	1.525
Albert canal	109.682
Scheldt-Rhine connection	8.000
Dessel-Kwaadmechelen canal	15.785
Zuid-Willemsvaart	42.00
Bocholt-Herentals	31.00

Mixed zones	Status (last edition)
Canal Ghent-Terneuzen	March 2014
Westerscheldt North (from Dutch/Belgian border till Rede Antwerp)	June 2014
Westerscheldt South (from Antwerp Rede till lock of Wintam)	June 2014

Ports	Status (last edition)
Zeebrugge	December 2013
Ostend	October 2013
Ghent	March 2014
Antwerp	finished

9.2.2 Wallonia

Inland ECDIS charts for class IV (and above) inland waterways will be available in year 2016

9.3 Bulgaria

Inland ENC's for the Danube are under preparation.

9.4 Croatia

Inland ENC's for the Danube, Sava and Drava are available at www.crup.hr free of charge. Conversion of the data to the current edition of the standard is in preparation.

9.5 Czech Republic

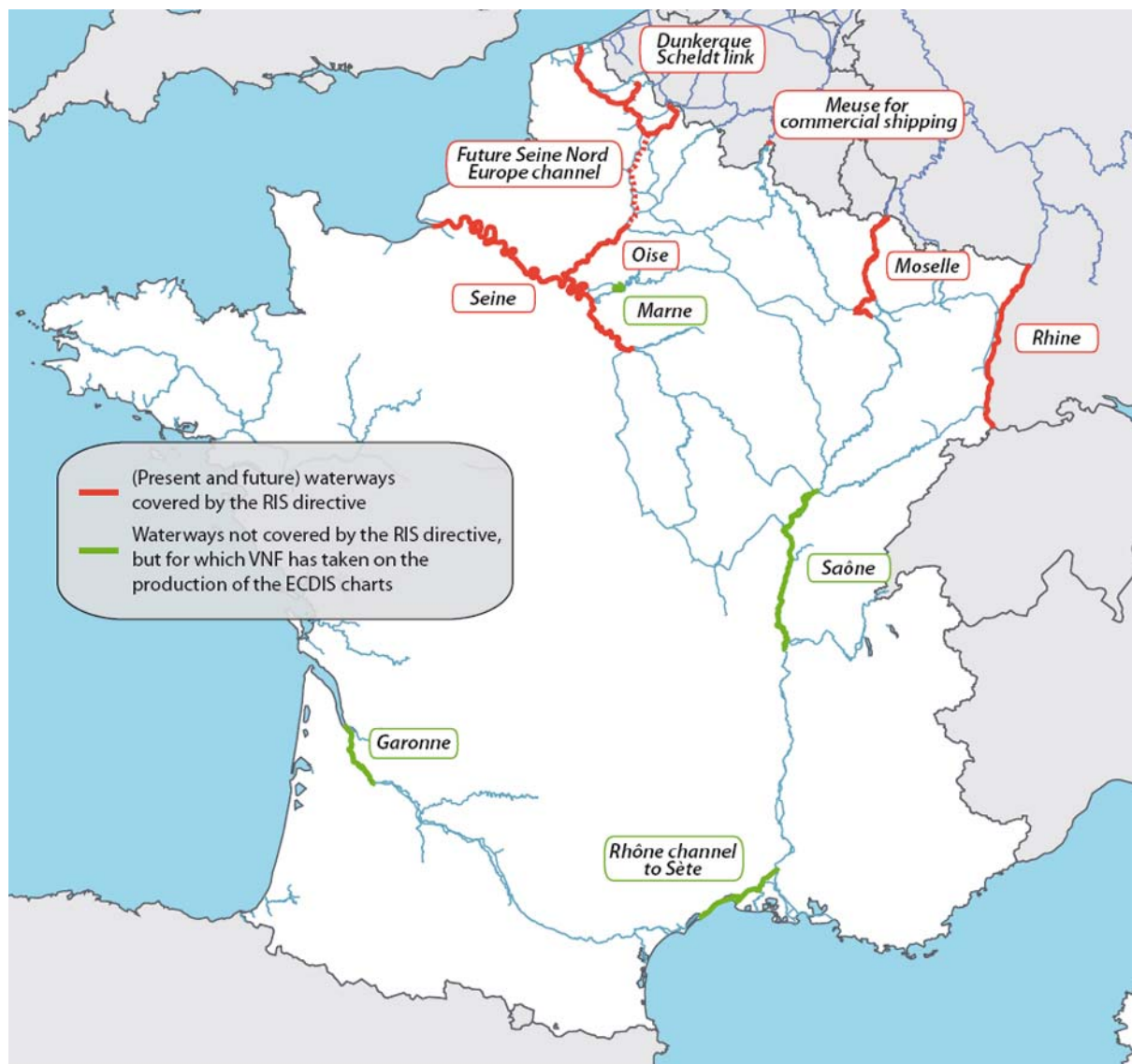
Inland ENC's for the Elbe and Vltava are available for download at www.lavdis.cz free of charge. The competent authority for the issuing of ENC's is the State Navigation Authority.

9.6 France

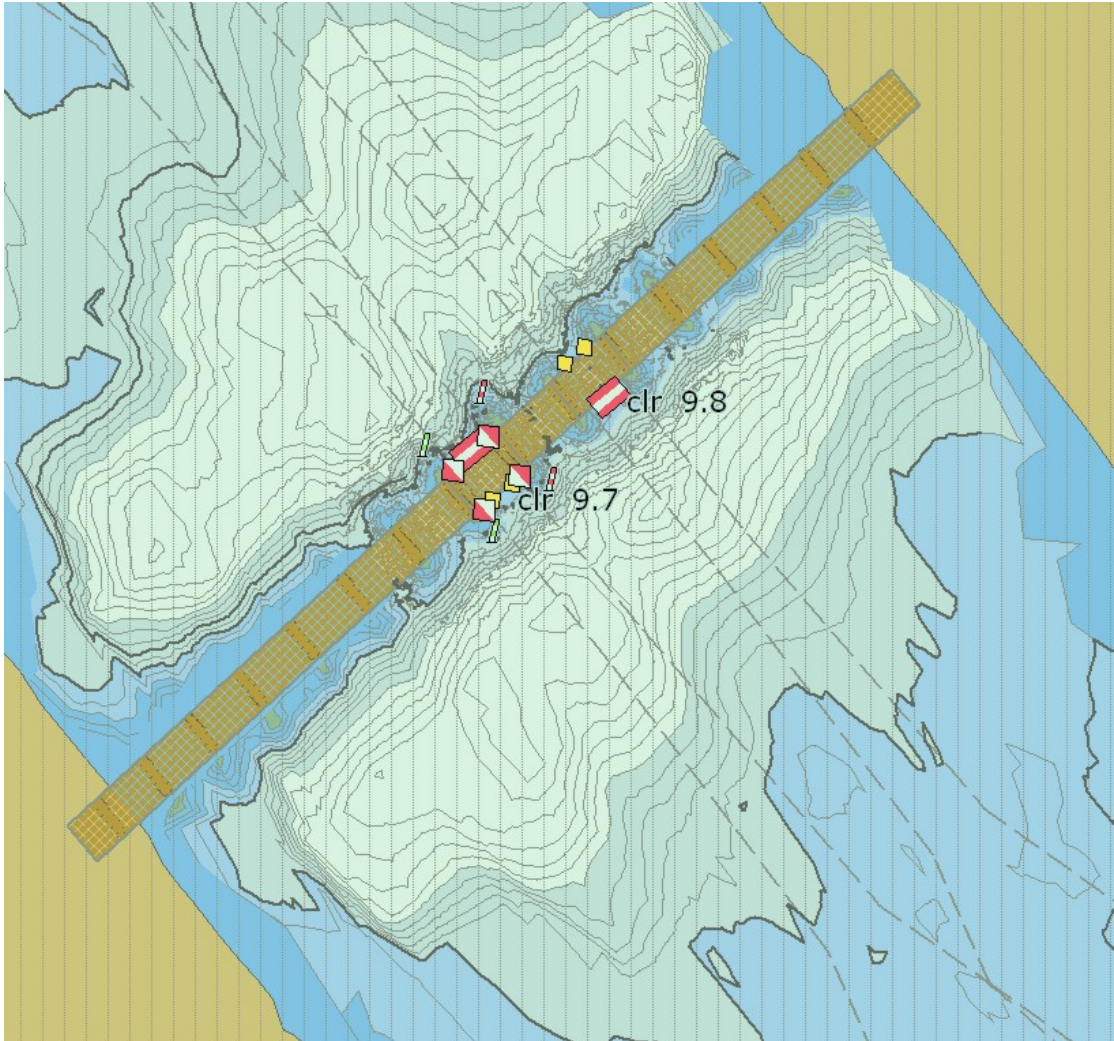
Inland ENC's produced by Voies navigables de France (VNF) are available free of charge. They can be downloaded via the VNF website at http://www.vnf.fr/vnf/content.vnf?action=rubrique&rub_id=1830

The charts are based on edition 2.1 of the Inland ECDIS standard. Presently, the VNF website provides finalised Inland ENC's of the **Dunkerque Scheldt link** (160 km), the **Garonne** (55 km) the **Saône** (219 km), the **Moselle** (160 km), and the **Franco-German Rhine** (drawn up in cooperation with the Wasser- und Schifffahrtsdirektion in Germany).

Inland ENC's of the **River Seine and River Oise** (160 km), are currently being produced.



Programme covering the French waterway network by Inland ENC's



ENC of the Garonne (Pont de Pierre)

9.7 Germany

Publisher:

Wasser- und Schifffahrtsverwaltung des Bundes (WSV) (Federal Waterways and Shipping Administration)

Chart production:

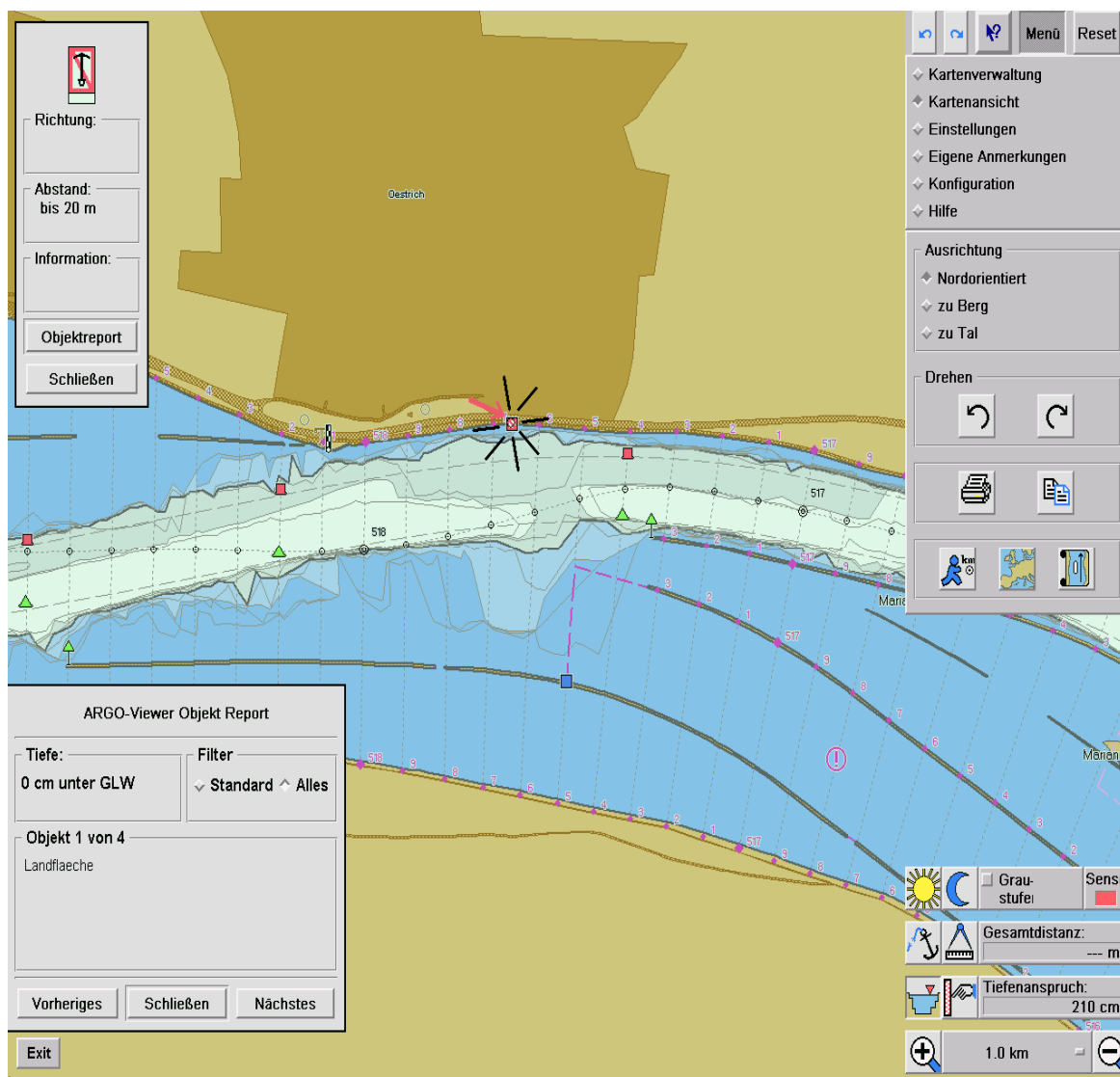
The Federal Waterways and Shipping Administration does provide its “electronic inland navigation charts” (Inland ENC) free of charge.

The up-to-date list of available Inland ENCs of the German WSV with the related edition and update numbers, the compatibility with the Inland ECDIS standard, the date of release and the area of applicability is published at <https://www.elwis.de/Service/Inland-ENC-der-WSV/index.html>. This list is updated regularly.

The publication of new or revised Inland ENCs is announced in the “Amtlichen Schifffahrtsnachrichten” (official shipping communications) and in ELWIS.

Short-term changes to the state of waterways that are critical to shipping (e.g. removal of buoys or lock closures) are announced immediately as is currently done by Nautischer Informationsfunk (nautical information VHF radio service). Medium-term changes are announced via the Internet (www.elwis.de) in the notices to skippers. Long-term changes are included in the new editions of the Inland ENCs, which are planned once a year.

The official Inland ENCs of the WSV can be downloaded at <https://www.elwis.de/Service/Inland-ENC-der-WSV/IENC-Dateien/index.php.html> free of charge. Users can inform themselves about the edition of new and changed Inland ENCs via the ELWIS subscription service. The Inland ENC is provided river by river as zip file in the official S57 exchange format. The use of the Inland ENC is only possible with a suitable Inland ECDIS application (e.g. Inland ECDIS viewer). The Inland ENC is compatible with Inland ECDIS Standard 1.02, 2.0 and 2.1. The Inland ENC is checked by the WSV chart offices on compliance with the Inland ECDIS data model and completeness with regard to content. The Inland ENC is suitable for Inland ECDIS navigation mode.



Depth information in the ENC (Rhine near Oestrich)

Depths information is provided in the Inland ENC for selected bottleneck sections. The publication of depths information does not change the type and scope of traffic safety measures as currently performed by the WSV. This means that a certain fairway width (target width) and fairway depth (target depth) within the framework of what is possible and reasonable will be maintained and regularly checked by the WSV.

The depths information contained in Inland ECDIS is not part of the obligation to ensure traffic safety, but supplementary information provided by the WSV.

Shipmasters, with regard to the immersion depth of their vessels and the use of the depths information of the chart, must take into account the fact that the depths information of the chart was sounded at a certain date (snapshot) and that the riverbed constantly changes by nature.

Vessels using the depths information as a nautical tool do not have priority over other traffic.

9.8 Hungary

There is an available Inland ENC for the Hungarian Danube sector which can be downloaded from the PannonRIS website (www.pannonris.hu). It is an old version (finished in 2007-2009), but it exists.

The National Transport Authority, the Waterway Management and the RSOE are working together to work out the method and the financial model for the regular updating. A feasibility study has already been finished and the financial possibilities are checked.

9.9 The Netherlands

Static and dynamic information about fairways in the Netherlands is available at the "FIS-site": www.vaarweginformatie.nl. This website contains up-to-date information such as: water related messages, fairway and traffic related messages, ice messages, weather forecast and Inland ENCs.

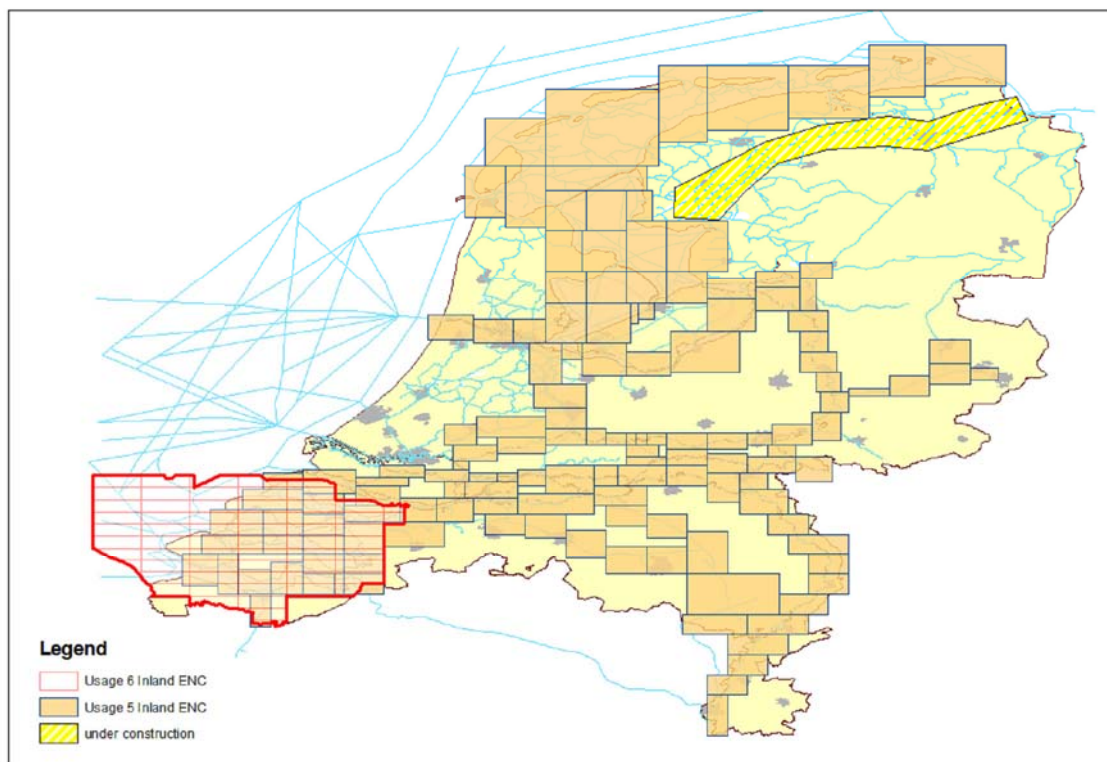
For a free ftp account of XML messages send an email to wmcn-waterkamer@rws.nl, part of Ministry of Infrastructure and the Environment, Rijkswaterstaat.

The available published Inland ENCs are to be found at sub-menu "Waterway information" /ENC.

Until now, the "FIS-site" only publishes the Inland ENCs produced and distributed by Rijkswaterstaat.

Publishing of Inland ENCs from other local RIS authorities via the "FIS-site" will follow later on. Feedback on the published Inland ENCs for improvements is very welcome; a feedback [intake sheet](#) is available on the "FIS-site"

The coverage of Inland ENCs in the Netherlands is shown in the following map.



Inland ENC products NL - July 2014

Additional information on the Westerscheldt area is provided in section 9.2 of this leaflet.

Developments

- With the objective to reach a harmonized ENC coverage in the Netherlands, an alliance of local RIS authorities (province South Holland; Port of Rotterdam and Rijkswaterstaat) produced recently the description of the minimum content of "the iENC for the Netherlands". This document will be the framework for implementation of the Inland ECDIS standard 2.3 (29 March 2016).
- A gap analysis on the available Inland ENCs proved that improvements will be required to reach the level of the approved framework for implementation of the Inland ECDIS standard 2.3. These required improvements would be executed by a step-by-step approach.
- Rijkswaterstaat also started a program for optimizing the existing ENC production processes.
- Recently Rijkswaterstaat has become the RIS authority for the main waterways (between Lemmer and Delfzijl) in the northern part of the Netherlands. It is expected that these fairways will be covered by Inland ENCs at the end of 2014

In the end, these initiatives must lead to harmonized Inland ENCs according the required standard.

For example: the nowadays-available Inland ENCs with "usage 5" and "usage 6" will be transformed to "usage 7".

This transformation process will be executed in several phases, Information about the progress of the published Inland ENCs will be available at the "FIS-site" .

9.10 Poland

The Inland Navigation Office in Szczecin provides electronic inland navigation charts (Inland ENCs) for the Lower Oder in Poland.

The official Inland ENCs of the Inland Navigation Office in Szczecin can be downloaded at szczecin.uzs.gov.pl free of charge. The Inland ENC is provided cell by cell as zip file in the official S57 exchange format. The use of the Inland ENC is only possible with a suitable Inland ECDIS application (e.g. Inland ECDIS viewer). The Inland ENC is compatible with Inland ECDIS Standard 2.3.

List of IENC cell's for Poland

Cell name	River	RKM	Other Inland waterways	Urban area
P17OD695	Oder	695,0 – 703,9	k. Schwedt	Ognica Widuchowa
P17OD704	East Oder West Oder	704,0 – 709,9 0,0 – 5,7	k. Ho – Fri – Wa	Marwice Friedrichsthal
P17OD710	East Oder West Oder	710,0 – 714,9 5,8 – 11,2	k. Gartz – Marwice	Dolna Odra Gartz
P17OD715	East Oder West Oder	715,0 – 719,9 11,3 – 16,5		Gryfino Mescherin
P17OD720	East Oder West Oder	720,0 – 724,9 16,6 – 21,5		Zabnica Debce Lubnica
P17OD725	East Oder West Oder	725,0 – 729,9 21,6 – 26,4	k. Klucz	Radziszewo Moczyly Siadlo Dolne
P17OD730	Regalica West Oder	730,0 – 734,9 26,5 – 29,9	k. Klucz p. Klucz – Ustowo k. Odynca k. Kurowski	Szczecin Siadlo Dolne Kurow
P17OD735	Regalica West Oder	735,0 – 737,9 30,0 – 33,3	k. Odynca Cegielinka Dabska Struga Dabie Male k. Kurowski	Szczecin Ustowo
P17OD738	Regalica West Oder	738,0 – 740,6 33,4 – 36,6	Dabski Nurt Parnica p. Parnicki k. Zielony	Szczecin
P18OD741	Regalica Dabie Lake	740,7 – 741,6	Czapina Babina Inski Nurt p. Mielenski Swieta	Szczecin Czarna Laka Lubczyna

9.11 Romania

Inland ENC's for the Maritime Danube from Sulina to Braila are available free of charge at www.afdj.ro.

The Corabia Port sector, km 625 – km 635, is a very difficult navigation point due to the presence of the Baloiu Island and the large width of the Danube bed in this area. This fact determines low current velocities, massive alluvium deposits and formation of submerged sandbanks. For this reason, this area is permanently monitored and the electronic maps that are drawn up provide updated data of the fairway and signal's position to the end-users (navigators) in real time. Geodesic surveys have been performed to draw up the electronic navigational chart of Corabia Port area, determining the morphology of the area (bank's alignment, limits and depths in the fairway points), the location and positioning of the floating and coastal signals and assessing the port surface. Depth values have been calculated in relation with the "0" datum of Corabia Port definition chart (level). In order to establish the outline of the banks and the island, a radar image capture system and a GPS system have been used. These lines have been adjusted by using the coordinates of the points determined on site.

For the remaining part of the sector, cells are made together with Bulgaria and Serbia. These cells contain the basic information, like fairway, coastal and floating signals, important ports, and other. These cells are produced according to edition 1.01 of the standard. Conversion of the data to the current edition of the standard is in preparation.

9.12 Serbia

Basic Inland ENC's for the Danube and the Tisza are available free of charge at www.plovput.co.yu. Extended Inland ENC's are distributed by Periskal cvba, Wuustwezel, Belgium, www.periskal.com. Conversion of the data to the current edition of the standard is in preparation.

9.13 Slovakia

Inland ENC's for the Danube are available at <http://www.svp.sk/dunaj/default.asp?id=45&mnu=45>.

9.14 Switzerland

The official chart is available and can be downloaded from www.portof.ch free of charge. The chart covers the Rhine from the national border (km 170.00) up to the road bridge Rheinfelden (end of commercial shipping route, km 149.10). The presentation of the fairway refers to the equivalent water level "Gleichwertiger Wasserstand" GIW 02 - 2.65 m. (GIW 02 equals gauge Basel-Rheinhalle 5.00 m).

9.15 United States of America

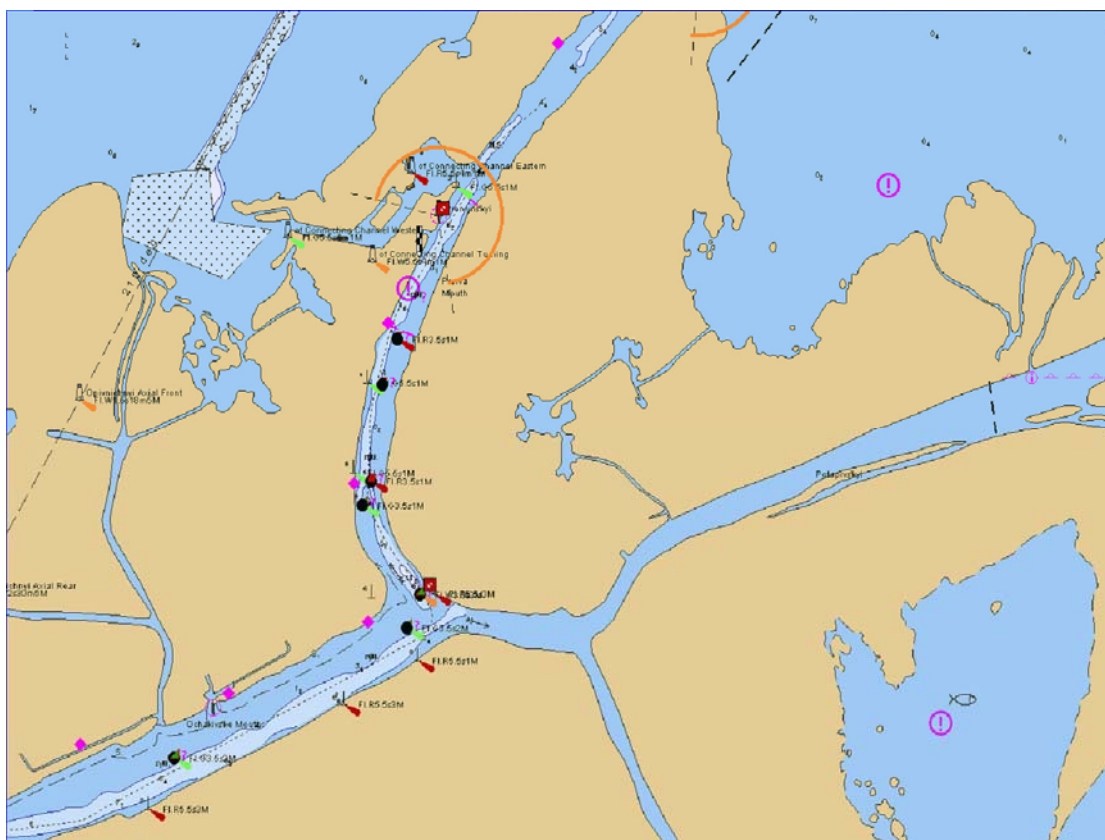
Inland ENC's for inland waterways are available free of charge at <http://www.tec.army.mil/echarts/>

9.16 Ukraine

Inland ENC for the Ukrainian section of the Danube and Dniro rivers are published by the State Hydrography Service of Ukraine (SHS). Information regarding Inland ENC for the Danube and Dniro rivers are available at the SHS homepage <http://www.charts.gov.ua> or <http://www.hydrography.com.ua>. SHS published Inland ENC are appropriate for navigation. ENC distribution: Periskal cvba Wuustwezel, Jepessen Italy and Navionics.

Depths information are based on RNW 96 (low water level according to the recommendations of the Danube Commission).

Conversion of the data from edition 1.02 to the edition 2.1 of the standard is still under preparation.



Contact addresses of the competent waterway authorities

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