

Hydrographic Data and E-navigation

In his “Insider”™s View™ column in the September 2013 edition, the president of IHO, Robert Ward, highlighted the need for more efforts to improve the world’s “global bathymetric dataset”. This position is even more critical when looking at the emerging e-navigation concept and fits in well with the theme of World Hydrographic Day 2014: “Hydrography” more than just charts™.

At the core of e-navigation are different data streams, communicated between the different stakeholders on shore and at sea. To gain the necessary situational awareness, a growing amount of data is being collected. This needs to be analysed and converted into meaningful information, which can increase situational awareness. Hydrographic data, especially in ENC’s but also bathymetric data, is the essential foundation. Real-time data – such as traffic situations – or semi-real-time data, such as tidal information submitted at certain time intervals, will be added to the data pool. This growing amount of data, including on-board sensor data, will need to be automatically selected given the situation at hand. The systems will provide the navigator with all the information needed to gain the necessary awareness for good decision-making. In other areas, such as in terrestrial or air navigation, this is already implemented to a degree.

Various e-navigation test projects are underway to prepare for this data consolidation and integration. One of the issues to be solved is how to link the different data sources together. Hydrographic data is gathered and consolidated in a certain grid structure. As tide station data is being integrated to develop a more accurate depth contour at the time of navigation, the tide station needs to be linked into the gridded static hydrographic data. Here, the hydrographic offices and other hydrographic data experts need to work closely with other data providers and data service providers functioning as data clearing houses. Furthermore, the rules need to be defined regarding which data is being selected for presentation to the user. What is to be presented, when? Which data should have priority over other types, and how should static, pre-composed hydrographic data be adjusted using semi-real-time data to better represent reality? These are just a few questions to be answered in the early phases of the e-navigation journey.

Such integrated hydrographic data is not only useful on board, but also on shore to gain a better insight into the traffic situation and provide educated advice to the mariner from a VTS station. Shore-based users may have a very different view and other goals to achieve, but some base data will be the same. This will improve communication between the different stakeholders in the maritime world, and also increase the ability of shore-based experts to provide meaningful advice to navigators on-board vessels. Understanding and utilising hydrographic data – rather than just charts produced based on this data – is becoming more important for all players in the maritime field.

It has to be understood that in this concept, while integrating new datasets, the foundation is the hydrographic data layer. Without the availability, quality and reliability of this data layer, e-navigation is like a house without foundations. E-navigation is not possible without them. While it may appear that the work of hydrographic offices will become less important in the future, the opposite is actually true. The final products used by the mariner may not come from HOs since they may be composed from different sources, but the HO data is – and will continue to be – central.

Going back to my initial remark: a good “global bathymetric dataset” as requested by Robert Ward is the cornerstone of e-navigation.