

HYDROGRAPHY

Definition

The International Hydrographic Organization (IHO) defines **HYDROGRAPHY** as “that branch of applied sciences which deals with the measurement and description of the features of the seas and coastal areas for the primary purpose of navigation and all other marine purposes and activities, including –inter alia– offshore activities, research, protection of the environment, and prediction services”.

Framework

In layman’s language, Hydrography involves the taking of measurements on a water body (ocean, sea, lake, etc) in order to establish, among other things, the depth of the water, the location of any obstruction/significant feature on the seabed, the nature of the seabed the presence of any water currents and the location and nature of any object on the surface that could act as an aid to navigation. The primary purpose for the collection of these measurements is to facilitate the safe movement of ships on the surface of the water but, as the definition suggests, there are other important applications.

The basic principle for the collection of the hydrographic data is to take measurements, called soundings, of the depth etc. from a boat, while at the same time taking measurements, called fixes, to determine the position/location of the boat. In this way a map, called a chart, can be prepared to show the depth and other details of the water at specific locations.

Tools and Methodology

Various techniques and tools have been used to take these measurements. In the past, the depth was measured with a 'lead line', which is a line/rope with a weight attached to one end and markings along its length. The lead line was dropped over the side of the boat and the depth read from the markings on the rope at the water surface when the weight touched the bottom. The position of the boat was fixed by the method of resection or intersection relative to fixed points on land or to the stars.

Now, improved technology allows for both the depth and boat position to be determined using various electronic instruments. The instrument most commonly in use for depth measurement now is the '**Echo Sounder**'. This instrument transmits electromagnetic pulses (high frequency sound) that travel through the water and is reflected from the seabed. The return travel time for the pulse is used to calculate the depth and this is recorded on a graphical printout. The measurement is done on a continuous basis while the boat is in motion. Simultaneously with the measurement of the depth, the position of the boat can now be fixed by another electronic instrument called a '**Geodetic Positioning System**' (GPS). The GPS uses electromagnetic signals received from special satellites to establish its position. This determination can also be done on a continuous basis. Hence, both the depth and position measurements can now be taken very accurately and more easily.

Importance of Hydrography

Hydrography has both national and international importance. It is a fact that most of the world's trade is transported by ships. Shipping is heavily dependent on charts to facilitate safe navigation in both national and international waters. Hydrographic data is critical to the production of charts and, by extension, to safety of navigation. It is therefore evident that any state, coastal or otherwise, that

has a reliance on shipping for trade and industry must place great importance on hydrographic products and services. Jamaica has a fair share of the world's shipping traffic. We rely heavily on shipping in the tourism industry, the bauxite industry, agriculture, fisheries and pleasure crafts industry. We have a vibrant and expanding trans-shipment industry and shipping critically impacts our oil imports and other trading activities. In addition, our territorial waters and Extended Economic Zone (EEZ) span important international shipping lanes

Regulatory Framework

The world's shipping industry operates under a regulatory regime of international organizations and conventions such as the International Hydrographic Organization (IHO), the International Maritime Organization (IMO) and the Safety Of Life At Sea (SOLAS) Convention among others. These organizations and conventions make specific provisions for the provision of hydrographic products and services to facilitate safety of navigation. Some of these regulatory requirements are recommended but not mandated while others are obligatory on member states or parties to the conventions. In either case, shipping interests pay keen attention to these provisions and any state that contravenes or fail to comply with the requirements run the risk of being 'black listed' or avoided by these shipping interest groups. This action could have devastating effect on the state's industries that rely on shipping and hence, its economy.

In Jamaica, the responsibility for the provision of hydrographic data to support safe access by ships to our ports and harbours resides with the NATIONAL LAND AGENCY (NLA). The NLA works in close association with the Port Authority of Jamaica to maintain adequate hydrographic coverage of our major ports and harbours. However, a lot more needs to be done if we are to meet our obligations under the various international maritime conventions and in particular the SOLAS Convention.