Report of the Hydrography and Cartography in Inland Waters Work Group (HCIWWG)

Submitted by:	Chairman, HCIWWG
Related Documents:	1) Report Of Proceedings, Vol. 1, XVII International Hydrographic Conference, pages 101, 178-180. 2) CHRIS 19th Meeting Report. 3) HCIWWG Chair Letters 01, 02, and 03. 4) IHB Circular Letters 112/2007, 11/2008, and 31/2008. 5) International Convention for the Safety of Life at Sea (SOLAS), Chapter V, Regulation 9, Item 3. 6) United Nations Convention on the Law of the Sea (UNCLOS). 7) IHO Convention (current and the amendments approved at the 3rd EIHC). 8) Publication M3 – Resolutions of the International Hydrographic Organization. 9) Future IHO General Regulations approved at the XVIIth IHC.

Chair:	Capt (Ret.) Wesley W. Cavalheiro, Brazil
Vice-Chair:	Mr. Juha Korhonen, Finland
Secretary:	Ms. Denise LaDue, USA
Member States:	Argentina, Brazil, Canada, Colombia, Ecuador, Finland, France, Germany, Italy, Korea (Rep. of), Mexico, Mozambique, Nigeria, Peru, Serbia, Slovenia, UK, USA
Expert Contributor Organisations:	Inland Electronic Navigation Chart Harmonization Group (IEHG)
	*See Annex **A** for details of HCIWWG members.*

Summary:
This paper provides the Report and conclusions of the Hydrography and Cartography in Inland Waters Working Group (HCIWWG) and makes recommendations for consideration of the International Hydrographic Organization (IHO) at its 4th Extraordinary International Hydrographic Conference (EIHC).

Background

The XVIIth International Hydrographic Conference decided (Decision 19) to ask the Committee on Hydrographic Requirements for Information Systems (CHRIS) to establish a working group on *Hydrography and Cartography of Inland Waters (HCIWWG)* with the purpose to analyze and recommend the level and nature of IHO involvement in the Hydrography and Cartography of Inland Waterways. The study was to involve all relevant non-IHO international bodies in its deliberations, including the IEHG, and a Report submitted to the 4th EIHC in 2009.

The CHRIS established the Working Group (WG) at its 19th meeting in November 2007 (see Related Document 02) with the following Terms of Reference (TORs).

The HCIWWG should:

a) Define those inland waterways for which the IHO may have a significant role.
b) Determine any actions that the IHO might take to contribute positively to the hydrography and cartography of inland waterways and propose which IHO bodies might foster such actions.
c) Propose any Technical and/or Administrative Resolutions that may be required to reflect IHO involvement in the hydrography and cartography of inland waterways.
d) The WG should liaise with all relevant non-IHO international bodies including the Inland Electronic Navigational Chart Harmonization Group (IEHG), as appropriate;
e) The WG should work by correspondence, and use group meetings, workshops or symposia only if required.
f) Submit a report and recommendations to CHRIS/20 in 2008 for subsequent consideration at the 4th Extraordinary International Hydrographic Conference in 2009.

Meetings Held During Reporting Period
All the work was done by correspondence, except for two face to face meetings of the Chair Group, taking the opportunity of programmed IHO meetings: one during the 19th CHRIS, and the second one during the 11th World-Wide Electronic Navigational Chart Database (WEND).

Work Program
The work program had three phases:
A) data research – from Nov 15th 2007 to Feb 10th 2008;
B) data analysis – from Feb 10th 2008 to Apr 20th 2008; and
C) Report production – from Apr 20th 2008 to Sep 12th 2008.

Progress on CHRIS Action Items
Considering IHO Member States interests and its information, the designated tasks are fully accomplished.

Problems Encountered
Lack of response to IHO Circular Letter (CL) 112/2007, especially from some Member States with extensive inland waterways.

Discussion
The following notes describe the outcomes of the work undertaken by the HCIWWG.

Definitions
1) There is currently no accepted IHO definition for "inland water" or "inland waterways".
   a) IHB CL 31/2008 highlighted the subject to all IHO Member States mentioning "*one of the outcomes of the HCIWWG Report will undoubtedly assist in providing an appropriate definition for the IHO to adopt in the future*".
2) Article 8 of the United Nations Convention on the Law of Sea (UNCLOS), Related Document 6, states: "Internal waters - 1. Except as provided in Part IV, waters on the landward side of the baseline of the territorial sea form part of the internal waters of the State." In many cases, "internal waters" covers maritime waters.
3) In Europe, the inland water traffic regulations are based on the "European Code for Inland Waterways" of the United Nations. Although the Code does not provide a definition for "inland water or waterway", it is based on the concept of an "inland waterway" as being the whole area of navigable water and not only the channel or route.
4) For the purposes of this study, the HCIWWG considered the term "navigable" as meaning that hydrography and nautical cartography, are required.
5) As a result of discussions, the WG developed the preliminary definitions contained in Annex **B**, which are strictly focused on its work. For a generic or wide use definition of "inland water", it will be necessary to conduct a more in-depth study.

MS Involvement in Inland Waters
6) A questionnaire was sent to all Member States under cover of IHO CL 112/2007 seeking information on which organizations are responsible for hydrography and cartography in inland waters, about opinions whether IHO should or should not be involved in such issues and any other information considered relevant. 56 responses were received representing 46 Hydrographic Services of IHO Member States and 10 Organizations which don't take part of IHO (Member State and non-Member States).

7) Annex **C** contains summary of the replies to the questionnaire.

8) Annex **D** contains an analysis of the responses to the questionnaire made by the HCIWWG.

Workshops
9) The HCIWWG has noted the two related workshops being held in 2006 and 2007. Annex **E** contains draft reports on the workshops: one on Inland Electronic Charting (Punta del Leste, Uruguay, November 2006) and one on Hydrography Fluvial Survey (Iquitos, Peru, November 2007).

Research Results
10) Analysis of the information in Annexes **C** to **F** indicates the following:

a) In several countries, the responsibility for hydrography and nautical cartography is divided among different organizations. Not all of them have representation in the IHO.
b) The limit of responsibility among the organizations differs according to the legislation of each country.
c) Most of those in charge of hydrography in inland waters wish that IHO would provide parameters for applicable standards for hydrographic survey as well as for nautical charts in both paper and digital formats.
d) The IHO standards for hydrographic survey and nautical cartography are currently not sufficient for application to all inland waters.
e) Environmental and other conditions in navigable inland waters in different parts of the world are distinct and require specific work methodologies.
f) Many inland waterways have a particular kind of traffic, requiring specific standards for navigation safety.
g) Some organizations in charge of hydrography and/or nautical cartography in States expressed a need for support (capacity building) in the practice of hydrographic survey and in nautical cartography for their inland waters.

11) Nothing in the current Convention on the IHO (Related Document 7) precludes the extension of IHO's activities to encompass any relevant aspects for inland navigation. Under the amendments to the Convention, agreed by the 3rd Extraordinary International Hydrographic Conference and now awaiting formal ratification by the required majority of Member States, Article II has been expanded to include: the widest possible use of hydrography, and the widest possible use of IHO standards. These amendments place no geographical limits on the application of hydrography or its associated standards.

12) The IHO has a diversity of instruments intended to meet its members' and stakeholders' needs for hydrography and nautical cartography. These include IHO Regional Hydrographic Commissions, IHO Technical Specifications and Resolutions, and IHO Capacity Building Program. A number of relevant texts from IHO documents (Technical Resolutions T1.3 and A3.4; Report of Proceedings, Vol.1, XVII International Hydrographic Conference, pages 101, 178-180, and Article 8 of the future General Regulation approved by the XVIIth IHC) were considered by the WG. These texts are contained in Annex **F**.

13) The IHO S-100 series of Geospatial Standards for Hydrographic Data is being developed to accommodate a wide variety of hydrographic Stakeholders' requirements including standards for electronic nautical cartography in inland waters, that is, IHO is already developing standards which may be applicable to inland waters.

14) The IEHG has already published format and data specifications for inland electronic nautical cartography that search to be compatible with IHO specifications. The Inland Electronic Navigational Chart Product Specification has been adopted by the IEHG and is applicable in North and South America, Russia and Europe. It is intended, that the Product Specification meets the basic needs for Inland Electronic Navigational Chart applications worldwide.

Conclusions

The HCIWWG reached the following conclusions:

1) The IHO is already implicated in hydrography and cartography of inland waters, both through the responsibility that some of its Members already hold, and by the fact that considerable nautical traffic passes from the sea to inland waters and vice versa. This calls for the harmonization of hydrographic and cartographic information and services provided to navigators to assist the safety of navigation and protection of the environment. No recognized organization other than the IHO is in a position to foster this harmonization.

2) In many cases the existing IHO specifications developed for sea and coastal areas are also applicable for inland waters and some Hydrographic Services are applying the existing specifications without any need to be developed more specific ones. However, some Hydrographic Services expressed there are hydrographic and nautical cartographic needs in inland waters – survey guidelines, cartography representation, safety information, capacity development –, particularly in the interface with maritime areas where the traffic is the same, that are currently not being met. No recognized organization other than the IHO is in a position to meet these needs.

3) Any standards for hydrographic survey and for nautical cartography for inland waters should be in line with the existing IHO specifications. The variety of environmental characteristics and the different nature of the use and traffic in each waterway should be taken into account in a harmonized way.

Recommendations
The HCIWWG recommends that the IHO should:

a) **Invite** relevant Regional Hydrographic Commissions to

i. consider establishing liaison committees or other bodies, where relevant, to ensure consistent use and development of hydrographic standards and mutual cooperation for the enhancement of navigation safety in inland waters within a region, and

ii. to encourage cooperation and mutual assistance between authorities, even from different regions but with common interests, particularly for the safety of navigation in inland waters, with the purpose of mutual support and the establishment of instructions and guidance for hydrographic survey and the production of nautical charts, in accordance with the guidance in Technical Resolution T1.3 and Article 8 of the future General Regulations.

b) **Invite** relevant Member States and/or Regional Hydrographic Commissions (RHCs) to submit to IHO proposals for Capacity Building Committee (CBC) projects for the support of the development of regional specifications and exchange of know-how in inland hydrography and cartography;

c) **Agree** that, wherever possible, when developing IHO Work Program, standards and guidelines, the potential use to hydrography and cartography for inland waters should be taken in consideration.

d) **Direct** the IHO Hydrographic Dictionary Working Group to establish a definition for inland waters, taking as a starting point the definitions contained in Annex B.

e) **Establish** a formal cooperation agreement between IHO and the Inland Electronic Navigation Chart Harmonization Group (IEHG) to produce, and to advise and assist the IHO on providing for the development and extension of specifications to cover Electronic Navigational Charts (ENCs) and digital nautical publications for inland waters.

f) **Adopt** a new Technical Resolution that recognizes the role of the IHO in contributing to the harmonization of the hydrography and cartography of inland waters with the standards and specifications that apply at sea and on the coast. A draft proposed resolution is contained at Annex G.

g) **Invite** the Committee on Hydrographic Requirements for Information Systems (CHRIS) / Hydrographic Services & Standards Committee (HSSC) to develop guidelines for those who are developing extensions to IHO specifications or intend to do so

h) **Invite** the Committee on Hydrographic Requirements for Information Systems (CHRIS) / Hydrographic Services & Standards Committee (HSSC) to consider recognising/adopting/recommending extensions developed by other organisations.

i) **Invite** the Inter-Regional Coordination Committee (IRCC) to foster and coordinate the inland related [capacity building] proposals/actions/work of RHCs and review their status at its annual meetings.

Justification and Impacts
The recommended actions, if adopted, can:
1) Improve the safety of navigation and protection of the environment.
2) Provide greater consistency in charting and navigation services for those vessels transiting between the sea and inland waters.
3) Promote the IHO and expand its influence.
4) Have minor, if any, implications to the IHO budget.

Actions Required of CHRIS

The CHRIS is invited to:

1) **Approve** this Report.
2) **Endorse** the recommendations of the HCIWWG.
3) **Submit** this Report and its Recommendations to the 4th Extraordinary International Hydrographic Conference.
4) **Agree** that the work of HCIWWG has been completed and **disband** the HCIWWG.

Annexes

A) List of WG Participants.
B) Inland Waters Definitions assumed by the WG
C) Responses to Chair IHB Circular Letter 112/2007.
D) Analysis of the responses of Annex B.
E) Draft Report on Seminar/Workshop on Inland Hydrography and Electronic Charting.
F) Reproduction of part of publications from IHO.
G) Proposed Technical Resolution – Hydrography and Cartography of Inland Waters.

Membership of [WG]

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Expert Contributor Organisation	Name of Delegate	email
IEHG	Mr. Anthony Niles	Anthony.R.Niles@erdc.usace.army.mil
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Preliminary Definitions of Inland Waters Assumed by the WG

Inland Waters

"Those areas of water, within land boundaries, such as rivers, lakes, lagoons, channels, etc., that cannot be considered as maritime[1] water".
Spanish version: Aguas tierra adentro.
French version: Eaux terre à l'intérieur.

Navigational Inland Waters

"Those navigable areas of water, within land boundaries, such as rivers, lakes, lagoons, channels, etc., that cannot be considered as maritime water, and upon which vessels need to navigate and for which navigational supporting tasks, such as hydrography and nautical cartography, are required. See INLAND WATERWAY".
Spanish version: Aguas navegables tierra adentro.
French version: Eaux de navegation terre à l'intérieur.

Inland Waterway

"A waterway within navigable inland waters. See WATERWAY"[2] and NAVIGABLE INLAND WATERS".
Spanish version: Via de navegación tierra adentro.
French version: Voie de navegation terre à l'intérieur.

International Inland Waters

"A non-legal term which refers to those inland waters that belongs to more than one country. See INLAND WATERS, INTERNATIONAL WATERS[3], and INTERNATIONAL NAVIGATIONAL INLAND WATERS ".
Spanish version: Aguas tierra adentro internacionales.
French version: Eaux terre à l'intérieur international.

International Navigational Inland Waters

"A non-legal term which refers to those navigational inland waters that belongs to more than one country. See INLAND WATERS and INTERNATIONAL WATERS".
Spanish version: Aguas de navegación tierra adentro internacionales.
French version: Eaux de navegation terre à l'intérieur international.

International Inland Waterways

"A waterway which crosses more than one country. See INTERNATIONAL WATERS and WATERWAY".
Spanish version: Vía de navegación tierra adentro internacional.
French version: Voie de navegation terre à l'intérieur international.

[1] At the IHO Hydrographic Dictionary (S-32), "sea water" is related to the physical characteristic of salinity, and "maritime is "bordering on, concerned with, or related to the sea". Relating "inland waters" to the maritime aspect, it will cover more possibilities.

[2] At the IHO Hydrographic Dictionary (S-32), "waterway" is defined as "A line of water (RIVER, CHANNEL, etc.) which can be utilized for communication or transport", do not specifying if maritime or inland. At the definition of PIANC, S-32 mentions the possibility of both types.

[3] At the IHO Hydrographic Dictionary (S-32), "international water" is defined as "A nonlegal term that refers to those waters subject to the high seas freedom of navigation and overflight, i.e., contiguous zone, EEZ, and high seas".

Responses to Chair Group of IHB Circular Letter 112/2007

Draft Summary Table of the Replies to the Questionnaire on IHO CL 112/2007

Legend:

Question 4: Light Green tint means YES; Yellow tint means NO.

Question 5: Light Green tint means YES, the same as for sea areas; Dark Green means YES, but the role extends beyond that for sea areas; Yellow tint means NO, Orange tint means NOT APPLICABLE. The tint is selected by interpreting the reply.

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
Algerie 9.2.08	Service Hydrographique des Forces Navales	Algerie CHMMN	**Non**			
Angola 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	ZAIRE/Congo River Mr. Costa NETO: neto.francisco@netangola.com	Yes, survey standards (S-44) AND Charting/ Cartographic Standards (M-4)	N/A	N/A
Argentina 9.2.08	**Servicio de Hidrografía Naval (SHN) Rolando RIOS rolando.o.rios @gmail.com**	Argentina SWAtHC	The Servicio de Hidrografía Naval (SHN) is in charge of the cartography. This task was established by means of the National Hydrograhic Law (Ley 19922). On the other side, hydrography of inland waters is responsability of the Dirección Nacional de Vías Navegables (DNVN), that is in charge also of sending the information to the SHN.	Provided that there was agreed that inland waters needs a standard for cartographic representation (paper charts and ENCs) we think that it is important for IHO to define the terms of that standarization, to let the countries avoid different ways of charting the inland waters. Also, in the hydrographic issue, it would be important to decide if the inland waters needs a special treatment for surveying processes.	**a. Comité Intergubernamental de la Hidrovía Paraguay-Paraná (Member States: Argentina, Bolivia, Brasil, Paraguay and Uruguay)** SECRETARIA EJECUTIVA DEL CIH Secretario Ejecutivo: Lic. Roberto BARATTA Hipólito Yrigoyen 250 - 11º Piso Oficina 1111- Buenos Aires Teléfono (+54-11) 4349-8788/5297 Fax: (+54-11) 4349-6527 E-mail: rbarat@minplan.gov.ar **b. Comisión Administradora del Río de la Plata (CARP)** Embajador Daniel OLMOS (Argentina) Contralmirante (R) José BELLO	

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
					GANDRA (Uruguay) Isla Martín García, Casa N° 102 Provincia de Buenos Aires República Argentina Teléfono: +(54)(11) 4728 0013 E-mail: carp.sec.tec@netizen.com.ar **c. Comisión Administradora del Río Uruguay (CARU)** REPUBLICA ARGENTINA: C.C.34 C.P.3280 - (Colón Entre Ríos - R.A.) Telefonos: +598-722-5400/5500 /// Telefax: +598-722-6786 REPUBLICA ORIENTAL DEL URUGUAY: Av. Costanera Norte S/N. Paysandú .C.C 57097 - R.O.U / REPUBLICA ARGENTINA: C.C. 34 C.P. 3280 - (Colón Entre Rios - R.A) E-mail: mailto:caru@caru.org.uy	
Australia 8.2.08	Australian Hydrographic Service international.relations@hydro.gov.au	Australia	Yes No SOLAS Class vessels navigate in the internal waters of Australia. Borders between the various states	No		
Austria 19.11.07	Inland waterways in Austria Bernd Birklhuber bernd.birklhuber@bmvit.gv.at	Austria	Danube and small parts of Traun, Enns and March. The Ministry of Transport, Innovation and Technology, Supreme Navigation Authority The private company via-donau, which is owned by the Ministry of Transport, is responsible for all the other data (geographical data including depth information)	A recognition of the standards for Inland ENCs by IHO would help to ensure, that ECDIS applications on maritime vessels, which are using inland waterways, are able to use Inland ENCs.	The **European Commission (EC)** is preparing a binding regulation on Inland ECDIS for all the member states of the European Union (Contact: Ms. Astrid Schlewing, astrid.schlewing@ec.europa.eu) The **Central Commission for Navigation on the Rhine (CCNR)** has already adopted the Inland ECDIS standard as a binding regulation for the river Rhine (Contact: Mr. Gernot Pauli, g.pauli@ccr-zkr.org) The **Economic Commission for**	Within Europe there is a specific set of regulations for inland navigation, which is different from the respective regulations of IHO and IMO (e.g. technical regulations for inland vessels instead of SOLAS, European Code for Inland Waterways (CEVNI) instead of COLREG, Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (AND respectively ADNR and AND-D) instead of IMDG Code and BC Code, special regulations for crews on inland

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					Europe of the United Nations (UN/ECE) has adopted the Inland ECDIS Standard as a recommendation for all European countries and the Russian Federation (Contact: Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org) The **Danube Commission** is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the Russian Federation (Contact: Mr. Petar Margic, secretariat@danubecom-intern.org) The **International Sava River Basin Commission** is also using the Inland ECDIS Standard for the river Sava (Contact: Mr. Sinisa Spegar, sspegar@savacommission.org) The **Inland ENC Harmonization Group (IEHG)** is the international technical expert group, which ensures a harmonized development of the standards for Inland ENCs (Contact: Mr. Anthony Niles, Anthony.r.niles@erdc.usace.army.mil, Mr. Bernd Birklhuber, bernd.birklhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque, Albuquerque@dhn.mar.mil.br)	vessels instead of STCW). However, maritime certificates are recognized in most areas to allow maritime vessels to use inland waterways. But there are also maritime certificates, which are not sufficient for European inland waterways. E.g. tank vessels for dangerous goods need an additional certificate, if they want to use European inland waterways and skippers need a special license, if they do not want to use a pilot.
Bangladesh 12.02.2008	Directorate of Hydrography Bangladesh Navy Captain Mir Imdadul Haque BN	Bangladesh / Area J (NIOHC)	Yes. Bangladesh Inland Water Transport Authority (BIWTA) BIWTA Bhaban, 141-143 Motijheel Commercial Area Post Box-76, Dhaka 1000 Bangladesh	There are rivers and inland waterways throughout the world which are used for international transportation of goods. The standard of hydrographic survey, channel marking and nautical charting	IALA may have significant influence in this issue to ensure similarity of the navigational markings and there usage in these internal waterways.	Nil

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	Email: dhydro@banglad esjnavy.org			for these international internal waterways should be same to ensure safe and easier navigation. These waterways should be located first and then IHO may promulgate certain standards/ specifications for the hydrographic survey and nautical charting for these waterways.		
Belgium 14.2.08	Flemish Hydrography guido.dumon@ mow.vlaanderen.be	Belgium Flanders	Yes. 1. Flemish Hydrography (ENC-production; future Inland-ENC production ??) 2. NV Waterwegen en Zeekanaal (Inland-ENC production) 3. NV De Scheepvaart (Inland-ENC production) 4. Different Harbours (Oostende, Zeebrugge, Gent, Antwerpen) (Inland-ENC production) At 26/02/08 the next meeting concerning Inland-ENC production takes place. After this date more specific contact information will be sent by e-mail. The Flemish Hydrography is responsible for the hydrography and nautical cartography (ENC-	Yes, since the EU RIS-directive mentions that Inland-ENC's should be distributed free of charge while the ENC's of the Flemish Hydrography are being sold by IC-ENC. If the Flemish Hydrography will have to make Inland-ENC's of the river Scheldt where already two ENC-cells are being produced, there will be a contradiction between the ENC's which are being sold and the Inland-ENC's which will be distributed for free. IHO could give some guidance concerning this matter by comparing national policies in different EU member states. In Belgium, the implementation of the EU RIS-directive concerning Inland-ENC production is at its starting point. Only the	The European Union through the RIS-directive; What about the Inspire directive ?? => information for free ?	Our apologies for this late answer.

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			production) of the river Scheldt. The other organisations are responsible for the hydrography and nautical cartography (Inland-ENC production) in the areas covered by the EU RIS-directive (River Information System)	Flemish Hydrography has operational experience concerning the production and standardisation of ENC's, quality control, distribution of ENC's through RENC's, … All other organisations mentionned above do not have any experience at all. There is also no standardisation of the Inland-ENC's which have to be produced in the near future. Most of the regulations and structures implemented by the IHO have to be repeated on a smaller level in the EU concerning Inland-ENC production. Perhaps IHO could play an important role.		
Brazil 26.12.07	DHN Email: albuquerque@dhn.mar.mil.br, freire@chm.mar.mil.br	B, C1	Yes. DHN	Yes, Brazil has waterways in which SOLAS ships sail. The hydrographic and the cartographic activities in those waterways must follow the standards established by IHO. Besides, it is important to maintain uniform procedures as much as possible, adapting the requirements and specifications to the characteristics of the inland waters.	IEHG, CHI (Paraguai River Waterway Committee)	
Bulgaria 3.12.07	Executive Agency for Exploration and Maintenance of the Danube	Bulgaria	Danube River in Bulgaria (as part of common Bulgarian-Romanian Danube sector) The Executive Agency for	Systematisation and standardisation of data acquiring and dissemination for all Inland waterways.	The **European Commission (EC)** is preparing a binding regulation on Inland ECDIS for all the member states of the European Union (Contact: Ms. Astrid Schlewing,	

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	River, Bulgaria Desislava Ivanova Director, Hydrographical and Analysis Department EA EMDR desi@appd-bg.org www.appd-bg.org		Exploration and Maintenance of the Danube River, Bulgaria is responsible for all geodetic, geomatic, hydrographical, cartographical, ENCs, hydrological, hydrometeorological, hydromorphological, navigational, hydrotechnical, etc. data for the Danube River.		astrid.schlewing@ec.europa.eu) The **Central Commission for Navigation on the Rhine (CCNR)** has already adopted the Inland ECDIS standard as a binding regulation for the river Rhine (Contact: Mr. Gernot Pauli, g.pauli@ccr-zkr.org) The **Economic Commission for Europe of the United Nations (UN/ECE)** has adopted the Inland ECDIS Standard as a recommendation for all European countries and the Russian Federation (Contact: Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org) The **Danube Commission** is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the Russian Federation (Contact: Mr. Petar Margic, secretariat@danubecom-intern.org) The **International Sava River Basin Commission** is also using the Inland ECDIS Standard for the river Sava (Contact: Mr. Sinisa Spegar, sspegar@savacommission.org) The **Inland ENC Harmonization Group (IEHG)** is the international technical expert group, which ensures a harmonized development of the standards for Inland ENCs (Contact: Mr. Anthony Niles, Anthony.r.niles@erdc.usace.army.mil, Mr. Bernd Birklhuber, bernd.birklhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque,	

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					Albuquerque@dhn.mar.mil.br)	
Canada 29.1.08	Canadian Hydrographic Service nicholsond@dfo-mpo.gc.ca	Canada	Yes Canadian Waters Canadian Hydrographic Service. Dr. Savithri Narayanan Director General, Dominion Hydrographer 615 Booth Street Ottawa, Ontario K1A 0E6 savithri.narayanan@dfo-mpo.gc.ca	Yes. Canada aspires to employ the same hydrographic and cartographic standards for all navigable waters, whether inland or coastal. As an IHO member, CHS actively supports international standards.	**Canadian Shipowners Association** 350 Sparks Street, Suite 705 Ottawa, ON, Canada K1R 7S8 **Bruce Bowie** Vice-President, Operations bowie@shipowners.ca **Chamber of Marine Commerce** 350 Sparks Street Suite 700 Ottawa, Ontario K1R 7S8 **Raymond Johnston** President rjohnston@cmc-ccm.com **The Shipping Federation of Canada** 300 rue du Saint-Sacrement, Suite 326 Montreal, Quebec Canada H2Y 1X4 **Ivan Lantz** Director, Marine Operations ilantz@shipfed.ca **Canada Steamship Lines** 759 Square Victoria Montreal,Quebec Canada, H2Y 2K3 e-mail: ships@cslmtl.com **Upper Lakes Shipping** 49 Jackes Avenue, Toronto, Ontario, Canada M4T 1E2 **Bernie Johnson** VP Marine Projects	International standards for ECDIS in their entirety are not accepted as applicable for inland water navigation by several major Canadian commercial shipping companies.

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					bjohnson@upperlakes.com **Algoma Central** 63 Church Street, Suite 600 St. Catharines, Ontario L2R 3C4 (905) 687-7888 **Great Lakes Pilotage Authority** 202 Pitt Street, 2nd Floor P.O. Box 95 Cornwall, Ontario K6H 5R9 **Laurentian Pilotage Authority** 555, René-Lévesque Blvd West, Suite 1501 Montreal, Quebec Canada H2Z 1B1 administration@apl.gc.ca **Transport Canada** Operations and Environmental Programs Place de Ville, 330 Sparks Street Ottawa, Ontario Canada K1A 0N5 **Robert Turner** Manager, Navigation Safety and Radio Communications TURNERR@tc.gc.ca	
Chile 30.1.08	Servicio Hidrográfico y Oceanográfico de la Armada (SHOA) Tte.1° Juan Pablo Olivares Arancibia	Chile, SEPHC	Yes SHOA Sr. Director del SHOA, CN Cristian Soro Korn shoa@shoa.cl	No		

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	hidrografia@shoa.cl					
Colombia 17.03.08	**DIMAR – CIOH Director Centro de Investigaciones CIOH <jefcioh@dimar.mil.co>**	Colombia **SEPHC** and **MACHC**	Yes. The Centro de Investigaciones Oceanográficas e Hidrográficas CIOH – DIMAR. The Dirección General Marítima, through CIOH, keep the carytography of river zone inse its jurisdiction, in which there are international comercial maritime traffic acivities. From this point till navigable ports in the river its competence of the Ministry of Transport and CORMAGDALENA	Yes. In Colombia's particular case there is no standards for hydrographic surveys in rivers and lagoons. Through IHO there would have procedures and knowledge share about reduction reference (vertical datum) in rivers.	IHO	NIL
Cuba 6.2.08	Servicio Hidrográfico y Geodésico de la República de Cuba Cap. Corb. Ángel Acanda Reyes E-mail: onhg@enet.cu	Cuba, MAHC	**NO**. We have this kind of navigable waterways but not to cargo and personnel transport, just to very small boats, reason which they are not included in our nautical cartography.	Yes, taking in account the work developed by our Organisation, it will be possible countries may harmonize standards for all types of nautical cartography (paper or electronic) in this kind of navigable waterways. We consider that he more feasible way to achieve this goal is to insert all Member States in this important matter, be by sending information, be by financing countries which need establish the security of navigation in this navigable waterways but, by its socio-economic development, keep low level of work and do not achieve the main objective: to guarantee the security of navigation in its internal waters,	IHO, IMO, ICA, IOC	Even though, in our country, we don´t have this kind of navigable waters, we consider it is important to know the particularities of this work, mainly I this kind of navigable waters, as for our Hydrographic Service works in the production and edition of ENC, it would be very useful to know IHO and IEHG standards to this kind of areas.

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				which will allow a higher environment and marine preservation.		
Cyprus 27.12.07	Department of Lands and Surveys msavvides@dls.moi.gov.cy	Cyprus	There are only a few water reservoirs which are not navigable. For periods of the year the dams are hardly full. The waters are used for drinking and irrigation. There are also some small rivers in Cyprus which have waters during the wnter time when it rains. Again the waters are no navigable Department of Lands and Surveys	We believe that in the case of Cyprus, the IHO has no significant role to play.		
Denmark 11.12.07	Kort & Matrikelstyrelsen soe@kms.dk	Denmark	No			
Ecuador 12.2.08	INOCAR msantos@inocar.mil.ec	Ecuador	Yes INOCAR	Yes. as in open waters IHO may rule all what concerns to inland waters, not only in order to maintain standards and facilitate the cooperation between members but also for the improvement of its activity.		
Estonia 13.12.07	Estonian Maritime Administration hnt@vta.ee	Estonia	Yes Estonian Maritime Administration, Valge 4, 11314, Tallinn, Estonia phone: +3726205600, fax: +3726205606, e-nail: hnt@vta.ee; www.vta.ee	IHO will be able to harmonize the navigational information (including charts and ENC) for sea and inland waters.		
Finland 28.1.08	Finnish Maritime Administration, Hydrographic	Baltic Sea; BSHC, NHC, INT Region E	Inland lakes and rivers Finnish Maritime Administration, P.O. Box 171, FI-00181	NO: The FMA hydrographic surveys and nautical charts are done according to the same specifications as used for sea	The PIANC have an Inland Navigation Commission, which may have some influence to this work. Please find more on www.pianc-	

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	Department juha.korhonen @fma.fi		HELSINKI, Finland Contact: Juha Korhonen, juha.korhonen@fma.fi Finnish Environment Institute (SYKE), P.O. Box 140, FI-00251 HELSINKI, Finland, Contact: Jari Hakala, jari.hakala@ymparisto.fi 1. Finnish Maritime Administration (FMA) is responsible for hydrographic surveys and nautical charting of those lakes and rivers which have commercial traffic. 2. Finnish Environment Institute (SYKE) is responsible for hydrographic surveys for other lake areas, mainly for environmental purposes.	areas of Finland. These are mainly based on IHO specifications with some (more stringent) national specifications (in Finnish).	aipcn.org/pianc/incom.php.	
France 4.2.08	France – SHOM Point of contact : Serge Allain ; email : dspre-rex@shom.fr	NSHC, EAHC, MBSHC, MACHC	For hydrography in the estuaries : local autonomous port authorities in inland waters : autonomous agencies in charge of management and exploitation of each river and canal networks For charting: in the estuaries : SHOM in inland waters : autonomous agencies in charge of management and exploitation of each river and canal networks Voies navigables de France : www.vnf.fr	No, the absence of worldwide international regulations applicable to inland waters together with the heterogeneity of the organizations concerned and of the relevant national regulations (including navigational aids) would make IHO implication disputable, difficult and cumbersome. Unlike maritime hydrography, there is no unique point of contact for inland water issues in many countries (6 autonomous agencies share the responsibilities of rivers in France). It is therefore a real handicap for working and co-	Centre d'études techniques maritimes et fluviales web: cetmef.equipement.gouv.fr Inland ENC Harmonization Group (IEHG) : http://ienc.openecdis.org/?q=node/19 Central commission for navigation on the Rhine: http://www.ccr-zkr.org/ Inland Waterways International http://www.inlandwaterwaysinternation	

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			Compagnie nationale du Rhône : www.cnr.tm.fr The geographical limits of responsibilities are defined in French decrees for the creation of each agency. SHOM charting responsibilities apply from the sea up to the "maritime limit" defined individually for each waterway.	operation at the international level. However, it could be worthwhile for local lake and river survey teams to be aware of IHO standards and rules of procedures. France considers it is sufficient to carry out this action on a national basis, or at a bilateral or regional level in the case of international inland waters, without any specific IHO involvement.	al.org/ European Barge Union : http://www.ebu-uenf.org/ PIANC : http://www.pianc-aipcn.org/	
France 30.11.07	Voies navigables de France , France Camille CESSIEUX Voies navigables de France	France	Inland waterways in France Two organizations are involved. The **SHOM** (service Hydrographique et Océanographique de la Marine) and **VNF** (Voies navigables de France.) SHOM is the competent authoritie for hydrographiy and nautical cartography of sea and coastal water VNF is the competent authoritie for inland waterway. As a public corporation answerable to the Ministry of ecology and sustainable development.. VNF is in charge to the implementation of the EU RIS directive. VNF is responsible for managing, operating, modernising and developing a network of navigable waterways in comprising 6,700 km of canals and developed rivers, over 2,000 permanent	A recognition of the standards for Inland ENCs by IHO would help to ensure, that ECDIS applications on maritime vessels, which are using inland waterways, are able to use Inland ENCs.	The **European Commission (EC)** is preparing a binding regulation on Inland ECDIS for all the member states of the European Union (Contact: Ms. Astrid Schlewing, astrid.schlewing@ec.europa.eu) The **Central Commission for Navigation on the Rhine (CCNR)** has already adopted the Inland ECDIS standard as a binding regulation for the river Rhine (Contact: Mr. Gernot Pauli, g.pauli@ccr-zkr.org) The **Economic Commission for Europe of the United Nations (UN/ECE)** has adopted the Inland ECDIS Standard as a recommendation for all European countries and the Russian Federation (Contact: Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org) The **Danube Commission** is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the	Within Europe there is a specific set of regulations for inland navigation, which is different from the respective regulations of IHO and IMO (e.g. technical regulations for inland vessels instead of SOLAS, European Code for Inland Waterways (CEVNI) instead of COLREG, Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (AND respectively ADNR and AND-D) instead of IMDG Code and BC Code, special regulations for crews on inland vessels instead of STCW). However, maritime certificates are recognized in most areas to allow maritime vessels to use inland waterways. But there are also maritime certificates, which are not sufficient for European inland waterways. E.g. tank vessels for dangerous goods need an additional certificate, if they want to use European inland waterways and skippers need a special license, if they do not want to use a pilot.

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			structures and 40,000 hectares of waterside public land.		Russian Federation (Contact: Mr. Petar Margic, secretariat@danubecom-intern.org) The **International Sava River Basin Commission** is also using the Inland ECDIS Standard for the river Sava (Contact: Mr. Sinisa Spegar, sspegar@savacommission.org) The **Inland ENC Harmonization Group (IEHG)** is the international technical expert group, which ensures a harmonized development of the standards for Inland ENCs (Contact: Mr. Anthony Niles, Anthony.r.niles@erdc.usace.army.mil, Mr. Bernd Birklhuber, bernd.birklhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque, Albuquerque@dhn.mar.mil.br)	
Germany 11.2.08	German Federal Institute of Hydrology (BFG) Postfach 20 02 53 56002 Koblenz Germany	Areas of Germany The German inland waterways and waters are delimited by a defined borderline from the maritime waterways and coastal waters.	The federal waterways of Germany are subdivided by the law in inland waterways and maritime waterways. Furthermore, navigation law subclassifies the federal waterways according to their prevailing use in inland navigation routes and maritime navigation routes. This leads to the fact that some reaches of inland waterways are maritime navigation routes (e.g. the River Elbe upstream to Hamburg), because they are mainly used by sea-going ships. The Federal Waterways and Shipping Administration (Wasser- und Schifffahrtsverwaltung; WSV)	The IHO has a significant role because: The inland ECDIS is becoming more and more relevant for the efficient utilization of the shallow inland waterways. To improve the utilization of the remaining underkeel clearance in Germany, we have supplemented the inland ECDIS in an selected area with depth information that can be related to the instantaneous water level in real time. The skipper can see the available channel depth in dependence on the actual draught of his ship. The IHO can help to standardize this method	Deutsche Hydrographische Gesellschaft e.V. (German Hydrographic Society) Geschäftsstelle Dipl.-Ing. H.-Fr. Neumann Parkstraße 8 21682 Stade Contact: http://www.dhyg.de/joomla/index.php?option=com_contact&task=view&contact_id=1&Itemid=48 Administration of waterways: Bundesministerium für Verkehr, Bau und Stadtentwicklung (Federal Ministry of Transport, Building and Urban Affairs) Robert-Schuman-Platz 1, 53175 Bonn	The German federal inland waterways have a total length of about 7,300 km. In terms of navigation law, they are divided into 6,500 Km of inland navigational routes and about 750 km of maritime navigational routes. More detailed information on the classification of waterways can be found at: http://www.wsv.de/wasserstrassen/gliederung_bundeswasserstrassen/index.html

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			is responsible for the administration of the waterways. They are subordinated to the Federal Ministry of Transport, Building and Urban Affairs (BMVBS). Nautical maps are produced by the WSV predominantly for its internal use (to ensure the safety and ease of navigation). Since 2003 the WSV has also produced inland ECDIS of about 1,800 km of the inland navigation routes. The Federal Maritime and Hydrographic Agency (Bundesamt für Seeschifffahrt und Hydrographie; BSH) is part of the WSV and is responsible for nautical cartography of maritime navigation routes (see explanation above). Other inland waters are managed by the 16 federal states (Bundesländer). Most lakes and reservoirs are not navigable or small and are therefore used only for recreational shipping. The largest lake, the Lake Constance (536 km2), for instance is mapped only in official topographic charts. There is no official nautical chart available although the lake is used by numerous ferries. Maybe this is	and achieve wider coverage in the neighbouring countries. More information of the electronic navigation-route information system (ARGO) based on the Inland ECDIS can be found at: http://www.elwis.de/RIS-Telematikprojekte/Telematikprojekte/argo/index.html The IHO can help to create the awareness for the need of special standards for hydrographic surveys of inland waterways. This might be at the beginning the existing S-44 Publication, but also a working group could become established with the task to find out whether the existing standard is sufficient or needs specific supplementation. The content of Inland ECDIS – especially the navigable-depth information - has to be reliable and must be more accurate than that on coastal waters. This could be achieved by proposing to introduce a quality-management system, which makes sure that the cartographic products comply with the hydrographic standards. The standards for the competence of hydrographic surveyors might need to be	E-Mail: poststelle@bmvbw.bund.de Internet http://www.bmvbs.de/ Wasser- und Schifffahrtsdirektion Südwest Fachgruppe Telematik (Waterways and Shipping Administration South-West Telematics Unit) Postfach 310160 55062 Mainz E-Mail: wsd-sudwest@wsd-sw.wsv.de Internet www.wsd-suedwest.wsv.de Bundesamt für Seeschifffahrt und Hydrographie (BSH) (Federal Maritime and Hydrographic Agency) Neptunallee 5 18057 Rostock Germany Internet http://www.bsh.de/de/index.jsp Land surveying offices responsible for Lake Constance Landesvermessungsamt Baden-Württemberg (Land Surveying Office of Baden-Württemberg) Büchsenstraße 54 70174 Stuttgart E-Mail: poststelle.vermbw@vermbw.bwl.de Landesamt für Vermessung und Geoinformation (Land Surveying Office of Bavaria)	

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			due to the fact that the right of ownership between Germany, Switzerland and Austria is not clear. The limit of the responsibility area of the BSH is the border of the maritime navigation routes, while the WSV produces nautical maps of the same area for its internal use and for pilots much more frequently than new editions of nautical charts are issued. The BSH utilizes data from the WSV for the nautical charts. Detailed information about the organisational structure and contacts in the Waterways and Shipping Administration can be found at http://www.wsv.de/Wir_ueber_uns/index.html.	adapted to the inland requirements. At the moment in Germany there are no legally binding regulations in this matter. The IHO could help to raise the awareness of the importance of official hydrography and nautical cartography at least for the most important lake (Lake Constance). In this context the land surveying offices of the federal states could be invited to participate. Alternatively, the private company ibn (address below) could be contacted to join in the activities regarding the international standards of the IHO.	- Regionalabteilung Süd – Alexandrastr. 4 80538 München E-Mail: Poststelle@lvg.bayern.de The private company producing the "Lake Constance Navigational Chart" Internationale Bodensee + Boot-Nachrichten Druck- und Verlagshaus Hermann Daniel GmbH & Co KG, Grünewaldstraße 15, Postfach 10 02 64, D-72334 Balingen, Germany Email: ibn@ibn-online.de	
Greece 10.2.08	HCMR, www.hcmr.gr elias@hcmr.gr	Greece, Attika	Yes. Hellenic Navy Hydrographic Service, www.hnhs.gr / Hellenic Military Geographical Service, www.gys.gr	Assist in the coordination and standardization of mapping services, incorporate maps in an international database, networking and better communication for improving services		
Iceland 27.12.07	Icelandic Coast Guard-Hydrographic Depart hilmar@lhg.is	Iceland, NHC, NSHC	NO	YES. IHO should work closely with relevant organisations to harmonize navigational roles, charting symbols and abbreviations		
Iran	Islamic Republic of	Iran RSAHC	Yes. PSO (Focal Point) , with the	YES, Due to laying of the International routs in some of	Irespective of PSO as the Focal Point , there are two main bodies that have	Our present status indicates that hydrographic data gathered in

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12.02.08	Iran Ports and Shipping Organization Parizi@pso.ir; Falahi@pso.ir;		contribution of National Cartographic Center (NCC) and National Geographical Organization(NGO) N.B. regarding to contact information of other main bodies, this is to inform you, according to the Policy of our National Hydragraphic Comeetee , any overseas correspondace conducts throhgh Focal Point.	inland waters such as: Khoure Musa and Shatt al arab (subject to CBC provisions), therefore IHO could play a significant role by suppervising and supporting of CHARIS and HCIWWG on ENC production Data/INT Charts.	influence on this issue called "NCC" and "NGO" .	digital format has been prepared by NCC from most important coastal areas of our regional waters. Meanwhile , we have been established 3VTS* Centers as follows: 1- Anzali Port (Caspian Sea area) 2- BIK Port (In the Persian Gulf) 3- First phaze of Shahid Rajaee port complex (in the Persian Gulf) * : All VTS Stations operate in the trial mode. In case of introducing ENC Charts successfully , we plane to furnish all our VTS stations in the Persian Gulf with these charts.
Italy 13.2.08	*CDR Roberto CERVINO* iim.sre@marina. difesa.it	Italy MBSHC	Yes. I.I.M. and Local Authority River: Estuary of River Lake: Relevance of navigational purpose	Yes. because survey and representation are similar and safety of navigation are quite the same, in any case maintain the same system is recommendable	IMO	
Kenya 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	Survey of Kenya (Dept of Lands) Lake Victoria: Mr. Bowers Okelo: bnowino@yahoo.com	Yes, survey standards (S-44) AND Charting/ Cartographic Standards (M-4)	N/A	N/A
Korea (Rep. of)	National Oceanographic Research Institute	Republic of Korea / East Asia	Yes. Ministry of Construction & Transportation and Local Government. Ministry of Construction & Transportation and Local Government: - General plan establishment ormanagement for Inland of Korea Local Government:	IHO is a organizatiion in charge of hydrography and charting for navigational safaty of all vesseels. In case of inland water, all members states will conduct hydrography survey and make a plan using the standards IHO provided such as S-44, S-57, etc. Therefore, NORI thinks that IHO also takes a role to collect the information on inland	European Community, PIANC, CCRN, UNECE, etc..	In order to survey in inland water and publish its chart (ENC), some of member states may establish a new national regulation guideline. Accordingly, IHO is sincere requested to collect relative information of others member states that already have them and distribute to member states requesting the information.

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			- Operational use under regional authority	of all members states and cooperate with relative international bodies.		
Malaysia 06.03.2008	National Hydrographic Center (NHC) rmnodc@tm.net.my	Malaysia	YES NHC is national authority for hydrographic and nautical charting activities within the country's maritime area, including navigable rivers.	Yes, if the inland waters are navigable.	-	-
Malawi 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	Malawi Survey Dept (Lake Malawi & Shire River) D.O.C Gondwe: surveys@sdnp.org.mw	Yes, survey standards (S-44) AND Charting/ Cartographic Standards (M-4)	N/A	N/A
Mexico 28.2.08	Secretaría De Marina - Mexico	Mexico - MACHC	Yes. Secretaría de Marina.	Yes, advisory in planning and execution of hydrographic survey in inland waters.	N/A	N/A
Morocco	Morocco Royal Navy Division of Hydrography, Oecanography, and Cartography of the Royal Navy (DHOC) <dhcmarine@yahoo.fr>	Morocco Mediterranean / East Atlantic	Yes. DHOC	No.	None.	None.
Mozambique 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	INAHINA (Lake Malawi & Zambezi River) Humberto Mutevuie: mutevuie@inahina.gov.mz	Yes, survey standards (S-44) AND Charting/ Cartographic Standards (M-4)	N/A	N/A
Netherlands 7.2.08	Netherlands Hydrographic Office (NLHO)	Netherlands	NLHO: NSHC region (no main Inland waters in Dutch Antilles (MACHC region)). RWS: Inland Navigable waters	HCIWWG could be usefull in establishing uniformity in products and distribution of products for ships using both	Danube Commission, Capt. Petar Margić, email to: petar.margic@danubecom-intern.org	Find attached status information on Inland ENC's coverage

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	Ministry of Transport and Public Works (RWS) NLHO: info@hydro.nl NLRWS: René Visser, email to: rene.visser@rws.nl Ministry of Transport Public Works and Watermanagement, Centre of Transport and Navigation (DVS)		with CEMT class IV; Va,b; VIa,b,c. Charting of SOLAS navigable waters: responsibility NLHO Charting of further inland waters: responsibility of The Ministry of Transport and Public Works Rijkswaterstaat (=NLRWS) Surveying and maintaining of all waterways except North Sea: responsibility of NLRWS plus Regional authorities (like harbours and provinces) Surveying North Sea: responsibility NLHO Contact NLRWS: René Visser, email to: rene.visser@rws.nl Ministery of Transport Public Works and Watermanagement Rijkswaterstaat Centre of Transport and Navigation (DVS) SOLAS vessels are mostly confined to the sea ports. However on the River Scheldt they travel up to Antwerp (about 90 km inland). On the Rhine SOLAS vessels may travel about 80 km inland before having to comply to inland navigation regulations including those with regard to Inland ECDIS. These waters are however also navigated by inland vessels that have to comply to the inland navigation regulation including those with regard to Inland ECDIS. Dutch HO produces paper charts and ENCs of (most of) the inland	inland and SOLAS ENC's. HCIWWG might support the merge of as many inland ECDIS features into the future S-100 Hydro Register as possible and practical to ease SOLAS navigation on inland waterways.	CCNR, Mr Gernot Pauli, email to: g.pauli@ccr-zkr.org EU, Mrs Astrid Schlewing, email to: Astrid.Schlewing@ec.europa.eu RIS- Platform, IEHG, Mr Bernd Birklhuber, Mr Tony Niles, email to: bernd.birklhuber@bmvit.gv.at/ Anthony.R.Niles@erdc.usace.army.mil Inland ECDIS expert group: Mr Bernd Birklhuber, email to: bernd.birklhuber@bmvit.gv.a	

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
			waterways that are navigated by SOLAS vessels. These are mostly based on surveys and information from The Ministry of transport and Public Works and local harbour authorities. The Ministry of Transport and Public surveys and has begun to produce inland ENCs for all mayor inland waterways including those navigated by SOLAS vessels. Mainly for the pilots additional ENCs with detailed bathymetry are produced for Rotterdam by the Port of Rotterdam. On the River Scheldt the pilots are supplied by similar detailed ENCs by the Ministry of Transport and Public Works in cooperation with the Belgium waterway authority			
Nigeria 8.2.08	Nigerian Navy Hydrographic Office nnho_nnhydrographicoffice@yahoo.com		YES a. Nigerian Navy Hydrographic Office Email: nnho_nnhydrographicoffice@yahoo.com b. Nigerian Ports Authority Hydro/Dredging Dept No. 26/28 Marina Lagos c. National Inland Waterways Authority Adankolo Juntion Lokoja	YES. By providing technical guidelines for Hydrography and Nautical Cartography in Inland Waters towards observance and maintenance of Standards. Also by providing technical training/ support in capacity building and any other way the IHO deems fit.	NIL	Nigerias Niger Delta Region and the 2 major river of Niger and Benue in the country present an enormous challenge in Hydrography and Nautical cartography to the Nation. Nigeria therefore sees this working Group as an impetus towards facing this challenge. In view of the above, It is requested that the following organizations in charge Hydrography Nautical Cartography in Nigeria be co-opted as associate members of the Working Group. The contact persons are as follows: a. Mr OLumide Olugbenga Omotosho Hydro/Dredging Dept.

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
			Kogi State Nigeria. Nigerian Navy Hydrographic Office- No limit within Nigeria Nigeria ports Authority- port Areas and Approaches National Inland waterways Authority – Inland waters except areas covered by Port Authority			Nigeian Ports Authority No. 26/28 Marina Lagos. Email: holuyde2002@yahoo.com b. Mr Denise A Osanwuta National Inland Waterways Authority Adankolo Juntion Lokoja Kogi State Nigeria. Email: daosanwuta@yahoo.com
Norway 7.2.08	Norwegian Hydrographic Service kjell.olsen@statkart.no	Norway NHC, NSHC	In river estuaries: NHS. In inland lakes The Norwegian Water Resources and Energy Directorate (NVE) nve@nve.no	No	None	NO
Pakistan 01.03.2008	PAKISTAN	RSAHC	**Yes** Ministry of Port and shipping,Government of Pakistan URL:http://www.pakistan.gov.pk/ministries/index.jsp?MinID=34&cPath=522 Director (Ports & Shipping) Phone no: +9251 9202049 e.mail: director@mops.gov.pk	No. Inland waterways are not developed for water transportation. Even, if developed, significant scope of the same is not envisaged because of geographical limitations with respect to suitable connection to sea.	Not applicable	Nil
Peru 8.2.08	Dirección de Hidrografía y Navegación rsablich@dhn.mil.pe	Peru CHRPSO	Yes. The Directorate of Hydrography and Navigation (DHN) is the national organ in charge of navigable rivers and lakes hydrography and nautical cartography in Peru. There are other organizations which have other responsabilities	We strongly belive that IHO may have an significant duty taking in account that can't be left aside "safety of Navigation" aspect at fluvial environment or lakes and in navigable inland waters which Hydrographics Services of some Member States have direct responsabilities, thence the interest this subject has a	It must be considered that some international organs have made important development with respect to the norms and specifications concerning electronic charts for rivers and inland waters (IENC), as it is the Inland Electronic Chart Harmonization Group (IEHG), which has produced norms such as "Code Harmonization Guide" which is the landmark of Fluvial	Taking in account the agreements of the VII Meeting of the South East Pacific Hydrographic Commission (SEPHC), and the coordination of the International Hydrographic Organization (IHO) through the Capacity Building Committee (CBC), and the Directorate of Hydrography and Navigation (DHN), have token place the 1st International Workshop

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
			related to rivers, lakes and internal waters in general, as for example the Instituto Geográfico Nacional (IGN), which produces small scale cartography of areas where rivers born (Peruvian Amazon) and lakes, but these works do not have batimetric information. The same way, the Dirección del Transporte Acuático del Ministerio de transportes del Peru have the responsability of area ports of rivers mantainance.	discussion space inside IHO which the objective to stablish standards and technical specification for fluvial environment and inland waters in general once this is the natural forum to share experiences and get a better cientific knowledge about rivers and inland waters as well as to evaluate the different characteristics and variable which affects navigation and to achieve a greater effetivitie in methodologies nowadays in use in fluvial hydrographic survey and to improve cartographic overture and the production and maintenance capacity of fluvial navigation charts, including inland electrocnic charts (IENC), stablishing as a medium term goal to achieve standards in this kind of work by the promulgation of IHO international norms and technical specification for inland waters.	ENC product specification contents. Página Web:www.**iehg**.org/	on Hydrographic Survey, from the Nov 14th to the 16th, 2007, in Ikitos, Peru, at the Amazon river margin, northwest Peruvian jungle, which is the main Peruvian Amazon fluvial port, with 35 representatives from countries as such Argentina, Brasil, Chile, Colombia, Ecuador, United States, Mozambique, Panamá, Peru, Uruguay, and Venezuela, and from the discussed topics it was possible take a clear vision about the general characteristic, the fluvial hydraulic, monitoring critical areas with the use of satellite images, as well as update techniques of hydrographic surveys employing ENC and radar in an integrated mode, which had replace the manual conventional work. At the same time, there was evaluated in a practical way the technological development of multibeam sounding and its employment in rivers hydrographic survey.
Poland 20.02.08	Hydrographic Office of the Polish Navy bhmw@mw.mil.pl	POLAND / BALTIC SEA	**YES** Ministry of Infrastructure Department of Maritime Transport and Inlad Navigation 00-928 Warszawa ul. Chalubinskiego 4/6 POLAND Phone: +48 22 385 56 40 Fax: +48 22 385 56 66	Yes, harmonization of aids to navigation at inland waters and sea areas, charts,	IMO	NONE
Portugal	Portuguese Hydrographic	Portugal Continental	Yes. IPHT. Rua das Trinas, 49	In line with the IHO Mission and Objectives, IHO must be	International Maritime Organization, International Association of Lighthouses	None.

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
	Office (IPHT) <martins.pinheiro@hidrografico.pt>	Portugal, Azores and Madeira Archipelagos	1249-093, Lisboa, Portugal Tel: +351 210 943 000 Fax: +351 210 943 299	involved with the production of standards for hydrographic data and provision of hydrographic services in inland waters. Inland ECDIS is recommended by a long list of standardization bodies worldwide and until now, IHO has just been kept closely informed about these activities. Since we are discussing issues like safety of navigation, digital products, that can readable by identical systems, ECDIS when they are used at sea and Inland ECDIS when they are used at watersways, updating activities, it seems advisable that worldwide formats, standards and tools should be harmonized in order to create an exchange set of products that can be used by a widespread kind of users and also then can be read by a widespread kind of equipments. In order to avoid same errors and mistakes, it will be beneficial for all if we share and learn with the experience gained with S-57 and production of ENCs.	Authorities, and European Commission.	
Qatar 14.1.08	Hydrographic Section of the UPDA Mr. Vladan Jankovic vladan@up.org.qa	Qatar	None			
Serbia	Directorate for	Republic of	YES – international waterways	S-57 standard is partially	Danube Commission (President:	

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
30.4.08	Inland Waterways "Plovput" Dr Jasna Muskatirovic (jmuskatirovic@plovput.co.yu)	SERBIA	on rivers Danube, Sava, and Tisza Directorate for Inland Waterways "Plovput" Francuska 9 11000 Belgrade SERBIA	used on inland waterways and its sinhronization with Inland ECDIS standard (Inland Harmonization Group) would be of great importance for further cooperation between IHO and countries with inland navigation	Mr. Milovan Bozinovic; secretariat@danubecom-intern.org; http://www.danubecom-intern.org/) International Sava River Basin Commission (Dejan Komatina; dkomatina@savacommission.org; http://www.savacommission.org/) United Nations – Economic Commission for Europe (UN/ECE) (http://www.unece.org/trans/welcome.html) Inland ENC Harmonization Group	
Slovenia 14.2.08	MINISTRY OF TRANSPORT OF THE REPUBLIC OF SLOVENIA, MARITIME DIRECTORATE igor.karnicnik@geod-is.si	Slovenia MBSHC (region F)	Yes. None	Yes, IHO should prepare standards, recomendations, give guidance for hydrographic works on inland waters and/or other legislation regarding inland waters, similar as it is regarding sea hydrography (for instance: which water levels should be used, what kind of equipment to be used for surveys, etc)	N/A	N/A
Spain	IHM <ihmesp@fn.mde.es>	Spain F, G	No. The Guadalquivir, as access to Sevilla port, is the only one river, by the international navigation point of view which is cartographed. It is done with the same standards used for the others nautical charts.	No.	Unknown.	Those inland waters, navigable rivers, lakes, close seas, which need to be cartographed for the use of maritime traffic would be done with the same IHO standards already exists to the production of nautical cartography. do not consider it will be necessary that IHO be involved with developments, due its king of use, once the possible vessels which will use these rivers or lakes will not get out these zones, just have interest at

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
						national level.
South Africa 30.1.08	SA Navy Hydrographic Office hydrosan@iafrica.com	South Africa SAIHC	Yes, of particular interest in the region is the Great Lakes of Africa and some navigable rivers. INAHINA (Lake Malawi & Zambezi River) Humberto Mutevuie: mutevuie@inahina.gov.mz Malawi Survey Dept (Lake Malawi & Shire River) D.O.C Gondwe: surveys@sdnp.org.mw Tanzania Dept of Lands (Lake Tanganjika, Lake Malawi/Nyasa & Lake Victoria) Ignatious K. NHNYETE: nhnyete@tanzaniaports.com Survey of Kenya (Dept of Lands) Lake Victoria: Mr. Bowers Okelo: bnowino@yahoo.com Angola (ZAIRE/Congo River) Mr. Costa NETO: neto.francisco@netangola.com Shared borders	Yes, survey standards (S-44) AND Charting/Cartographic Standards (M-4)	N/A	N/A
Suriname 18.02.08	Maritime Authority Suriname info@mas.sr or bmahabier@mas.sr	Suriname, MACHC	Yes, MAS 88 Paramaribo Suriname info@mas.sr	yes, standardization of navigable waters	PIANC, IMO, IALA,	
Sweden 8.12.08	Swedish Maritime Adm, Hydrographic Office ake.magnusson	Sweden	Yes, The most important are: Lake Vänern, Lake Mälaren, Lake Vättern, Lake Hjälmaren Trollhätte Canal and Göta Canal	IHO have the same role for this waters as for the coastal waters of Sweden		

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
	@sjofartsverket.se		Swedish Maritime Administration (see above)			
Switzerland 22.11.07	Department of the Environment, Transport, Energy and Communications DETEC; Federal Office of Transport FOT, Switzerland Max Bühler max.buehler@bav.admin.ch	Switzerland	River Rhine from Rheinfelden – Basle (km 149.10 – 170.00) The "Rheinschifffahrtsdirektion Basel" (after 1st January 2008: Swiss Rhine Ports) are responsible for the data, which is related to traffic regulation (e.g. notice marks, buoys and beacons, anchorage areas and berths, restricted areas,…) and all the other data (geographical data including depth information)	A recognition of the standards for Inland ENCs by IHO would help to ensure, that ECDIS applications on maritime vessels, which are using inland waterways, are able to use Inland ENCs.	The **Central Commission for Navigation on the Rhine (CCNR)** has already adopted the Inland ECDIS standard as a binding regulation for the river Rhine (Contact: Mr. Gernot Pauli, g.pauli@ccr-zkr.org) The **European Commission (EC)** is preparing a binding regulation on Inland ECDIS for all the member states of the European Union (Contact: Ms. Astrid Schlewing, astrid.schlewing@ec.europa.eu) The **Economic Commission for Europe of the United Nations (UN/ECE)** has adopted the Inland ECDIS Standard as a recommendation for all European countries and the Russian Federation (Contact: Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org) The **Danube Commission** is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the Russian Federation (Contact: Mr. Petar Margic, secretariat@danubecom-intern.org) The **International Sava River Basin Commission** is also using the Inland ECDIS Standard for the river Sava (Contact: Mr. Sinisa Spegar, sspegar@savacommission.org) The **Inland ENC Harmonization Group (IEHG)** is the international technical expert group, which ensures a	Within Europe there is a specific set of regulations for inland navigation, which is different from the respective regulations of IHO and IMO (e.g. technical regulations for inland vessels instead of SOLAS, European Code for Inland Waterways (CEVNI) instead of COLREG, Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADNR on the River Rhine, ADN-D on the Danube and ADN) instead of IMDG Code and BC Code, special regulations for crews on inland vessels instead of STCW). However, maritime certificates are recognized in most areas to allow maritime vessels to use inland waterways. But there are also maritime certificates, which are not sufficient for European inland waterways. E.g. tank vessels for dangerous goods need an additional certificate, if they want to use European inland waterways and skippers need a special license, if they do not want to use a pilot.

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
					harmonized development of the standards for Inland ENCs (Contact: Mr. Anthony Niles, Anthony.r.niles@erdc.usace.army.mil, Mr. Bernd Birklhuber, bernd.birklhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque, Albuquerque@dhn.mar.mil.br)	
Tanzania 30.1.08	South Africa hydrosan@iafrica.com	SAIHC	Tanzania Dept of Lands (Lake Tanganjika, Lake Malawi/Nyasa & Lake Victoria) Ignatious K. NHNYETE: nhnyete@tanzaniaports.com	Yes, survey standards (S-44) AND Charting/ Cartographic Standards (M-4)	N/A	N/A
Tunisia 9.2.08	Tunisian Naval Hydrographic and Oceanographic Center sho@defense.tn - sho@email.ati.tn	Tunisia	Yes Tunisian Naval Hydrographic and Oceanographic Center BP 01 - 7011 – La Pêcherie – Bizerte- Tunisie Tel : 00 216 72 510 570 - Fax : 00 216 72 510 777 - Email : sho@defense.tn None	Yes We believe that the IHO's activities should extend to cover all navigable waters, and this may be materialized by updating the IHO SP44 publication with standards applicable to inland waters	International Maritime Organisation (IMO)	None
Turkey 8.2.08	Turkish Navy, Office of Navigation, Hydrography and Oceanography info@shodb.gov.tr	Turkey, MBSHC	Organisation responsible for surveying: General Directorate of State Hydraulics Works (etudplan@dsi.gov.tr) Organisation responsible for charting: Turkish Navy, Office of Navigation, Hydrography and Oceanography GDSHW is responsible for surveying lakes and other inland waterways, which are not many, for purposes other than charting. TN-ONHO is responsible for	No, there are only a couple of navigable lakes in Turkey, which are used only by local boats.	--	--

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
			charting inland waterways where applicable.			
United Kindom 19.11.07	UK Hydrographic Office	United Kingdom	MCA- Maritime and Coastguard Agency Captain Joe Collins Email Joe.Collins@mcga.gov.uk	Within the UK we do not have an extensive network of large navigable inland waterways as do our European counterparts. However I do believe the IHO have a role to play in ensuring Inland ENCs do not develop in isolation. With the development of the S-100 registry we have an extensible tool to assist in the development of IENC.	Inland Waterways Advisory Council (IWAC) Email iwac@iwac.gsi.gov.uk Web www.iwac.org.uk Association of Inland Navigation Authorities Email info@aina.org.uk Web www.aina.org.uk	
Ukraine 14.1.08	State Hydrographic Service of Ukraine office@dudg.kiev.ua; Attn: Mr. Mykola Golodov	Ukraine, MBSHC (BASWG) Black Sea	Yes. State Hydrographic Service of Ukraine - Tel./Fax: +38 044 467 60 77; E-mail: office@dudg.kiev.ua; Ukrvodshlyah DP - Tel.: +38 044 462 55 51 State Hydrographic Service of Ukraine: the Black Sea, the Sea of Azov, the Danube River from Reni Port to the Mouth, the Pivdennyi Buh River - Buz'ko-Dniprovs'kyi Firth Ukrvodshlyah DP: all other river waterways	Due to its ability to implement the unique modern requirements in the field of hydrography and cartography in inland waterways	-	-
USA 22.2.08	U.S. Army Corps of Engineers and NOAA Office of Coast Survey Anthony.R.Niles@usace.army.mil and	USA	Yes United States Army Corps of Engineers, Contact: Anthony Niles, Anthony.R.Niles@usace.army.mil and NOAA Office of Coast Survey Contact: Steven.Barnum@noaa.gov	Moderate to high role: European, U.S., Russian, and Brazilian electronic charts seek to follow IHO data and display standards; see http://www.openecdis.org/ & http://ienc.openecdis.org/. However, the U.S. feels it is extremely important to ensure	Inland ENC Harmonization Group	Information exchange on hydrography for inland waters through a recognized forum is also sought

Country Date of reply	**Q#2** Replying body	**Q#3** Country/ Area/ Region	**Q#4** Are there inland waters? Which organisation is responsible.	**Q#5** Does IHO have a role on these waters?	**Q#6** International bodies	**Q#7** Other information
	Steven.Barnum @noaa.gov		Hydrography for most inland waterways are the responsibility of the U.S. Army Corps of Engineers. However, NOAA is responsible for the nautical charts in all US waters as well as hydrography for several large rivers (e.g. Colombia River, Delaware River), the Gulf and Atlantic Intercoastal Waterways, and the Mississippi River up to Baton Rouge, Louisiana.	consistency of format and data between the inland waterways and the coastal waters, and as the internationally recognized authority on hydrography and charting, the IHO is the logical body to assume this responsibility.		

Note: In the case of France, the Chair Group, for "IHO role", considered only the IHO representative response.

Analysis of the Questionnaire on IHO CL 112/2007

1. Replies to the Questionnaire in IHO CL 112/2007

Summary table of the replies to the Questionnaire is in the Document *Draft Summary Table of the Replies to the Questionnaire on IHO CL 112/200.*

Altogether 56 Organizations have replied to the Questionnaire in CL 112/2007. From these there are 46 Hydrographic Offices of IHO Member States (Algeria, Argentina, Australia, Bangladesh, Belgium, Brazil, Canada, Chile, Colombia, Cuba, Cyprus, Denmark, Ecuador, Estonia, Finland, France, Greece, Iceland, Iran, Italy, Korea (Republic of), Malaysia, Mexico, Morocco, Netherlands, Nigeria, Norway, Pakistan, Peru, Poland, Portugal, Qatar, Serbia, Slovenia, Spain, Suriname, Sweden, Tunisia, Turkey, United Kingdom, Ukraine, and USA, as well as Mauritius, Mozambique, and South Africa through South Africa and Island Hydrographic Commission) which is 58,75% of the IHO Member States. There are also 9 replies from Organizations of the countries which are not IHO MS (Austria, Bulgaria, Switzerland, as well as Angola, Kenya, Madagascar, Malawi, Seychelles and Tanzania through South Africa and Island Hydrographic Commission), and one Organization from Germany which don't represent Germany at IHO.

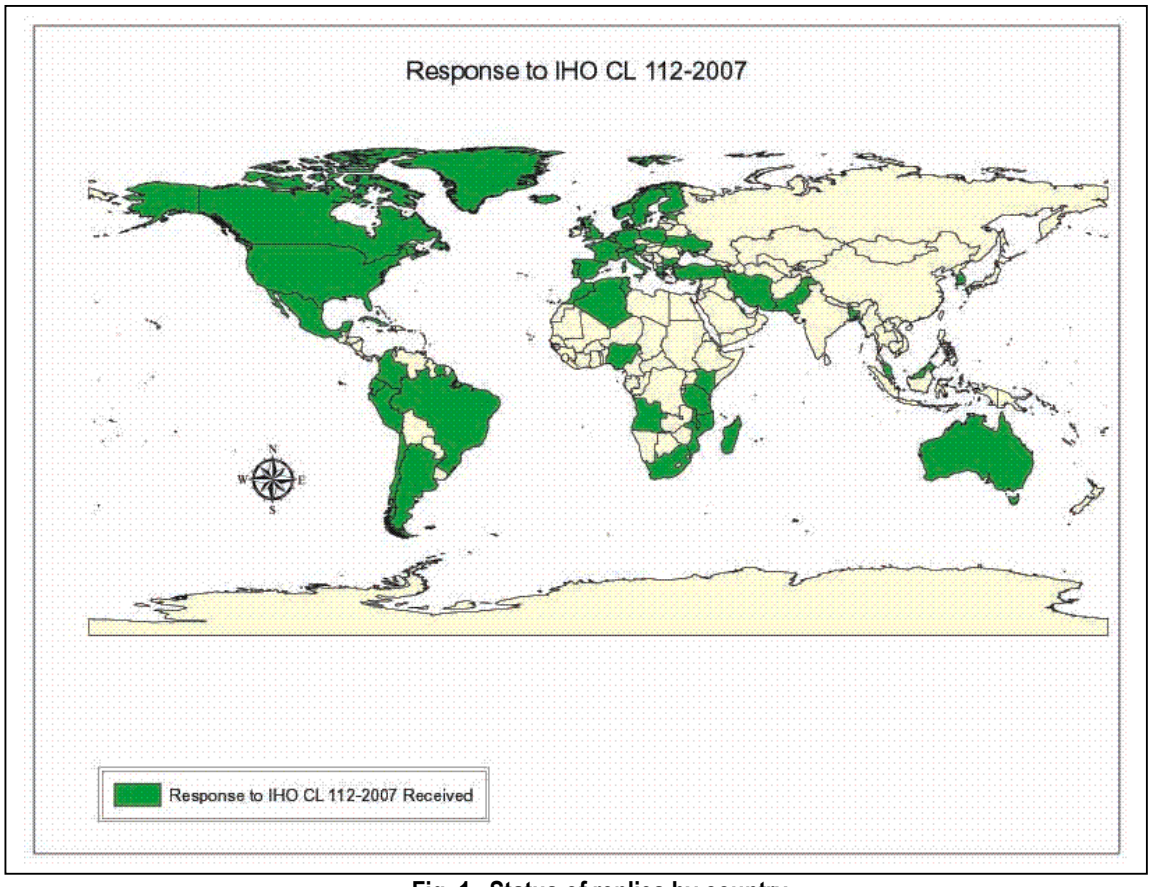

Fig. 1. Status of replies by country.

2. General observations on the replies

The Chair Group has done the following processing and interpretations to the replies.

Q#5: The replies were divided into three categories:

1. IHO has significant importance on inland waters
2. IHO importance on inland waters is similar as for sea areas

3. IHO does not have importance on inland waters

Q#6: International bodies

Appendix II lists the international organizations the responses appointed as relevant bodies in the matter.

2.1 Inland waters

In the Fig 2 there is a map showing the replies which indicated the existence of inland waters.

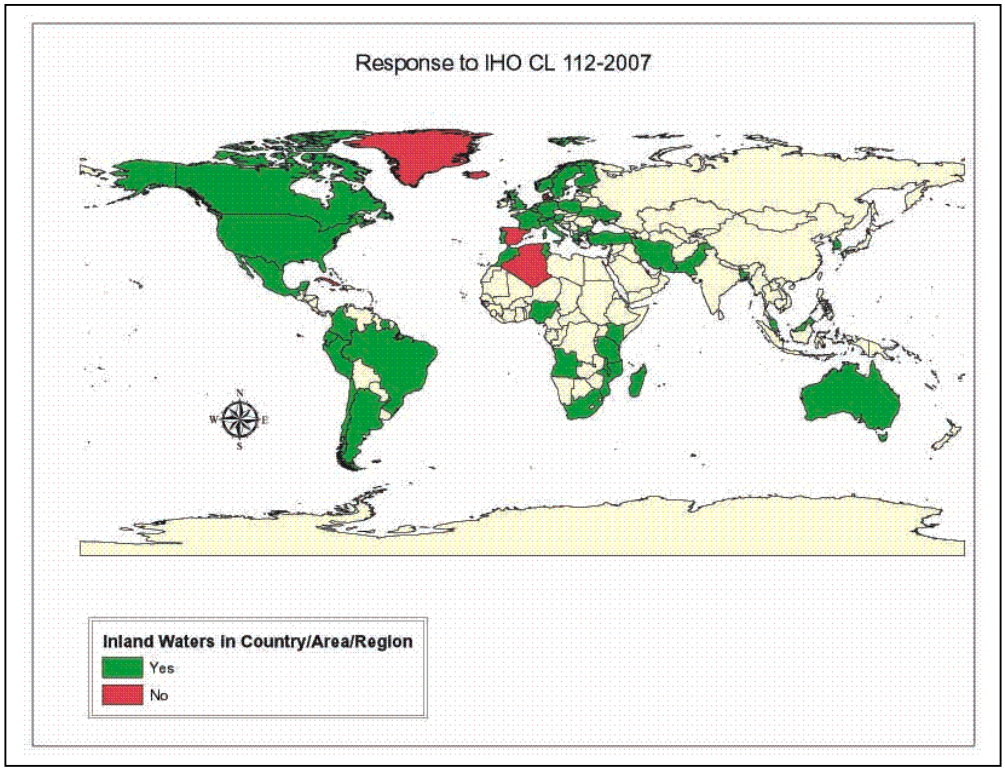

Fig. 2. Status of replies by country.

The following table gives the number of reported inland water types[4].

Type of inland waters	Number of replies	Remarks
Lakes	**7**	
Rivers	**16**	
Reservoirs	**1**	
Canals	**2**	
Harbours	**1**	
Inland waterways	**3**	

Below are some observations on the replies[5]:

– It can be noticed that some of the replies did not specify the name of their inland waters.

[4] As interpreted by the Work Group.
[5] As interpreted by the Work Group.

- Responsibility of inland waters in 8 countries is the same as for sea areas. There are different or additional organisations in 13 countries.
- There were 26 reported cases where inland water areas are navigable and 5 cases where they are not navigable. The rest of the replies did not indicate this information.
- There were reported in 3 cases where inland water areas are used for SOLAS shipping.
- Environmental characteristics and/or the nature of the waterway employment are different worldwide.

In the Appendix I there is the List of Inland waters and waterways that were reported.

2.2 IHO Significance

Significant IHO influence was seen by 36 countries. 8 countries saw that IHO does not have a significant importance (See Fig. 3 below).

The replies were divided into three categories:

1. IHO has significant importance on inland waters
2. IHO importance on inland waters is similar as for sea areas
3. IHO does not have importance on inland waters

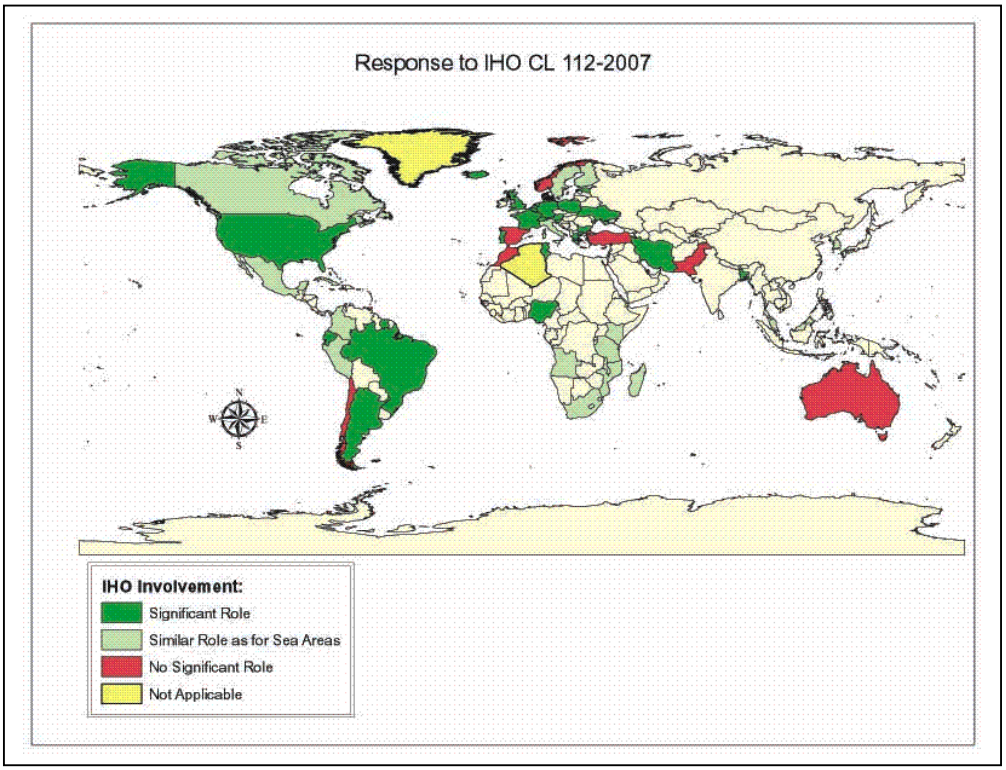

Fig. 3. Status of replies by country

Detailed opinions on the type of IHO influence were given as follows[6]:

Opinion	# of references	Remarks
IHO to provide/maintain Standards for Inland Cartographic Standards, ENCs and Survey standards	5	
Systematisation and standardisation of data	2	

[6] As interpreted by the Work Group.

acquiring and dissemination		
IHO to promote to use the same standards as for coastal areas (M-4, S-44)	13	
IHO to foster uniformity of products and distribution both for SOLAS and inland navigation	4	
IHO to study if special inland extensions or supplements to S-44 are needed	3	
IHO to propose a Quality Management System	1	
IHO standards for competence of hydrographic surveyors need to be adapted for inland requirements	1	
Harmonisation of navigational information for sea and inland waters	1	
IHO to raise awareness of the importance of official hydrography and nautical cartography on inland waters	1	
Guarantee safety of navigation on inland waters	1	
IHO recognition of Inland ENCs	3	
IHO to be as a forum to change opinions and scientific knowledge on inland waters	1	
IHO to develop better methods for inland hydrography	2	
IHO to assist coordination and standardisation with relevant organisations/mapping agencies	2	
IHO to provide training/support in capacity building	1	
IHO to standardize the method for instantaneous water level presentation on inland ECDIS	1	
Inland ENCs not to be developed in isolation	2	
IHO to supervise and support inland charting projects	1	
IHO to compare national pricing policies and to give guidance on them	1	
Development of S-100 registry	1	

Some observations to the opinions above:

- some of the replies indicate that the same specifications (M-4, S-44) are in use or could be used also for inland waters. Some proposed that these specifications may need some extensions, supplements, or adaptations for inland waters.
- IHO has a role to ensure uniformity between sea areas and inland waters and produce/maintain standards for inland waters.
- there are many proposals for IHO tasks regarding inland waters (raise awareness, training, capacity building, water level specifications, supervising projects, guidance on pricing policies, etc.). Not all of these may be feasible to the IHO.

2.3 International organisations

Altogether 35 International organisations were listed. The list and contact information on these is in Appendix II.

3. Main conclusions

- The IHO is already somewhat involved in the matter of hydrography and cartography in inland waters, whether it be by the responsibility that some of its members already hold, or by the nautical traffic that crosses the naval areas and coast zones, which need harmonization of documents to ensure the safety of navigation.

- There are unmet hydrographic and nautical cartographic needs in inland waters, specifically hydrographic and cartographic standards, harmonization of information at coastal / inland waters interface area, cooperation between responsible organizations, particularly in the interface with maritime areas where the traffic is the same.

- It is not advisable to have only one standard for hydrographic survey and for nautical cartography for all waterways, whether it be due to environmental characteristics, the nature of the waterway employment, or the heterogeneity of the organizations concerned and of the relevant national regulations.

- From all listed international organizations, the IEHG appears to have a special role in the subject.

List of International Navigable Inland Waters and Waterways Informed

Region / RHC	Water/ waterway	SOLAS traffic	Remarks
Africa; SAICH	Congo river Shrine river Zambezi river Lakes Malawi, Vitoria, Tanganjika	NA*	- Data source: SAICH - Lake and river
Africa; EACH	Nigeria inland waters	Yes for some of them	- Data source: Nigeria - Lagoon, rivers, and creeks
Europe NSHC, EAHC, MBSHC	Those listed at http://www.unece.org/trans/conventn/agn.pdf	Yes for part of them	- Data source: Austria; - Rivers
Europe NSHC	Netherland inland water	Yes	- Data source: Netherland - Canals, Harbours
Europe; BSHC	Estonian inland waters	NA	- Data source: Estonia - Lakes and rivers
Europe; BSHC; NSHC	Finnish inland waters Sweden inland waters	Yes	- Data source: Finland, Sweden - Lakes, rivers, and canals
North America; USCHC	Canadian inland waters	Yes	- Data source: Canada - Lakes
South America; MACHC, SEPHC, SWAtHC	Amazon River and affluents Orinoco River Paraguay-Paraná Waterway Uruguay River Río de la Plata Brazil's inland waters	Yes	- Data source: Argentina, Brazil, Peru - Lagoon and rivers

* NA – Not avaiable

Draft List of International Organisations

Organisation	Role	Contact information	Remarks
African Union (AU)			
Algoma Central		63 Church Street, Suite 600 St. Catharines, Ontario L2R 3C4 (905) 687-7888	
Association of Inland Navigation Authorities		Email info@aina.org.uk Web www.aina.org.uk	
Canada Steamship Lines		759 Square Victoria Montreal,Quebec Canada, H2Y 2K3 e-mail: ships@cslmtl.com	
Canadian Shipowners Association		350 Sparks Street, Suite 705 Ottawa, ON, Canada K1R 7S8 **Bruce Bowie** Vice-President, Operations bowie@shipowners.ca	
CARP (Río de la Plata Administrative Commission)	Administration of the waterway	Embajador Daniel OLMOS (Argentina) Contralmirante (R) José BELLO GANDRA (Uruguay) Isla Martín García, Casa N° 102 Provincia de Buenos Aires República Argentina Teléfono: +(54)(11) 4728 0013 E-mail: carp.sec.tec@netizen.com.ar	
CARU (River Uruguay Administrative Commission)	Administration of the waterway	REPUBLICA ARGENTINA: C.C.34 C.P.3280 - (Colón Entre Ríos - R.A.) Telefonos: +598-722-5400/5500 /// Telefax: +598-722-6786 REPUBLICA ORIENTAL DEL URUGUAY: Av. Costanera Norte S/N. Paysandú .C.C 57097 - R.O.U / REPUBLICA ARGENTINA: C.C. 34 C.P. 3280 - (Colón Entre Rios - R.A) E-mail: mailto:caru@caru.org.uy	
Central Commission for Navigation on the Rhine (CCNR)	has already adopted the Inland ECDIS standard as a binding regulation for the river Rhine	http://www.ccr-zkr.org/ Mr. Gernot Pauli, g.pauli@ccr-zkr.org	
Chamber of Marine Commerce		350 Sparks Street Suite 700 Ottawa, Ontario K1R 7S8 **Raymond Johnston** President rjohnston@cmc-ccm.com	
CHI (Paraguay-Paraná Waterway Committee) (instead of CHI	Administration of the waterway	SECRETARIA EJECUTIVA DEL CIH Secretario Ejecutivo: Lic. Roberto BARATTA Hipólito Yrigoyen 250 - 11º Piso Oficina	

Organisation	Role	Contact information	Remarks
(Paraguay River Waterway Committe))		1111- Buenos Aires Teléfono (+54-11) 4349-8788/5297 Fax: (+54-11) 4349-6527 E-mail: rbarat@minplan.gov.ar	
Danube Commission	is currently updating its recommendation on inland ECDIS to the latest version. The recommendation is addressed to all the riparian countries of the Danube and the Russian Federation	Mr. Petar Margic, secretariat@danubecom-intern.org	
Economic Commission for Europe of the United Nations (UN/ECE)	has adopted the Inland ECDIS Standard as a recommendation for all European countries and the Russian Federation	Ms. Azhar Jaimurzina, azhar.jaimurzina@unece.org	
Economic Community of West African States (ECOWAS)			
European Barge Union		http://www.ebu-uenf.org	
Great Lakes Pilotage Authority		202 Pitt Street, 2nd Floor P.O. Box 95 Cornwall, Ontario K6H 5R9	
International Cartographyc Organization (ICA)		http://www.icaci.org	
International Hydrographic Organization (IHO)		www.iho.int	
International Maritime Organization (IMO)		www.imo.org	
Inland ENC Harmonization Group (IEHG)	is the international technical expert group, which ensures a harmonized development of the standards for Inland ENCs	http://ienc.openecdis.org/?q=node/19 Mr. Anthony Niles, Anthony.r.niles@erdc.usace.army.mil, Mr. Bernd Birklhuber, bernd.birklhuber@bmvit.gv.at, and Mr. Carlos de Albuquerque, Albuquerque@dhn.mar.mil.br	
Inland Waterways International		http://www.inlandwaterwaysinternational.org/	
International Sava River Basin Commission	is also using the Inland ECDIS Standard for the river Sava	Mr. Sinisa Spegar, sspegar@savacommission.org	
Internationale Bodensee + Boot-Nachrichten Druck- und	The private company producing the "Lake Constance Navigational Chart"	Hermann Daniel GmbH & Co KG, Grünewaldstraße 15, Postfach 10 02 64, D-72334 Balingen, Germany Email: ibn@ibn-online.de	

Organisation	Role	Contact information	Remarks
Verlagshaus			
IOC			
Laurentian Pilotage Authority		555, René-Lévesque Blvd West, Suite 1501 Montreal, Quebec Canada H2Z 1B1 administration@apl.gc.ca	
PIANC Inland Navigation Commission	may have some influence to this work	http://www.pianc-aipcn.org/ www.pianc-aipcn.org/pianc/incom.php	
The European Union through the RIS-directive	**The European Commission (EC),** an institution of the European Union, is preparing a binding regulation on Inland ECDIS for all the member states of the European Union	Ms. Astrid Schlewing, astrid.schlewing@ec.europa.eu	
Upper Lakes Shipping		49 Jackes Avenue, Toronto, Ontario, Canada M4T 1E2 **Bernie Johnson** VP Marine Projects bjohnson@upperlakes.com	

Draft Report on Seminar/Workshop on Inland Hydrography and Electronic Charting

Part I

Seminar/Workshop on Inland Electronic Charting
Punta del Este, Uruguay
27 November – 1 December 2006

Summary Report

Background

This was the first Seminar/Workshop held in South America dealing with Inland Electronic Charting. There were two main components:

Seminar presentations on the scope of Inland/River Electronic Chart-related activities that are occurring in South America, and elsewhere in the world.

A Workshop on the tools/procedures that can be used to produce Inland ENC data in accordance with IHO S-57 data standards.

It was primarily organized and conducted by:

Otto Duarte Volker (Cledir S.A, Montevideo, Uruguay)
Eric Rottmann (SevenCs, Hamburg, Germany)
Lee Alexander, University of New Hampshire, USA

Objectives

Seminar - Increase the level of knowledge about the challenges and opportunities associated with the production, distribution and use of Inland ENCs, worldwide. An associated objective was to encourage South American participation in international standards development/implementation (i.e., Europe - North America - Russian Federation Inland ENC Harmonization Group).

Workshop – Provide practical information and give hands-on experience on the use of SevenCs tools required for Inland ENC data production, validation, protection, and distribution in accordance with IHO standards.

Participants

Twenty-four (24) persons attended including representatives from hydrographic offices, inland waterway transportation agencies, port authorities, and inland/river shipping companies. Four South American countries were represented (Argentina, Brazil, Paraguay, and Uruguay) with additional persons from Germany, United Kingdom, and USA.

[Note: A complete listing of the Seminar/Workshop Participants is contained in Appendix 1.]

Presentations

SevenCs Overview
Inland ECDIS in the View of the UKHO
Overview of Inland ENC Production/Coverage/Use
Europe
North America
Russian Federation
South America

Inland ENC Standards Development and Implementation
- Encoding Guide
- Product Specification
- Feature Catalogue
- Use of the Open ECDIS Forum (OEF)
- Alignment with IHO S-57 --> S-100

Inland ENC Harmonization Group (IEHG)
- Terms of Reference
- Membership/Participants
- Inland ENC Register
- Benefits of South American Participation

Challenges and Opportunities (a Discussion Session)
- technical (e.g., changing water levels, aids-to-navigation, security schemes, etc.)
- production/distribution, river information services

[Note: A complete listing of PowerPoint Presentations, including both Spanish and English language versions is contained in Appendix B.

Topics for Further Consideration

During the week-long Seminar/Workshop, several topics were raised that warrant further consideration.

1. In the past, some Hydrographic Offices (HOs) -- and thus IHO -- have avoided dealing with Inland/River ENCs saying it was not their responsibility. Due to the fact that the IHO S-57 standard was "frozen" and could not be altered to deal with additional inland navigation requirements was another complicating factor. But, this has been overcome by the development of an "Inland ENC Encoding Guide" by the European - North American - Russian Federation Inland ENC Harmonization Group (IEHG) that is closely based on IHO S-57. As such there are very few differences between "maritime" and Inland ENCs.

2. Not all countries that have Inland/River shipping have a hydrographic office or belong to IHO. This is particularly true in Europe on the Rhine and Danube Rivers (e.g., Austria). But, those that do (e.g., Argentina and Brazil) have a responsibility to ensure safe navigation for <u>both</u> coastal/maritime and for inland/river navigation.

3. In terms of the responsibility to provide hydrographic services within a nation, it would appear that there two main categories, each with two sub-categories:

1) <u>Have a National HO and are an IHO Member State</u>
   a) responsible for only maritime/SOLAS navigation (e.g., Australia and Singapore)
   b) responsible for both maritime/SOLAS and Inland/River navigation (e.g., Argentina and Brazil)
2) <u>Have an Inland River/Waterway Administration, but are not an IHO MS</u>
   a) responsible only for non-SOLAS inland/river navigation (e.g., Austria)
   b) responsible for both maritime/SOLAS and inland/river vessel navigation (Paraguay?)

Obviously, there are some nations that do not currently have an HO or belong to IHO (e.g., Panama). Also, there are some nations that do not appear to fit any general category (e.g., USA)

4. Clearly, IHO should be involved where SOLAS vessels are conducting international transits on inland rivers, waterways and lakes. For instance:
- Rio Parana - Paraguay (Argentina, Paraguay, and Bolivia)

- Rio Parana - Tiete (Argentina, Paraguay, and Brazil
- Rio Uruguay (Argentina and Uruguay).
- Rio Amazon (Brazil and Peru)

However, it is less clear if this applies for non-SOLAS vessels (e.g., barges and towboats).

Follow-on Actions

1. Compile of list of major river system/waterways in South America. Ideally, the listing would include the following information:

Country
River System
Responsible Government Agency
Length of Navigational Waterway (km)
Extent of Inland ENC Coverage
Planned
Completed

2. Facilitate South America joining the Europe – North America –Russian Federation Inland ENC Harmonization Group (IEHG). Initially, this could include Argentina, Brazil and Uruguay.

3. Investigate the benefit of holding the 2007 Annual Meeting of IEHG in Rio de Janeiro in conjunction with the 2007 Meeting of the MesoAmerican – Caribbean Sea Hydrographic Commission Meeting (Sep – Oct 2007).

_____

Prepared by:

Dr. Lee Alexander
Center for Coastal and Ocean Mapping – Joint Hydrographic Center
University of New Hampshire

Otto Duarte Volker
Cledir S.A.
Montevideo, Uruguay

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Fluvial Hydrographic Survey Workshop
Iquitos, Peru
14 - 16 November 2007

Organized by: Peru and Ecuador; also, by IHO CBC and East Pacific Hydrographic Commission (EPHC)

Hosted by: Peruvian Hydrographic Service for Navigation of the Amazon River

Attendees: ~ 36 persons (see attached List of Participants)

Countries	Companies	Academia
Argentina	*CARIS* (Canada)	Univ. of New Hampshire (USA)
Brazil	*Atlas Electroniks* (Germany)	
Chile	*Hypack* (USA)	
Colombia	*Cledir* (Uruguay)	
Ecuador	*Jeppesen Marine/C-Map* (Germany)	
Mozambique	*Reson* (USA)	
Panama		
Peru		
Uruguay		
USA		
Venezuela		

Purpose of Workshop:
To discuss the challenges and opportunities associated with the conduct of hydrographic surveys in dynamic river (i.e., fluvial) systems -- particularly those in South America. This included various types of equipment/systems that can be used, appropriate process/procedures, and resulting type of products/services.

Presentations:
A number of topics were covered including:
- General characteristics of Amazon River
- Present techniques used by Peru DHN to survey dynamic fluvial systems
- Monitoring the Amazon River with satellite images
- Production/use of Inland ENCs in Europe, North and South America
- Inland ENC Harmonization Group (IEHG)
- Future IHO Digital Geospatial Data Standard (IHO S-100)
- New IHO Working Group on Hydrography and Cartography for Inland Waters

In addition, presentations were provided by private companies who provide equipment and software for conducting hydrographic surveys and associated data products.

Technical Visits:
The Workshop included two technical visits.

1) Visit to the headquarters of the Peruvian DHN office in Iquitos, Peru responsible for hydrography on the Amazon River (Servicio de Hydrografia y Navegacion de la Amazona – SEHINAV). Of primary interest was both the tools and process used by SEHINAV to collect and process hydrographic survey data on very dynamic river system such as the Amazon River.

2) An underway period onboard the Peruvian Hydrographic Survey Vessel *BAP Stiglich*. The 4-hour transit included both the Port of Iquitos and a 25KM portion of the Amazon River. During

this time, a heavy rain event provided Workshop participants the opportunity to observe first-hand how quickly the water level and current flow can change on the Amazon River. During this time, it was also very interesting to see the dynamic nature of the river bank in terms of rapid erosion and deposition.

Post-Workshop Task Group – IHO Hydrographic Survey Publications
Chair: CDR Jose Gianella (Peru)
Participants: Argentina, Brazil, Colombia, Ecuador, Peru, and Uruguay
Technical Coordinator: Dr. Lee Alexander, Univ. of New Hampshire
Purpose: Review two IHO publications and their use for conducting fluvial hydrographic surveys:

IHO Standards for Hydrographic Surveys (S-44)
Manual on Hydrography (M-13)

Primary Question: How suitable are these IHO publications as a means of guidance/standards for conducting hydrographic surveys on dynamic river/fluvial systems?

1. What is (is not) relevant?
2. What needs to be modified?
3. What needs to be added?

Second Question: What are recommended "best practices" specific to river/fluvial systems?

1. Equipment
2. Techniques
3. Budget/personnel

Intended Outcomes:

1) A written report will be submitted to IHO Hydrography and Cartography of Inland Water Work Group (HCIWWG).

2) Recommendations to IHB regarding changes/additions to S-44 and M-13 to accommodate river/fluvial hydrographic surveys.

Reported by:
Dr. Lee Alexander, University of New Hampshire
18 February 2007

Fluvial Hydrographic Survey Workshop
Iquitos, Peru
14 - 16 November 2007

16 November 2007

Post-Workshop Task Group Session on
Suitability of IHO Publications on Hydrographic Surveying for Fluvial Navigation

Chair: CDR Jose Gianella (Peru)
Participants: Argentina, Brazil, Colombia, Ecuador, Peru, and Uruguay
Technical Coordinator: Dr. Lee Alexander, Univ. of New Hampshire
Purpose: Review two IHO publications and their use for conducting fluvial hydrographic surveys:
IHO Standards for Hydrographic Surveys (S-44)
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Primary Question: How suitable are these IHO publications as a means of guidance/standards for conducting hydrographic surveys on dynamic river/fluvial systems?
1. What is (is not) relevant?
2. What needs to be modified?
3. What needs to be added?

Second Question: What are recommended "best practices" specific to river/fluvial systems?
1. Equipment
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Intended Outcomes:
1) A written report will be submitted to IHO Hydrography and Cartography of Inland Water Work Group (HCIWWG).
2) Recommendations to IHB regarding changes/additions to S-44 and M-13 to accommodate river/fluvial hydrographic surveys.

Establishment of a new IHO WG on Hydro and Carto for Inland Waters
- Decision 19 and 22 at 17th IHC in Monaco
- mention IHO CL 62/2007 of 10 July 2007

<u>Two IHO Publications</u>:
IHO Standards for Hydrographic Surveys (S-44)
Manual on Hydrography (M-13)

M-13

Chap		Maritime	Fluvial
1	Principles of Hydro Survey		
2	Positioning		
3	Depth Determination		very dynamic
4	Seafloor Classification and Object Detect		not really relevant
5	Water levels and flow		very important
6	Topographic Survey		instead, use satellite imagery
7	Practice of Hydro Survey		

Chapter 1 - Principles

1. Brazil is following the 3rd edition of rather than the 4th edition approach in which IENCs are going to be produced at 100K scale. This is OK for passage planning but not so for approach.
2. Argentina HO surveys the navigation channel for the Rio Plata river . For the rest of the river, there is a private company that performs the survey. However, they give the data to the HO to be produced as charts.
3. Ecuador believes that 1:12,500K scale is necessary for berths and ports.
4. All participants agree that single beam survey that shows the location and depth of the river channel is more important that MBES survey of the entire river.

Chapter 2 – Positioning

1. DGPS is a suitable positioning system for surveying South American. However, RTK may be needed for certain critical/dangerous passages (e.g., areas of rapid currents, shifting depth areas, shoal waters, etc.).

Chapter 3 – Depth

1. Singe beam is the preferred method of depth determination in terms of cost, time to conduct, and required accuracy. However, adequate control is needed (e.g., quality control, equipment/performance checks, track planning, etc.). Sidescan sonar (SS) or Multibeam Echosounder (MBES) is needed for classifying hazards or obstructions.
2. Bar checks are more useful than sound speed profiles. Special cases would be freshwater vs. salt water gradient.
3. Motion sensors are not needed for single beam surveys.

Chapter 4 – Seafloor classification

1. Not really relevant for rivers as it is for maritime.

Chapter 5 – Water Levels

1. Water levels should be determined with a similar approach to determining tidal/water levels (e.g., statistical reductions). Should be able to use the existing statistical approach for water levels.
2. Water levels zones can vary depending on the slope of the river. In some cases, a zone can extend over 100KM. The reduction needs to be practical.
3. Determining water levels in rivers is more difficult than for tidal maritime areas. Brazil uses a practical table to interpolate (linear) between WL stations.
   - In the future, there should be more WL stations so there will be less interpolation.
4. Fluctuations in WL is one of the most challenging problems associated with surveying in South American rivers.

Chapter 6. - Topographic Surveying

1. The use of topographic maps is less important than using recent aerial/satellite imagery.

- satellite imagery is the future!

Chapter 7 – Hydro Practice

1. Practical means:
   - [Note: there are some additional notes that LA is looking for….]
2. Advanced survey methods (MBES and RTK) are not necessary practical (i.e., in terms of cost, time, training, resources, etc.).
3. Knowing the exact location of the river bank is useless if it is constantly changing.
4. Chile believes that hydro surveys need to be accurate. But, it is the river morphology that will determine what level of accuracy is needed. Argentina agrees and pointed out that rocky areas are more critical and need more effort.

S-44

- do same way as for M-13

Chap		Maritime	Fluvial
1	Classification		
2			
etc.			

[Note: did not have sufficient time remaining to discuss; will do via e-mail correspondence]

Reproduction of part of IHO Publications

Part I

M3 – Resolutions of the International Hydrographic Organization (version dated July 2007)

T1.3 ESTABLISHMENT OF REGIONAL HYDROGRAPHIC COMMISSIONS (RHC)

1.- It is resolved that the IHB shall encourage Member States having common regional interests in data collecting or nautical charting to form Regional Hydrographic Commissions (RHC) to cooperate in the undertaking of surveys and other projects. As part of IHO, the RHC shall complement the work of the Bureau.

2.- RHCs are intended to provide, in pursuance of the resolutions and recommendations of the IHO, regional co-ordination with regard to nautical information, hydrographic surveys, production of nautical charts and documents, training, technical cooperation and hydrographic capacity building projects. They (RHC) should enable the exchange of information and consultation between the hydrographic services concerned. Geographically adjacent RHCs should liaise with each other.

3.- RHCs shall be properly constituted and have activities in line with the objectives of the IHO as described in Article II of the Convention on the IHO and in accordance with the approved IHO Work Programme. Geographical areas of the RHC will normally coincide with INT chart regions, modified as appropriate to meet regional requirements and special circumstances. There are special provisions for Region M (Antarctica) because of its special status.

4.- RHC membership may include full members, associate members, and observers, all willing to contribute to the safety of navigation in the fields of hydrography, nautical charting, nautical information or navigational warnings in the region concerned. The roles of full members, associated members and observers will be defined by each RHC. Full membership is reserved for IHO Member States within the region who sign the statutes of the RHC.
Associate membership is available to other IHO Members States or States of the region who are non-IHO members, both being signatories of the statutes of the RHC.
Other States and International Organizations active in the region concerned may be invited by the RHC to participate as observers.

The invitation procedures should be established by each RHC.

5.- The working languages used by the RHC shall be agreed upon by their members and designated to ensure the best communication between participants. The reports and IHO documents relating to RHC activities shall be in at least one of the official languages of the IHO. For correspondence with the Bureau, one of the official languages of the IHO shall be used.

6.- A representative of the Bureau shall be invited to attend meetings of RHCs.

6bis.- RHCs shall assess regularly the hydrographic capacity and requirements within their region.

7.- Chairs of RHCs shall report to the I.H. Conference on RHC activities, hydrographic capacity and requirements within their region, future plans and the agreed key targets that support RHC tasks detailed in the IHO Work Programme. The Chairs of RHC's shall also submit an annual report to the IHB indicating progress made against the agreed key targets in the IHO Work Programme for general dissemination. Between sessions of the IHC, reports of studies or other activities, which may be considered of general interest to all IHO Member States, shall be sent by Chairs of RHCs to the Bureau for general dissemination.

8.- The following structure is to be used for National Reports made to those RHCs that wish to receive such reports:

Structure for National Reports to Regional Hydrographic Commissions

Executive summary

1. Hydrographic Office / Service:	General, including updates for the IHO Yearbook e.g. reorganization
2. Surveys:	Coverage of new surveys. New technologies and /or equipment New ships Problems encountered
3. New charts & updates:	ENCs ENC Distribution method RNCs INT charts National paper charts Other charts, e.g. for pleasure craft Problems encountered
4. New publications & updates:	New Publications Updated publications Means of delivery, e.g. paper, digital Problems encountered
5. MSI	Existing infrastructure for transmission New infrastructure in accordance with GMDSS Master Plan Problems encountered
6. S-55	Latest update (Tables)
7. Capacity Building	Offer of and/or demand for Capacity Building Training received, needed, offered Status of national, bilateral, multilateral or regional development projects with hydrographic component. (In progress, planned, under evaluation or study) Definition of bids to IHOCBC
8. Oceanographic activities	General GEBCO/IBC's activities Tide gauge network New equipment Problems encountered
9. Other activities	Participation in IHO Working Groups Meteorological data collection Geospatial studies Disaster prevention Environmental protection Astronomical observations Magnetic/Gravity surveys International Etc.

10. Conclusions

A3.4 HYDROGRAPHIC OFFICE ARRANGEMENTS FOR THE EXCHANGE AND REPRODUCTION OF NAUTICAL PRODUCTS

Note: "Products" within the context of this TR includes nautical charts and documents in analogue or digital format.

1. Noting that:

   1.1 Hydrographic Offices have a need to exchange products in the interest of safety and efficiency of navigation,
   1.2 Member States have rights to the products of their Hydrographic Offices under national and international law,
   1.3 Hydrographic Offices should cooperate to meet the needs of their customers by ensuring appropriate availability of adequate and up-to-date products,
   1.4 Hydrographic Offices should avoid creating products where another Hydrographic Office has charting responsibility for the waters concerned and already offers up-to-date products adequate for customers' requirements,
   1.5 Originating and reproducing Hydrographic Offices should seek to maintain good liaison, including the use of bilateral arrangements where appropriate,

   the following procedures are recommended:

2. Hydrographic Offices should make use of internationally standardized products such as International (INT) Charts and Electronic Navigational Charts (ENC) of other Hydrographic Offices where these products meet their customers' needs and are kept up-to-date. INT charts should be adopted in accordance with the 'Regulations of the IHO International (INT) Charts'. The use of ENC should be governed by the principles of the Worldwide Electronic Navigational Chart Data Base (WEND).

3. If no internationally standardized product is available, and national products are agreed to be adequate for national and international navigation, these should be used.

4. Where internationally standardized products are not available, and where national products do not meet the requirements of its customers, any Hydrographic Office may compile new products to satisfy those needs, provided that it obtains the agreement and cooperation of all Hydrographic Offices whose agreement is required.

5. Hydrographic Offices may establish bilateral arrangements covering the exchange and reproduction of products, and other issues of mutual interest. These bilateral arrangements should meet the legal requirements regarding the reproduction of works and may include technical, financial or other terms and conditions including acknowledgement, in the published products, of all Hydrographic Offices whose material has been utilized in those products.

6. Until bilateral arrangements are in place, or where it is mutually agreed that the procedures above are not appropriate or economical, Hydrographic Offices may operate according to other procedures mutually agreed between them.

7. In order to facilitate the negotiation of bilateral arrangements, the parties may agree to seek the assistance of the International Hydrographic Bureau.

8. In circumstances where differences arise between Member States concerning bilateral arrangements, it is recommended that they consider agreeing to the use of alternative dispute resolution procedures in order to attempt to resolve those differences.

See also A1.18.

Part II

P6 - Report of Proceedings, XVII International Hydrographic Conference

Extract of Vol. 1, Page 101

PRO 20 - ESTABLISHMENT OF A WORKING GROUP ON HYDROGRAPHY AND CARTOGRAPHY OF INLAND WATERS

EXPLANATORY NOTE

The vision, the mission, and objectives for IHO approved by the 3rd EIHC do not restrict IHO activities to ocean and coastal areas. On the contrary, its scope should be generic, and include all navigable waters.

Until these days, for any reasons (don't expressed necessity, heterogeneous areas with specifics treatments, etc.), IHO just have had take care of maritime areas.

Inland navigation is increasing and taking an increasing importance around the world, both in vessel transits or tonnage transport.

Vessels movements cruising more than one country are increasing and requiring facilities and support for their sailing, which includes a minimum standard of navigation security information.

In 2003 a group of countries established an independent Inland Electronic Charts Harmonization Group (IEHG - www.ccr-zkr.org; www.unece.org) and some of them have actively participated in WEND and CHRIS meetings.

Today, hydrographic and nautical cartographic standards for inland navigable waters constitutes a gap on IHO duties.

Extract of Vol. 1, Pages 178-180

PRO 20 - ESTABLISHMENT OF A WORKING GROUP ON HYDROGRAPHY AND CARTOGRAPHY OF INLAND WATERS (CONF.17/G/02 Add.1)

Rear Admiral DI VINCENZO (Argentina), introducing the proposal, said that the inland navigable waters were gaining in significance worldwide, and there was a need for international hydrographic and cartographic standards for those waters. IHO should establish a working group on the subject, which should take account of other work being done elsewhere.

The PRESIDENT OF THE DIRECTING COMMITTEE said a letter about the proposal had been received from a representative of Austria currently serving as one of the Chairmen of the Inland ENC Harmonization Group (IEHG). The aim of the IEHG was to develop and maintain a harmonized standard for inland electronic navigational charts based on IHO standards. The letter indicated that the IEHG had good relations with CHRIS, and was concerned that IEHG might overlap with the proposed group.

The PRESIDENT recalled that when dealing with proposal 15, on the Terms of Reference of the ISPWG, the question of inland waterways had been raised by the delegation of the United States, which had agreed to postpone further discussion until proposal 20 was taken up.

Dr. MUSKATIROVIC (Serbia) supported the proposal, which was of great importance for countries with inland waterways. Those countries should play a full part in the work of IHO and work closely with IHO standards. In support of the position of Austria, she suggested that instead of setting up a new body, IHO should find a way of coordinating and guiding the work of existing groups.

Captain WARD (Australia), speaking as the Chairman of CHRIS, supported the proposal. The sponsors of the proposal had highlighted the need to coordinate the charting of inland and estuarine waterways with that of the high seas. CHRIS was already collaborating successfully with organizations such as the IEHG, through its relevant technical working groups. The proposal to establish an IHO working group was therefore timely. The group should decide what role IHO should play in relation to inland waters, and should preferably report to CHRIS. It would be important to establish a deadline for reporting. The proposal included Terms of Reference for the group. If the group was to report to CHRIS, the proposed Terms of Reference should be refined within the structure of CHRIS.

IGA BESSERO (France) urged caution in extending the scope of IHO activities. Doing so might have far-reaching consequences. There was no international regulatory body for inland waterways equivalent to IMO for the high seas. Most inland waterways were regulated nationally or through bilateral agreements. Moreover, IHO might not possess the necessary capacities. In France, for example, the national hydrographic service was not responsible for inland waterways. It would be preferable to respond to countries having specific needs in relation to inland waterways, without taking full responsibility for them, especially bearing in mind that IHO had not yet met all the challenges in the maritime sphere. The implications of inland navigation should be considered by the ISPWG, and a decision on the proposal should be postponed until the EIHC in 2009.

Captain CAVALHEIRO (Brazil) said that Brazil was sponsoring the proposal because of the need to coordinate the growing number of bilateral agreements relating to inland waterways, as well as the technical aspects of their hydrography and cartography. The new Convention stated that all Member States of the United Nations were eligible for membership of the IHO. That would include noncoastal states and IHO ought to be in a position to support hydrographic and cartographic capacity building in those countries. He supported the proposals that the working group should report to CHRIS and that the outcome should be submitted to the EIHC in 2009.

Captain IBARRA (Chile) agreed. He supported the proposal.

Dr. ESTIRI (Islamic Republic of Iran) agreed that IHO should consider its attitude towards developing standards for inland waterways. He suggested setting up a small study group to discuss the proposal in detail and make a report.

Professor EHLERS (Germany) supported the view that IHO should take a cautious approach to the question of inland waterways. The proposal before Conference had been submitted at a late stage, and there had been little opportunity to reflect and comment on its implications or to discuss the matter with the national organizations responsible. Until now IHO had concentrated on maritime safety, and to extend its remit to inland waterways would alter its character. The problems of inland water traffic might best be solved on a regional basis among the countries concerned, as in the Central Commission for the Rhine, rather than at the global level. Member States would have to make a positive decision if they wished the Organization to take on new responsibilities of that kind. He therefore was in favour of setting up a working group on the question, to undertake a preliminary investigation of the situation to identify the problems involved and how and by whom they were currently resolved. It would then decide whether coordination through IHO would improve matters and add value to the Organization.
It was essential to avoid duplication of work and conflict with existing organizations. The Working Group should report to the 2009 EIHC, which should consider how best to proceed.

Captain SUAREZ (Venezuela) supported the proposal by Argentina. Although many countries such as hers had national bodies responsible for inland waterways, the time had come to develop and maintain international standards.

Admiral ABRAMOV (Russian Federation) acknowledged the importance of the proposal and mentioned the problem of worldwide electronic chart coverage. His country had a national body with specific responsibility for its vast expanses of inland waterways. However, he agreed with the delegations of France and Germany that caution was needed in expanding the scope of IHO's activities. The question should be referred to a future Conference.

Captain PEREYRA (Uruguay), supporting the proposal, said that, in essence, the mission of IHO extended to all navigable waters. Most countries already had adequate regulations and authorities responsible for inland navigation, but some did not. Guidelines were needed, in particular, for passage from maritime to inland waters, to avoid misinterpretation of charts. Moreover, maritime Electronic Navigational Charts (ENCs) would not contain all the necessary data to cover inland waters. However, the deadline proposed for the working group might be too short.

Rear Admiral ANDREASEN (United States of America) mentioned the constant pressure for increased ENC coverage and the need to harmonize maritime spatial data. Steps should be taken to incorporate the inland ENCs developed by the Inland ENC Harmonization Group (IEHG) into IHO's S-100 standards, and indeed to accommodate IEHG itself within the group to be established. Member States should be encouraged to include in their delegations to the IHC authorities responsible for inland waterways. Non-IHO Member States, such as those in the Great Lakes region in Africa, had navigation problems that could be dealt with only by IHO.

Rear Admiral ZEGARRA (Peru) supported the proposal. His country had an authority for the hydrography and cartography of inland waters. However, there was a need to develop international standards and capacities in the matter.

Captain KAMPFER (South Africa) supported the proposal. It was high time attention was given to inland navigation. The African continent, for example, had a vast network of inland waters and navigable rivers that were poorly surveyed and had witnessed serious accidents and considerable loss of life.

Rear Admiral MONCRIEFF (United Kingdom) acknowledged the importance of the question while urging caution in establishing a working group to deal with it. It was important to recognize the interests of non-IHO Member States and those of regulatory national bodies for inland waterways, also bearing in mind the existing common charting standards for waters linked to the high seas and navigable by seagoing vessels, for example, the ongoing work under the European "Lorelei" project.
All those aspects should first be examined, and only then should IHO identify a possible role for itself and decide whether a working group was needed and what form it should take. The Terms of Reference of any such group should take full account of the work of the IEHG.

Captain NAIRN (Australia) said that the level of IHO involvement in inland waterways clearly needed careful consideration. He was in favour of setting up the proposed working group to study the question and report to CHRIS, which was the most appropriate body to finalize the Terms of Reference and supervise the work.

Captain CAVALHEIRO (Brazil) agreed. As for safety of navigation, many countries needed the support of the IHO Capacity Building Committee, which had a mandate, among other things, to encourage countries to establish national hydrographic committees.

Commander KLEPSVIK (Norway) said that nothing in the Convention or its amendments precluded the extension of IHO's activities to inland navigation. The concerns of Germany and France, which he shared, about the implications of expanding IHO's work into that area, could be met by confining the Terms of Reference of the working group to those in paragraph (a), and requesting it to report to the 4th EIHC in 2009. At that point, the Terms of Reference could be further developed.

Mr. BIANCO (Observer for Malta) commented that the term "inland waters" covered all waters within the national baseline.

The PRESIDENT said that some inland waters formed the boundary between two countries, and were therefore international.

Summing up the discussion, he said it was generally agreed that the proposal dealt with a question of policy, and was of exceptional importance. It should be taken forward, although with a degree of caution. The most appropriate forum to deal with it was the CHRIS Committee, which should submit a set of recommendations to IHC, possibly the 4th EIHC. He suggested that the proposal should be left pending and that a drafting group should revise the proposed Terms of Reference in the light of the discussion, and submit new wording to the Conference at a subsequent session.

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DECISION No. 19 (PRO 20) - ESTABLISHMENT OF A WORKING GROUP ON HYDROGRAPHY AND CARTOGRAPHY OF INLAND WATERS

The Conference approved to ask CHRIS to establish a Working Group on Hydrography and Cartography of Inland Waters, to set its Terms of Reference and Rules of Procedure noting the guidelines below and to report on its work to the 4th EIHC in 2009.

- The purpose of the Working Group will be to analyze and recommend the level and nature of IHO involvement in the Hydrography and Cartography of Inland Waterways.

- The Working Group should involve all relevant non-IHO international bodies in its deliberations, including the IEHG.

Part III

Future General Regulation, approved at the XVIIth IHC

Regional Hydrographic Commissions

ARTICLE 9

(a) Regional Hydrographic Commissions (hereinafter RHCs) are bodies, established by Member States and recognized by the Assembly to improve coordination, enhance exchange of information and foster training and technical assistance.

(b) RHCs recognized by the Assembly are listed in the Annex to these General Regulations.

(c) RHCs shall be established by an agreement of their members.

(d) RHCs membership may include full members and associate members, both willing to contribute to the objectives of the Organization.

(e) Full membership is reserved for Member States within the region.

(f) Associate membership is available to:

(i) other Members States; and

(ii) States of the region who are not Member States.

(g) Other States and international organizations active in the region concerned may be invited by the RHC to participate as observers.

(h) RHCs shall assess regularly the hydrographic capacity and requirements within their region.

Proposed Draft Technical Resolution

Hydrography and Cartography of Inland Waters

Recognizing that:

a. under the Convention on the International Hydrographic Organization (IHO), Article II, an object of the Organization is to seek the greatest possible uniformity in nautical charts and publications;

b. under the amendments to the Convention, agreed by the 3rd Extraordinary International Hydrographic Conference (EIHC) and now awaiting formal ratification by the required majority of Member States, Article II has been expanded to include: the widest possible use of hydrography, and the widest possible use of IHO standards. These amendments place no geographical limits on the application of hydrography or its associated standards;

c. the IHO is already involved in hydrography and cartography of inland waters, both through the responsibility that some of its members already hold, and by the fact that considerable nautical traffic passes from the sea to inland waters and vice versa. This calls for the harmonization of hydrographic and cartographic information and services provided to navigators to assist the safety of navigation and protection of the environment;

d. the IHO is recognized by the United Nations General Assembly and the United Nations International Maritime Organization (IMO) as the technical authority for issues concerning hydrography and nautical cartography;

e. the responsibility for hydrography and nautical cartography for inland waters in States is often divided among different organizations, not all of them having representation in the IHO, and that the limits of responsibility among these organizations may differ according to the legislation in each State;

Acknowledging that:

a. IHO has an extensive set of specifications for hydrography and nautical cartography developed for sea and coastal areas, but used widely also on inland waters;

b. however, these IHO specifications for hydrographic survey and nautical cartography are currently not sufficient for application to all inland waters and do not cover all hydrographic and nautical cartographic needs in inland waters;

c. extended [regional] specifications for hydrographic survey and for nautical cartography for inland waters are needed to take into account a variety of environmental characteristics and the different nature of circumstances, use and traffic in each waterway;

d. these extended [regional] specifications should be as far as possible consistent with the IHO specifications;

e. there are other bodies, such as the Inland Electronic Navigational Chart Harmonization Group (IEHG), which has already published format and data specifications for inland electronic nautical cartography;

f. no recognized organization other than the IHO is in a position to foster harmonization between hydrography and cartography in maritime areas and the corresponding activities in inland waters;

The IHO **Resolves**:

A 1.xx **Hydrography and Cartography of Inland Waters**

1. Relevant Regional Hydrographic Commissions (RHC), through appropriate liaison bodies, are invited to:

    a. encourage the consistent use of hydrographic and nautical cartographic standards and mutual cooperation for the enhancement of navigation safety in inland waters within and between regions.

b. encourage to identify needs for developing additional [regional] inland extensions to IHO specifications and foster these developments together with other relevant organisations.

c. encourage to liaise with relevant IHO bodies [International Hydrographic Bureau (IHB), Hydrographic Services & Standards Committee (HSSC)] to ensure that these inland extensions are fully consistent with IHO specifications and are as far as possible harmonised between other [regional] extensions.

d. encourage to liaise, when appropriate, with other bodies working with inland hydrographic and nautical specifications, especially with the Inland Electronic Navigational Chart Harmonisation Working Group (IEHG), to ensure consistency and harmonisation as far as feasible with their specifications.

e. encourage cooperation and mutual assistance between relevant authorities, even from different regions but with common interests, particularly for the safety of navigation in inland waters, with the purpose of mutual support and the establishment of instructions and guidance for hydrographic survey and the production of nautical charts (see also Resolution A3.4).

2. Where the responsibility for hydrography and nautical cartography of maritime and inland waters is divided among different organizations, Member States are encouraged to create National Hydrographic Committees.(see also Resolution T1.3)