INTERNATIONAL CO-OPERATION FOR ENC COVERAGE

IC-ENC: Showing the Way for RENCs

Producing official Electronic Navigational Charts (ENCs) is a responsibility of every coastal state. Making ENCs work together flawlessly and seamlessly on an ECDIS display requires close co-operation between Hydrographic Offices. Twenty-five countries from all continents, numbers growing, have already agreed to co-operate under the umbrella of the International Centre for ENCs (IC-ENC) to ensure high-quality and consistent data, and to release all ENCs to accredited companies providing official services to the global maritime market. Ideally such co-operation should involve all HOs in achieving worldwide ENC coverage of consistent quality: an aim that would be facilitated by forming a worldwide ENC Coordinating Centre.

The Modern Age

The world is going digital! Music is now downloaded as MP3 rather than purchased on CD-ROM. Films are watched on large plasma TVs, run from DVDs and with 3D sound. And TV is steadily being replaced in the hearts of the next generation by broadband internet with its many â€˜online communitiesâ€™. Within the hydrographic community we have been lucky enough to have had a transfer standard (S-57) for our digital hydrographic data since the mid-90s, along with a product specification for our electronic navigational charts (ENCs). And yet, more than ten years on, the vision of a digital world with paperless navigation and ECDIS has still failed to materialise.

Of course, nautical charts are not, like music and TV, about mere entertainment, they are about protecting the lives of mariners at sea and protecting the increasingly valuable maritime environment. The significance of what we as Hydrographic Offices do has finally (and rightly) been recognised in the latest version of the IMOâ€™s SOLAS Convention, in which the provision of hydrographic services is now included as an obligation for contracting governments. So when it comes to ENCs, getting it right is much more important than simply getting it out there. And few among us will argue that the â€˜getting it rightâ€™ bit is far easier said than done.

We are working with a standard that incorporates a distinction between â€˜mustâ€™ and â€˜shouldâ€™ when describing the encoding of objects and attributes and, despite several revisions, still contains a number of internal inconsistencies. It is no wonder, therefore, that there are as many different interpretations of the meaning of the standard (and internal ENC product specifications) as there are Hydrographic Offices, and that the various S-57 production and validation tools currently available all work differently and give subtly different results.

It is also unfortunate that in the vast majority of cases the paper chart continues to lead the production process, the ENC being derived from this. It will be some years before we see the wide use of GIS technology that reverses this approach. In the meantime, we need to keep in mind that the way a paper chart is used on the bridge of a ship is very different to the way a digital chart is used.

Paper charts are used in relative isolation from each other, with the vesselâ€™s position recorded manually (and retrospectively). Onscreen ENCs are displayed in a seamless fashion and vessel position is recorded automatically and in real time, together with other overlay information. The design features of a paper chart are therefore not entirely suited to the ENC, where the continuity and density of the information being displayed become much more important considerations as the navigator zooms and pans. Simply digitising paper charts in S-57 is therefore not sufficient, and HOs need to go much further than this to ensure their ENC products are fit for the task in hand: providing timely information to support the navigation of a ship. A good ENC/ECDIS combination maximises the time the navigator can spend looking out of the bridge window.

The Challenge

Given all this, ensuring the quality and consistency of ENC products now being produced by the more than fifty national hydrographic departments worldwide is paramount if we are to be confident that they will work efficiently on ECDIS. Recent discussions at IMO should also help us to focus our minds more clearly on this issue, given that a mandatory ECDIS requireâ€“ment now looks to be more a question of â€˜whenâ€™ than â€˜ifâ€™. And IMO has made the â€˜whenâ€™ dependent on when IHO member states deliver sufficient ENC coverage for merchant shipping. Indeed, we already have regulations in place that will require the carriage of ECDIS on high-speed craft by 2008, and history has often demonstrated such regulation to be the first step towards a wider carriage requirement. So against this background, any failure on our part to deliver high-quality, consistent ENC products in good time will severely compromise the reputation of the hydrographic community.

Co-operation

It would be over-optimistic to believe that individual hydrographic departments will be able to rise to this challenge by simply working in isolation. Now, more than ever, it is vital that Hydrographic Offices work together to harmonise and co-ordinate their ENC production and distribution activities in order to ensure the success of ENCs and ECDIS. Ultimately, an easy-to-read display on the ECDIS based on

reliable, up-to-date, official data is what the mariner needs. He will be the judge of whether or not IHO and its members have accomplished their mission.

RENCs

As an example of a Regional ENC Coordinating Centre (RENC), the International Centre for ENCs (IC-ENC) provides a focus for such co-operation and harmonisation work. Its committee and working groups provide an excellent forum for the relevant personnel working in its member hydrographic departments to discuss ENC production and distribution issues, exchange ideas and share expertise. This is why I have been so proud to serve as the chairman of IC-ENC for the past four years.

A RENC is not a purpose in itself. Member nations took a conscious decision from the outset to focus IC-ENC work, for the least cost, in those areas where co-operation was most needed and which fitted wholly within the responsibility of government authorities. Namely, to assure the overall quality of official ENCs in compliance with the obligations of governments under the SOLAS Convention. We therefore focus exclusively on providing an independent and so consistent quality-assurance service, acting as the centre of expertise on all ENC matters for members internationally.

IC-ENC does not therefore get involved in the commercially orientated work of service delivery, but prefers to work on behalf of its members with companies who are better equipped to develop, promote, customise and provide such end-user services and who are accredited by IHB. IC-ENC calls these companies â€˜Value Added Resellersâ€™ and they are the â€˜Data Serversâ€™ as described within S-63, the IHO data security scheme. IC-ENC members believe that this approach is necessary to encourage competition and the development of integrated ENC services vital in providing the â€˜one-stop-shopâ€™ needed to meet the demands of the international mariner. It also helps to keep IC-ENC costs of operation to a minimum.

In order to meet customer expectations, IC-ENC quality-assurance work increasingly goes beyond simple strict conformance to the S-57 standard to encompass other relevant considerations that affect the suitability and usability of an ENC product as a navigational tool. This commitment to customer-focused quality management is what led IC-ENC to realise early on that, whilst the database of ENCs it was distributing would load successfully on an ECDIS, inconsistencies in the way ENCs had been encoded would make them more difficult to use than need be.

IC-ENC therefore studied the various dimensions of this problem and came up with a series of recommendations which, after further discussion within IHO committees, were subsequently published by IHB as Circular Letter 47/2004. Taking this work forward, IC-ENC is now also actively involved in the international effort to produce a more robust ENC product specification (S-101) which will incorporate these data consistency recommendations and hopefully other issues which IC-ENC believes will help to improve the quality of the next generation of ENCs.

Final Thoughts

IC-ENC membership now stands at 25 nations from all continents, all working together within a common co-ordinating framework designed to provide a consistent ENC database of predictable quality and fit for the purpose in hand. Our common mission for IC-ENC is: â€˜To deliver cost-effective service designed to meet the needs of the users by providing high-quality, fit-for-purpose ENCs that comply with IMO and IHO standards and which are delivered to users within integrated and user-friendly ENC servicesâ€™.

The fact that so many ENC-producing nations have decided to work together in this way, supplemented by a significant number of further nations working together in a similar way under the Primar-Stavanger RENC framework, is a powerful statement of the hydrographic communityâ€™s commitment to rise to this challenge. Of course, there is still much work to be done over the coming years. We have to manage full implementation of the IHO recommendations on ENC consistency (IHO Circular Letter 47/2004), transition from S-57 to S-100/101, and from paper chart-led production to product derivation from a central digital database.

More work is needed to find ways of working together to accelerate the expansion in coverage, particularly in those areas of the world where resource constraints limit the capabilities of national hydrographic departments. IC-ENC can assist any HO, at their request, in finding a partner among members ready to provide support for ENC production.

We have also still to master ENC distribution so that we ensure the development of a series of fully integrated ENC services worldwide. However, this goal requires the co-operation within certain security elements of fully integrated services, also from those countries who prefer to stay on their own and to supply their ENC services themselves.

RENCs act as a catalyst and physical expression for the sort of multi-lateral and bilateral co-ordination and harmonisation that is required to address these issues, and so help to make ENCs a success. Active involveâ€“ment in a RENC like IC-ENC and in the workings of IHO and its various bodies is therefore vital to our common future and to the safety of navigation.

The more ENC coverage grows, the more it becomes global, the more one may wonder if a single â€˜WENCâ€™, a world-wide ENC Coordinating Centre, would be a more appropriate framework for ECDIS-related co-operation between IHO members. Indeed, a â€˜World ENCâ€™ is what mariners are demanding, not merely a collection of regional and national ENC sets, and this would certainly be more facilitated by a global structure than by a fragmented one. IC-ENC, with its membership belonging to all continents and which has already developed a concept of regional co-operation within its international framework, supports the idea of WENC.

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