



**XXXIX ANTARCTIC TREATY
CONSULTATIVE MEETING**
SANTIAGO - CHILE 2016
25 YEARS PROTOCOL ON ENVIRONMENTAL PROTECTION

Agenda Item: ATCM 4
Presented by: IHO
Original: English
Submitted: 04/04/2016

Report by the International Hydrographic Organization (IHO)

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Limitations in hydrographic knowledge in Antarctica and the consequent risks to scientific and maritime operations

Introduction

The International Hydrographic Organization (IHO) is an intergovernmental consultative and technical organization. It comprises 85 Member States. Each State is normally represented by its national Hydrographer.

The IHO coordinates on a worldwide basis the setting of standards for hydrographic data and the provision of hydrographic services in support of safety of navigation and the protection and sustainable use of the marine environment. The principal aim of the IHO is to ensure that all the world's seas, oceans and navigable waters are surveyed and charted.

What is Hydrography?

Hydrography deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers. Hydrographic surveying identifies the shape and nature of the seafloor and the hazards that lie upon it, together with an understanding of the impact of tides on the depth and water movement. This knowledge supports all marine activities, including transport, economic development, security and defence, scientific studies, and environmental protection.

Importance of Hydrography in Antarctica

Hydrographic information is a fundamental pre-requisite for the development of successful and environmentally sustainable human activities in the seas and oceans. Unfortunately, there is little or no hydrographic information for a number of parts of the world, especially in Antarctica.

In this particular region, where vessels may face the most severe weather conditions, any grounding due to a lack of adequate surveying or nautical charting may have serious consequences. Unfortunately, the grounding of vessels operating outside previously navigated routes in Antarctica is not uncommon.

The Polar Code, adopted by the International Maritime Organization (IMO) in 2014, includes significant cautions concerning hydrography and nautical charting.

As stated, the Polar Code

... “considers hazards which may lead to elevated levels of risk due to increased probability of occurrence, more severe consequences, or both (...)

and notes in particular:

*...remoteness and possible lack of accurate and complete **hydrographic data and information**, reduced availability of navigational aids and seamarks with increased potential for groundings compounded by remoteness, limited readily deployable Search and Rescue (SAR) facilities, delays in emergency response and limited communications capability, with the potential to affect incident response ...”*

Most scientific studies and an understanding of the marine environment benefit significantly from a knowledge of the nature and shape of the seafloor and the movement of the water caused by tides. Therefore the lack of such hydrographic knowledge in most Antarctic waters, particularly in the coastal and shallower regions, must compromise many scientific endeavours being undertaken under the auspices of ATCM and individual Member States.

Status of Hydrography and Charting in Antarctica

The state of hydrographic surveying and nautical charting in Antarctica poses serious risks for the safety of navigation as well as impeding the conduct of most activities taking place in the surrounding seas and oceans.

Over 90% of Antarctic waters remain unsurveyed. Large areas are uncharted and where charts do exist, they have limited utility because of a lack of reliable or comprehensive depth information.

Hydrographic surveying in Antarctic waters is expensive and problematic. This is because of hostile and unpredictable sea conditions, short seasons for surveying and the long logistic train involved in supporting ships and equipment.

According to IMO international requirements (Safety of Life at Sea - SOLAS), Electronic Nautical Charts (ENCs) are now required for navigation in all passenger vessels and an increasing number of vessels of other types - all of which are operating in Antarctic waters. So far, only half of about 170 ENCs that have been identified by the IHO Hydrographic Commission on Antarctica (IHO HCA) as being required for navigation in the region have been published.

The production of ENCs for Antarctica is severely hampered by the lack of data, the poor state of the corresponding paper charts that they are intended to replace and the production and financial priorities of those States that have volunteered to make the ENCs; only 10 ENCs were produced in 2014, and only five¹ in 2015.

The status of hydrography and nautical charting is available on the IHO website as a GIS web service (www.iho.int > Committees&WG > Hydrographic Commission on Antarctica > Miscellaneous > IHO GIS for Antarctica).

IHO Hydrographic Commission on Antarctica (HCA)

The IHO HCA is dedicated to improving the quality, coverage and availability of nautical charting and other hydrographic information and services covering the region. The HCA comprises 23 IHO Member States (Argentina, Australia, Brazil, Chile, China, Ecuador, France, Germany, Greece, India, Italy, Japan, Republic of Korea, New Zealand, Norway, Peru, Russian Federation, South Africa, Spain, United Kingdom, Uruguay, USA, Venezuela), all of which have acceded to the Antarctic Treaty and are therefore also directly represented in the ATCM. Colombia has recently indicated its intention to seek to become a full member of the IHO HCA.

The IHO HCA attempts to work closely with stakeholder organizations such as COMNAP, IAATO, SCAR, IMO and IOC. However, with the exception of successful work with IAATO, no co-operative programmes or packages using ships of opportunity or other resources have been achieved in order to improve hydrographic data in critical shipping areas.

It was reported to ATCM last year that the 14th meeting of the IHO HCA had been postponed, due to the low level of registrations from Member States and from Observer Organizations. This is a sad evidence of the low priority that governments have been placing on improving hydrographic and bathymetric knowledge in the region. An invitation letter to participate in the 14th meeting of the IHO HCA which will take place in Ecuador, from 30 June to 2 July 2016, was issued on 18 Feb. We take this opportunity to remind IHO HCA Members and stakeholder organizations that registrations for participants were expected before 15 April 2016, therefore, those interest parties that have not done so, are invited to register right away.

Ways and Means to Improve Hydrography and Nautical Charting in Antarctica

The IHO has reported regularly on the unsatisfactory level of hydrographic knowledge in Antarctica since ATCM XXXI (Kiev, 2008) and the inherent risks involved for all seaborne activities taking place around the continent. The IHO has consistently indicated the requirement to obtain support at the highest political levels if things are to improve significantly.

¹ Argentina (1), Chile (1), UK (3).

It is pleasing that ATCM XXXVII adopted Resolution 5 (2014) on strengthening cooperation in hydrographic surveying and charting of Antarctic waters. However, with the exception of the significant surveys carried out in the Gerlache Strait in 2015, there has been little noticeable impact or improvement on the previously reported situation. It can only be hoped that this will improve after the IHO-HCA meets in mid-year in Ecuador where it is expected that a whole of continent risk-assessment analysis will be finalised. All interested ATCM Parties are invited to participate in the meeting as a means of identifying priorities and risks and coordinating their hydrographic surveying and charting activities.

Recommendation for Consideration by ATCM

The IHO invites ATCM to encourage Parties to participate in the next meeting of the HCA in Ecuador 30 June to 2 July and to contribute effectively to its activities in accordance with Resolution 5 (2014).