

Paper for Consideration by MACHC

Focus on Challenges and Peculiarities of Brazilian Inland ENC's

Submitted by:	Directorate of Hydrography and Navigation (DHN/BR)
Executive Summary:	This study gives an overlook about the challenges and peculiarities faced by DHN/BR while planning the inland ENC coverage for the internal waters and also presents the way forward for the next years.
Related Documents:	N/A
Related Projects:	N/A

Introduction/background

During the 15th MACHC, occurred in Manzanillo, Mexico, as a result of the discussion raised during the presentation of the Brazilian National Report, the Mr. Chair of MACHC pointed to Brazil an action (on Action List), later numbered 15.6.2.1, asking "Brazil to engage other countries in the MACHC region and other RHCs to develop a platform in the area of Inland ENC (IENC)".

During 16th MACHC, in St. John's, Antigua, due to the intense discussions raised during the meeting there was no time for the discussion of Inland-ENC. So Mr. Chair pointed himself an Item inside Action List, number 16.7.6, asking "Chair to reserve time and space in the agenda of 17th MACHC Conference for inland ENC's". This resulted in Agenda Item 7.3 - Papers Industry and/or Nations, under which will be presented this document.

Analysis/discussion

Following the development of new technologies for nautical cartography, DHN/BR developed a Master Plan for the coverage for Electronic Navigational Charts – ENC. Established in 2006, this Plan aimed at covering the routes of the SOLAS ships and the largest ports of the entire country.

This Plan is still active and 138 Brazilian ENC were published. But some challenges appeared: what about non-SOLAS routes, used by smaller vessels without conditions of having ECDIS aboard? And the peculiarities of the inland waterways, how to develop signs for those water bodies?

One possible answer is the Inland ENC. Inland ENC is the easiest solution for navigation when traffic on inland waterways is not regulated by the maritime Collision Prevention Rules (COLREG), but by regional regulations. Having fewer requirements to be stated and being adaptable for different waterways - objects such as bridges can only be encoded in a very basic form for maritime ENCs, but are extremely important for inland navigation – Inland ENC is being used operationally in many countries, as US, Europe, China and Russia, and can be adopted by other countries as an official product for navigation.

Brazil is a good place for the establishment of those products: there are many waterways crossing the country, as Solimões-Amazonas, Madeira, Tietê-Paraná, Patos Lagoon and Paraguai, for example. And DHN/BR is studying the coverage in this places, as a component for the III Brazilian Nautical Cartographic Plan. Some challenges are being faced:

- The extension of the waterways: Solimões-Amazonas waterway has almost 17.000km of navigable water. To cover this huge extension, doing hydrography and concluding the cartography in a fast way is a big challenge and demands many ships to be used, and skilled personnel so as to analyze data and product the official cartographic products;
- The diversity of the waterways: each one of the waterways has its own characteristics: Madeira waterway, for example, can vary 17 meters during flood season; Tietê-Paraná water flow is ruled by the hydroelectric engines placed all over the waterway; Paraguai river has its own traditional signs for navigation, using an adapted IALA B system for navigation – and the local signs had to be created in the library for using in the products;

- The bi/multinational waterways: the fact that Solimões-Amazonas and Paraguai waterways are bi/multinational creates a problem: the development of an official product for navigation has to satisfy each country using the waterway. So institutions linking all the actors have to be created to discuss requirements and updates for the product;
- The development of technical and operational minimum requirements for the entire country, having in mind the diversity presented by the waterways: choosing from one only specification for the entire country or having regional specification? Emphasizing there's just one National Hydrographic Service, with its own limitations, and no specific company for developing and maintaining the products in a region;
- The establishment of the Inland ENC as an official product of safety: nowadays, there is a Maritime Authority Standard that establish the need of paper charts and/or ENC in every vessel navigating on Brazilian waters. With the development of Inland ENC, discussions have to be taken so as to verify what kind of official documents are going to be needed aboard the vessels.

DHN/BR elaborated the first Inland ENC for the Paraguai Basin, and called the civilian navigators to test them in the Basin. Also the Navy ships are using the products and giving feedback on the needs to improve the products. Figure 1 shows the actual coverage of Inland ENC at Paraguai waterway:

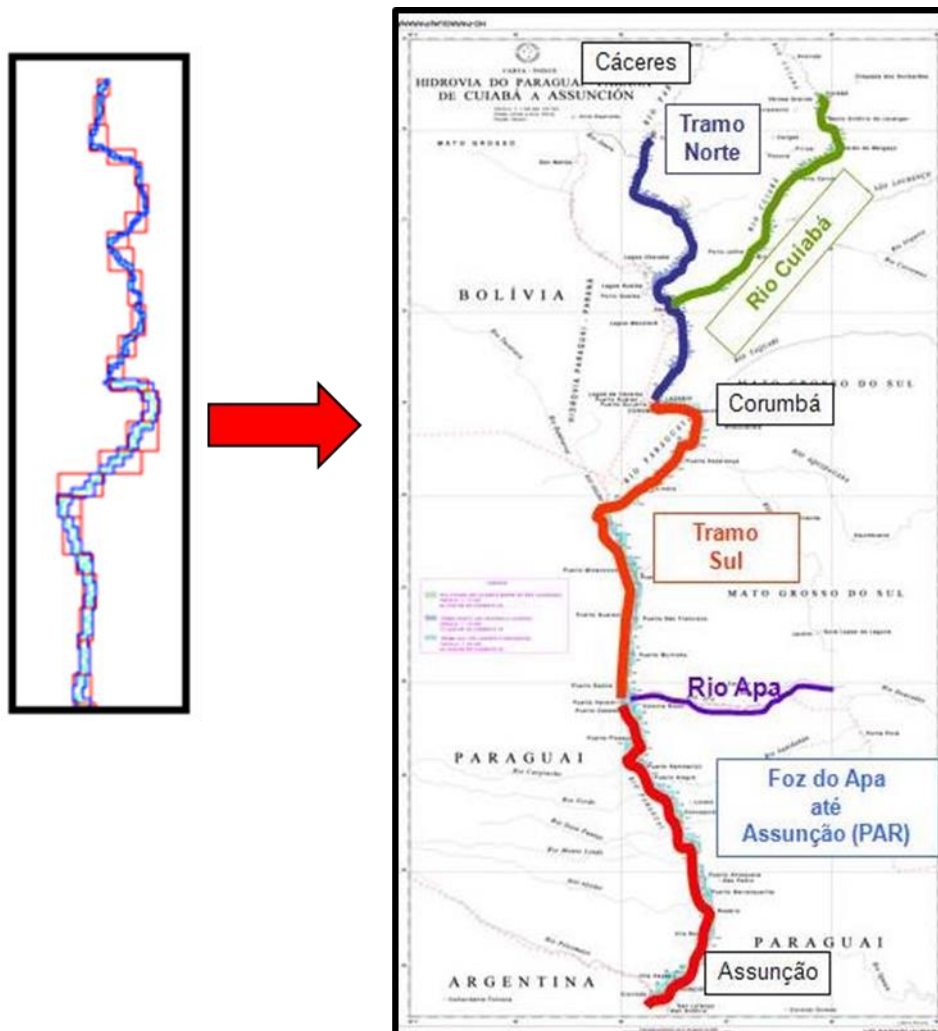


Figure 1 – Coverage of Inland ENC for Paraguai waterway

For the Solimões-Amazonas waterway, DHN/BR plans the following coverage (Figure 2):

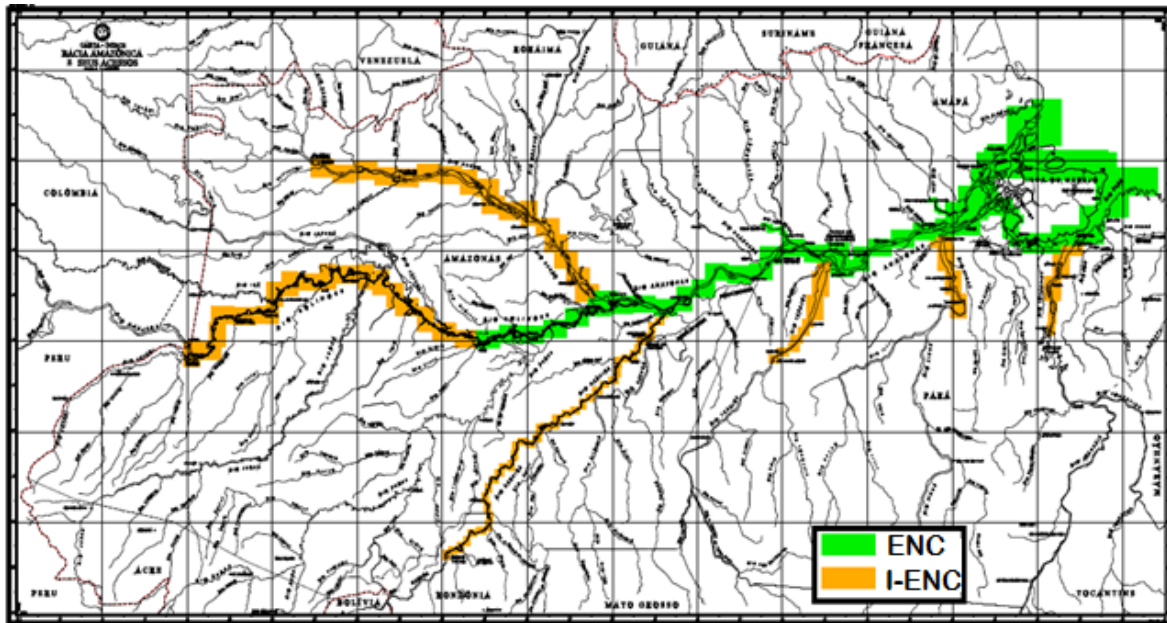


Figure 2 – ENC/Inland ENC coverage for Amazon Basin

The potential for use is enormous: the Tiete-Parana Waterway can have these kind of products in a 700km extension, and the Patos Lagoon/Uruguai-Brasil Waterway, at least other 450km can be covered by Inland ENC.

Conclusions

Inland ENC is the easiest solution for navigation when traffic on inland waterways is not regulated by the maritime Collision Prevention Rules (COLREG), but by regional regulations. Having fewer requirements to be stated and being adaptable for different waterways, Inland ENC is being used operationally in many countries, as US, Europe, China and Russia, and can be adopted by other countries as an official product for navigation.

Despite being a good place for the establishment of those products, Brazil is facing many challenges to accomplish the needs of the navigators, the capacity of the Hydrographic Service, the diversity of the different waterways and the evolution of the technology.

Recommendations

None.

Action Required of MACHC

The MACHC is invited to note this report.

References:

N/A.