

Review of Special Publication No. 55 Status of Hydrographic Surveying and Nautical Charting Worldwide

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The primary purpose of Special Publication No. 55 'is to provide the reader with comprehensive and concise information on the status of hydrography and nautical charting worldwide' (International Hydrographic Bureau 1999, p.1). In addition, 'the publication is intended to serve as a reference document for initiatives aimed at improving the status of hydrography and nautical cartography, providing key data required for assessments, comments, conclusions and recommendations' (Ibid. p.1). This review will assess the value of the publication in addressing these issues and will offer recommendations to improve the information provided by making it more quantitative and hopefully of more use to a wide spectrum of users, including hydrographic offices, shipping companies, development banks and agencies providing aid. Special Publication No.44 (International Hydrographic Bureau, 1998) will also be discussed as it is felt that any review of Hydrography must be done using a standard comparison system. On the cartographic side, the standards for the production of paper charts as well as S-57, Edition 3, the International Standard for the Transfer of Digital Hydrographic Data (International Hydrographic Bureau, 1996), will also be considered in the review.

Background

National Hydrographers, as well as other senior staff in hydrographic offices, are frequently called upon to justify the level of expenditures required to provide hydrographic services as well as other services provided by hydrographic offices. This is especially true if a request is being made to increase expenditures as well as when decisions have to be made on spending funds on hydrography versus spending funds on other activities such as health services or some other branch of science. Recently, the authors of this review had occasion to review the programme of the Canadian Hydrographic Service (CHS) and in doing so attempted to use S-55 as a means of comparing the hydrographic efforts in various countries. The intention was to do this comparison in terms of the status of surveys, the size of the task, and the extent of shipping and recreational boating. The review will to some extent be based on this work.

Factors to Consider in Making Comparisons

Factors that should be considered in comparing hydrographic and cartographic efforts on a global basis include the following:

- i) Common definition for defining 'adequately surveyed'. In S-55, on page 21, 'Adequately surveyed means that the survey data quality and density is sufficient for present requirements to ensure safety of navigation'. While this may be sufficient for a very general qualitative assessment, it is felt if the data are to be used in a quantitative comparison, then adequately surveyed should conform to the Summary of Minimum Requirements for Hydrographic Surveys as shown on page 5, Table 1, of S-44. While this would portray the status of global hydrography in a more critical sense, it would be in agreement with standards that were very carefully prepared by hydrographers of many Member States of the International Hydrographic Organization working together to achieve a truly remarkable Member state consensus
- ii) Services provided by hydrographic offices. The suite of services provided by hydrographic offices in different nations are quite dissimilar. For example, the Canadian Hydrographic Service (CHS) is part of the Science Sector of the Department of Fisheries and Oceans and hydrographers work closely with other ocean scientists in areas such as tidal studies and the application of hydroacoustics to fish stock status. Hydrography as carried out by CHS may be defined as that branch of applied science that deals primarily with measuring and depicting those parameters necessary to describe the precise nature and configuration of the seabed, its geographic relationship to the landmass and characteristics and dynamics of the sea. These parameters include water depths, bottom features, tides, currents and water levels. The primary uses of these data are to compile navigation charts (paper and electronic) and other documents to facilitate safe and efficient navigation. Hydrographic data are also used for determining bilateral and seaward maritime boundaries, for exploration and exploitation of non-renewable offshore resources and for fisheries research and exploitation. In the November/December 1999 issue of *Hydro INTERNATIONAL*, Dr. Peter Ehlers, President and Professor of Bundesamt für Seeschifffahrt und Hydrographie (BSH) defines hydrography as carried out by BSH, the German Hydrographic Service, as 'the description of the seas for all seaborne purposes'. BSH acts as a provider of public maritime services not only for shipping, but also for fisheries, offshore industry and other marine technology activities. It is therefore clear that if meaningful comparisons are to be made, then they must be made from the same suite of services. While some hydrographic offices are mainly involved in satisfying the mariners requirements for charts and publications, in many instances the services demanded from a hydrographic office are much more encompassing
- iii) Area covered. The 'area covered' designation is not considered a truly representative parameter for comparison. If it is used, however, it must be used according to some standard. In S-55, the Length of Coastline and the area of the Exclusive Economic Zone are used for comparison. While this may work in many cases, in Canada's case approximately 25% of the hydrographic effort is expended on the Great Lakes-St. Lawrence Seaway System, waters not included in the Length of Coastline for Law of the Sea issues. In addition, in many countries, not all surveying and charting activities are carried out from the Hydrographic Offices. In some countries, hydrography is done by Port Authorities and by other agencies. This lack of a common criterion makes quantitative comparisons somewhat difficult
- iv) Hydrographic and cartographic resources. While the number of hydrographers and cartographers employed represents a reasonable measure of the human resources, the vessel resources may be quite misleading. This is mainly because it does not represent the number of sea-days on survey. In many cases, especially in this period of decreased hydrographic budgets, ships remain alongside for long periods of time
- v) Charts schemed and published. The number of charts schemed does not really represent a meaningful comparison unless timeframes for anticipated publication are provided. In some instances, these charts may not be published for a very long time and if they are not published within five to ten years after scheming, then at the time of chart construction, the scheme should be examined to ensure that it meets the current shipping requirements. In addition, the detail provided in S-55 in terms of chart scales appears more than necessary

Recommendations for a Revised Document

While it is easy to be critical of a publication of this nature, it is much more difficult to specify a publication that would represent a vast improvement and still be within a reasonable budget. It is felt, however, that this matter is of considerable importance and a publication that would show the status of hydrogra-

phy together with shipping patterns for the main shipping routes is urgently required. It is therefore suggested that the following components might be considered for a revised document that would address the concerns expressed in this review as well as extending its value to other users such as development banks and agencies providing aid:

- Inclusion of major rivers and other major fresh water areas used for navigation and information on survey activity and charts produced by agencies other than National Hydrographic Offices
- An evaluation of adequately surveyed areas using the definitions specified in S-44 within the major sea routes of the world
- An evaluation of paper charts and publications as well as an evaluation of S-57 digital hydrographic data for the main shipping routes
- An evaluation of unsurveyed areas in comparison with shipping in these areas, i.e. a weighting of unsurveyed areas
- A tabulation of hydrographic and cartographic resources as is provided in the current document but using sea-days rather than the number of ships as is done in the current document

In conclusion, it is felt that an up to date document of this nature is a definite requirement. Furthermore if a case is being made to provide data to seek funds to enhance hydrography worldwide, it is most important that the data be accurate and be provided according to documented and widely accepted standards.

References

International Hydrographic Bureau, 1998, Status of Hydrographic Surveying and nautical Charting Worldwide, Monaco: IHB Special Publication No. 55. Second Edition.

International Hydrographic Bureau, 1998, IHO Standards for Hydrographic Surveys, Monaco: IHB Special Publication No 44, 4th Edition.

International Hydrographic Bureau, 1996, Transfer Standard for Digital Hydrographic Data, Monaco: IHB Special Publication No.57, Edition 3.0 B.

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