

HYDRO INTERNATIONAL INTERVIEWS REAR ADMIRAL (R) ANDRES ROQUE DI VINCENZO

Surveying and Charting



Surveying, charting and monitoring a complex and vast area which includes features from rivers, waterways, a long Atlantic coast to the Antarctic Peninsula environment, is a very challenging task. Only a well-equipped Governmental Hydrographic Institution can cope with it. The Servicio de Hidrografia Naval (SHN) of the Republic of Argentina, continuously produces the nautical information needed

by sailors and the scientific world. In doing this, SHN benefits from its membership of the International Hydrographic Organization and of the Organisation of the Antarctic Treaty. Rear Admiral Di Vincenzo, who has headed the SHN for the past four years, explains how they accomplish their mission.

Could you tell us, Admiral, something about your background as naval officer and Hydrographer?

I started my studies at the Escuela Naval Militar (the Naval College) on 1 February 1971 and graduated in 1974 as an Ensign. Afterwards, I obtained a diploma in Hydrography and specialised in Communications. I took several courses, including the Course on Command and General Staff at the Escuela de Guerra Naval (Naval War College) and the Course on Defence at the United Kingdom Royal College of Defence.

I worked as a teacher and a consultant at the Escuela Naval Militar and the Argentine Naval Mission in Paraguay for several years and served in several operating units of the Sea Fleet and the Hydrographic Naval Group at the command of surveying vessel A.R.A. *Comodoro Rivadavia*, A.R.A. *Drumond* Corvette, and A.R.A. *Libertad* Frigate.

My last positions were head of the Naval Communications Service, commanding officer Maritime Traffic, headmaster of the Naval War College, commanding officer of the Naval Atlantic Area, head of Mar del Plata Naval Base, and under-secretary of Maritime Interests. I have now been the director of the Argentinean Hydrographic Office since 2007.

As Hydrographer I was the commanding officer of the Argentine Coast surveying launch A.R.A. *Cormoran*, and head of Operations and second-in-command officer of surveying vessel A.R.A. *Comodoro Rivadavia*.

You have been the Hydrographer of Argentina for some years now, a period in which the SHN has changed its direct dependency from the Navy to the sub-secretariat for Technological Development and Scientific Innovation of the Ministry of Defence. What were the reasons for this change and what are the advantages and disadvantages (if any) of this new organisation?

The purpose of changing the dependency of the SHN from the Argentine Navy to the Ministry of Defence was to bring all the organisations under the Armed Forces, which conducts tasks in both the scientific and technological scope. Consequently, the National Meteorological Service (SMN), the National Geographic Institute (IGN), the Scientific and Technical Research Institute for Defence (CITEDEF) and the SHN are now branches falling within the scope of the under-secretariat for Scientific Research and Technological Development. This resulted in a closer relationship between the above-mentioned institutions and greater co-ordination of all their activities, by joining their efforts for a common purpose. In this sense, the SHN is currently carrying out joint projects with the other three institutions ranging from the development of numerical models with the SMN for wave and weather forecasts to the development of conversion modules with CITEDEF to automatically send tide-gauge signals to the receiving base and to publish them on the website. In addition, we continue to carry out our other usual, specific activities, namely Aids to Navigation tasks (the SHN serves 510 signals throughout the Argentine sea

coast and Antarctica), maintenance of the Argentine Standard Time and research work in the fields of oceanography, astronomy, marine meteorology and related sciences.

The survey and charting area for which SHN is responsible is very extensive and includes a part of the Antarctica. Can you briefly describe the characteristics of that survey area and tell the readers of Hydro International what the main challenges are facing SHN in meeting this task?

The primary challenges for the SHN in the cartographic field may be summarised in three main groups or areas: river navigation charts, the Atlantic coast and Antarctic charts. Every area has clearly distinctive features which require different strategies and approaches. While the main navigable waters have a special dynamism resulting from their volume and transport of suspended material, cartography efforts are primarily directed to reflect these changes properly. On the other hand, the lengthy Atlantic coast and port and waterways distribution require a different effort on the part of the SHN both with regard to the size of the area under responsibility and the relative distances to logistics and infrastructure support centres to carry out the tasks. Antarctica is especially difficult for the development of activities dealing with hydrographic surveys. The distance from supporting logistics centres, ice presence, changeable weather (generally hostile), and a working period ranging from December to March (extending to April in some cases), are all reasons for the tasks having to be postponed on many occasions.

The area may be divided into three different spots: one of them on the Bellingshausen Sea, another one on the north side of the Antarctic Peninsula and the South Shetland Islands, and the third one covering South Orkney Islands and the Weddell Sea. These spots have distinctive characteristics thus constituting different challenges for those responsible for planning hydrographic activities. Besides, the time of the year to approach the different spots differ, and their glaciological and meteorological behaviour is particularly peculiar.

More specifically, what part of the SHN resources are devoted to surveying and charting the internal waters? What is the effort devoted to surveying and charting the portion of Antarctica under Argentinean responsibility?

The SHN has the survey ship *Comodoro Rivadavia* and the oceanographic ship *Puerto Deseado* to carry out bathymetric surveys in the areas of responsibility. There are also working teams for other small vessels to conduct surveys in shallow waters. These vessels are also intended for collecting oceanographic data and for supporting aids to navigation in the sea coast. In Antarctica, hydrographic and oceanographic surveys are carried out by the oceanographic ship *Puerto Deseado* and by all Argentine Navy vessels that take part annually in the summer Antarctic Campaign. They also carry on board the staff devoted to keeping Antarctic aids to navigation and completing, correcting or improving the corresponding nautical charts and publications. In the near future, when the repair of Icebreaker *Alte Irizar* has been concluded, activities in Antarctica will be increased since navigation in more restricted areas will be possible with the Icebreaker.

Argentina has been a member of the Antarctic Treaty since its creation in 1959 (ratified in June 1961) and has ratified its more recent Environmental Protocol. What is the specific role of the SHN in the frame of these two international instruments? Does SHN assist science in the Antarctic region beyond nautical charting of the Antarctic area? If so, in what way does SHN assist Antarctic science?

Vessels from the SHN engaged in Antarctic campaigns contribute to checking compliance with regulations set out by the Dirección Nacional del Antártico Argentina (DNA), the National Antarctic Board, in order to see that the provisions established in the Antarctic Treaty System and its environmental Protocol are strictly adhered to. Among its activities, the SHN carries DNA inspectors on board to accomplish their specific functions. The SHN is also a member of Antarctic Toponymy Group in the Scientific Committee of Antarctic Research (SCAR).

Within the frame of the International Maritime Organization, it is also involved as a consultant member in the group dealing with the drafting of the Code of Polar Navigation. The Argentine Republic has a long-standing scientific tradition in Antarctica and the SHN has actively participated in nearly all the activities. Both through our own research activities and in co-operation with other Argentine and foreign institutions, we study ocean dynamics, tides, waves, currents, glaciology, marine meteorology, geology, for a better understanding and to provide more products and services to the general community.

Argentinean tour companies are also member of the International Association of the Antarctica Tours Operators. Does the SHN co-operate with this association in promoting the safety of navigation in the Antarctic waters?

Both IAATO and the SHN are members of the IHO Antarctic Hydrographic Commission, and they co-operate closely as shown by the technical visits to recreation vessels which arrive in the port of Buenos Aires. Hydrographic aspects dealing with the vessels' operation areas are discussed, and technical information and documentation is exchanged. These vessels provide their own surveys while the SHN provides the charts and nautical publications necessary to be used and evaluated.

The SHN contribution is reflected by the continuous broadcast of Notices to Mariners, namely NAVAREA, Coastal and Local warnings, the publication of charts, Sailing Directions, and List of Lights, etc.

In addition, some professionals in this service organise and deliver different lectures of the *Course on Antarctic Navigation* which the

Escuela de Ciencias del Mar (the Argentine Navy School of Sea Sciences) has been running for 22 years. This course is intended for mariners sailing in Antarctic waters.

At present, what are the main challenges for the SHN in the Antarctic region?

Today, one of the main challenges in the Antarctic region is the enhancement of safety of navigation since maritime traffic has increased significantly. Besides, ice retreat due to global warming has resulted in the exposure of danger zones which must be urgently and accurately surveyed and charted.

On the other hand, technological developments have given rise to a need for electronic navigational charts (ENCs) production in the area. This implies an additional effort as well as a need for a dedicated staff trained to produce and maintain these types of charts.

Aids to Navigation require an advanced technology and power supply with renewable energy. This is another reason for the SHN to be constantly concerned not only about obtaining suitable material and equipment but also about training qualified staff.

Over the last few years several nations started producing S-57 Marine Information Overlays containing ice coverage information. In what way is SHN providing the mariners with the latest ice information?

For the time being, the SHN is not planning any Marine Information Overlays (MIOs) publications.

Ice coverage information is given through NAVAREA warnings. The information provided is the result of the analysis of different satellite images by experts in glaciology from this service and of reports by mariners after direct ice observation.

A Hydrographic Service is usually seen as supporter of the actions that each coastal state carries out to preserve the marine environment. Can you tell us in which way the SHN co-operates in this activity nationally and internationally?

The SHN shows its support to actions by the State to preserve the marine environment by strictly complying with the corresponding regulations in its' own ships and also by taking part in research projects in co-operation with such national organisations as the Secretaría de Medio Ambiente (Environmental Secretariat - Patagonian Marine Project), Autoridad de Cuenca Matanza-Riachuelo (Authority for Matanza-Riachuelo Basin), and international organisations such as Comisiones Administradoras del Río de la Plata y del Río Uruguay (Administrative Commissions for the Río de la Plata and Río Uruguay) and the Comisión Técnica Mixta del Frente Marítimo del Río de la Plata (Binational Technical Commission of the Río de la Plata Maritime Front).

Furthermore, our scientific investigations contribute to a better understanding of the South West Atlantic Ocean and the Antarctica and their role in climate and weather variability. Examples are the regular monitoring activities on ocean-atmosphere interaction, the CO₂ balance, and heat and mass transport both at a local and regional level and also with a global prospect. The SHN is strongly engaged in the co-operation and contribution to environmental protection and sustainable use of resources.

Argentina was among the first States to constitute the International Hydrographic Bureau (nowadays International Hydrographic Organization IHO) in 1919. How do you see the present activities of the IHO? What is Argentina's contribution to it?

I highlight the IHO regional integration policy represented by the regional hydrographic commissions. In our case, the South West Atlantic Hydrographic Commission (SWAtHC) -with Brazil and Uruguay as the other members- not only fosters co-operation among our hydrographic offices but also facilitates co-ordination of activities in areas of common interest. It is also important to state that SWAtHC action has contributed to a closer relationship with Bolivia and Paraguay Hydrographic Offices for the purpose of increasing maritime safety in the waterway connecting us.

Argentina is a Member of the IMO, IALA and IOC. These three organisations have reinforced their co-operation with the IHO over the past 20 years. How do you see this form of integration of efforts and what is SHN's contribution to it?

We see this interaction as a necessary and fundamental articulation of organisations towards a better stewardship of the oceans. The SHN has been closely following its development and contributes to the programmes and projects of the above organisations as well as to their meetings. In the case of the IOC, over the last 20 years a member of our staff has been appointed as either a national representative or as an alternate national representative, and sometimes even with both representations at the same time, thus providing us with a unique opportunity to seek and support interaction and foster a greater synergy. Within the existing examples we can mention our responsibilities towards GEBCO and our membership of the GEBCO Sub-Committee on Undersea Feature Names (SCUFN).

The SHN, as the Argentine national member before IALA, has regularly attended the IALA Conferences held every 4 years as well as the

Assemblies taking place. We have also contributed to translating the NAVGUIDE 4th Edition - 2001 and it is our intention to take part in the IALA e-NAV Committee in a permanent way.

With regard to IMO, this service takes an active part in the Sub-Committee on Safety of Navigation (NAV), and Argentina has had a permanent representative to the IMO since 1979.

How do you currently see the development of the hydrographic science - What are the perspectives of young people in Argentina who want to join that specialisation? Do you have a message for these young people?

The present level of hydrographic science constitutes an increasing challenge due to exponential technological developments in all its fields, from geodesy and positioning evolutions to satellite images, the new multi-beam, laser and RTK bathymetric technologies, ENC's, and the new S-100 Standard. Argentina meets this challenge by gradually incorporating new technologies in accordance with our possibilities without setting aside the academic issue as well as the forward-looking approach. We are redoubling our efforts by training students in our Escuela de Ciencias del Mar where courses on Hydrography and Cartography are run. These courses are in the process of being recognised by the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC).

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