

NOWADAYS CHALLENGES ARE ENFORCED BY ADVANCED TECHNOLOGY

Human Resources in Hydrography

Certainly, all of us belonging to the hydrographic community have heard, read or even written, dozens and maybe hundreds of times about the importance of human resources when referring to the performance of reliable hydrographic surveys. That is a fact that upon which we have remarked and seen with some nostalgia, mainly because of the human tendency to consider that “Everything was better in the past”.

Nevertheless, whether we like it or not, things have somehow changed. The advancements of technology are marking tracks in the way our professionals are facing the challenge of extracting from nature the precise data to create products for the benefit of mankind. In this regard, it is suggested that we look back, and with the perspective that today's knowledge provides us, appreciate that really what was done by our ancestors, and the way it was done, is “unbeatable” by the spirit of service and sacrifice which they showed. We guess that for the new generations of hydrographic surveyors, the main challenge consists in being recognised as reliable and unquestionable professionals, devoted to contributing to safety at sea and the development of other relevant related international maritime activities.

As It Once Was

In the third Yearbook of the Chilean Hydrographic Office, 1887, Lieutenant Manuel Seáoret, commanding officer of the hydrographic group which was exploring the area of R  o Bueno, at the end of the year, very close to Christmas and New Year eve, recorded the following activities in the logbook of the hydrographic vessel:

“On the 24th, during all the day we continued working, finishing everything up to “El Manzanillo”, on the southern coast of the river, two kilometres apart from Las   nimas estuary”.

“25 December was holiday. We gave rest to our crew, to allow them to wash their clothes and repair the surveying boats”.

Here we have an example of an old fashioned way to work in hydrography. In effect, the chief of the hydrographic team, working all day before Christmas and granting to his group the concession of having some 'rest' time during the holiday to “wash their clothes and repair the surveying boats”, is nothing else than a true example of what have historically marked the selfless spirit of the hydrographic surveyor. For a job that is so dependable on the meteorological conditions couldn't be any other way; no matter the latitude or season of the year where the survey takes place, normally the hydrographic surveyor's task has been tough, highlighted by the constraints and pressure of time to do everything according to the instructions provided. Thus was Christmas in 1877 in this corner of the world. There must have been many other examples like the crew of the “R  o Bueno” unknown by common mortals, perhaps in the Malacca Strait, Mississippi River or the Aegean Sea.

Professional Changes for Hydrographic Surveyors

Most readers will argue that in those days the rhythm of user's demands was very much slower than today. It is true; but we also have to recognise that today the elements and instrumentation which hydrographic surveyors have access to are infinitely better than those used, for example, by Captain Robert Fitz Roy (Royal Navy, 1805-1856) Commanding Officer of H.M.S. Beagle on the expedition to South American coasts. At the time you try to compare the differences between present and old expeditions, you end up finding that really they cannot be compared. A valuable question which then arises is: were they better professionals than us, performing surveys with so precarious equipment whose results until today we admired by its precision?

For our understanding, the dedication and professionalism of the early hydrographic surveyors still constitutes the basis of our esoteric profession everywhere in the world. Our feelings push us to consider those “old chaps” to be sort of “supermen” gifted with aptitudes reaching the level of heroism. But where does this feeling come from? We are of the opinion that multiple factors exist. Some of them follow:

- The hydrographic tradition

The hydrographic surveyor as a person belongs to a profession which has always felt the weight of an unalterable tradition of effort and excellence in its work. Obviously this is translated into a legitimate pride to be the successors of people who were the ones who opened navigation routes which are today used by navigators throughout the world. This tradition has resulted in bridging cultures, countries and civilisations, as well as contributing to improving the world's geographic knowledge.

- The effect and influence of hydrographic surveys

Carrying out works to build a commercial port which will cost a nation thousands of millions of dollars; or for the construction of a

marina which will allow the development of tourism, are tasks that constitute a high responsibility to any professional who appraises the importance and consequence of his work, relative to the welfare of the population of his country. Unquestionably the hydrographic surveyor's ego can be boosted over time as the nautical chart which he contributes to is still in use by the mariners of the world, even after many years have passed since the data was collected.

- The feeling of considering itself different

The experience of being exposed to lands that have never been trodden before invites the hydrographic surveyor to think of himself as "a discoverer". The adventure of conducting these activities in very close relationship with nature, perhaps in a sort of marriage distinguishes the hydrographic surveyor as a person from other men.

It can be seen that all these factors are tightly linked with the way "the person" conducts and performs his profession. Certainly these differences have historically marked hydrographers, all over the world. No matter what the changes are, the answer to the question, is it the same to be or not a hydrographic surveyor, is not an easy one. Notwithstanding, in our opinion we are different. But we still have a second question: are today's hydrographic surveyors as good as former ones? Let's think if we should expect any changes that could affect in a negative way the profession. The following characteristics are seen as the basis of the hydrographic surveyor's success:

- Self control
- Initiative
- Temper
- Knowledge
- Co-operation
- Manners
- Wisdom
- Toleration
- Measure
- Honesty
- Responsibility
- Good health to work in tough conditions
- Ability to work in group and to lead working teams

We do not see any reason why new professionals might be questioned in relation to the exercise of these qualities and abilities. From our perspective, modern technologies should not on their own, be responsible for lowering the quality, confidence, responsibility, efficiency and effectiveness of the new professional in the field of hydrography. We are confident that there are no reasons to worry about the continuous practice of the above mentioned characteristics. We are optimists and we think that the most important resource of the hydrographic activity - the hydrographic surveyor - will keep on working with the same excellent team spirit and expertise with which he has worked until today. Nevertheless, this positive outlook should provide us with confidence in excess. We must be on duty to ensure that future generations, through proper training and education, will understand the importance in keeping this spirit and to practice it on a daily basis. This is especially relevant when considering that every day and with ever greater force technology allows man, in all the activities of his life, to work alone, disregarding the help of others. Thus, labours that until not long ago were very difficult to solve for a single person, today are easily feasible by machines and advanced systems of automation and robotics. The calculations are fast and infallible from field computers which provide support and help to surveyors' activities. Therefore, self discipline is of the most importance as there is nobody checking our own mistakes and honesty. The ability to work in groups might not be as important as in the past, but due to the characteristics of modern systems, we have to learn to work alone; and sometimes that is not easy.

One of the aspects with more influence nowadays is communications facilities. We do not have all the time to provide answers as in the past, and we cannot argue that "there is no information". In general terms information exists and answers are needed nearly in real time. We are requested to react immediately and therefore almost all characteristics identified above need to be practised having this new scenario in mind.

Technological Tendencies

The effect on the hydrographer's professional preparation

Now let us focus our attention on tendencies which can be observed in technology, and a couple of very particular effects which deserve special attention by our present and future professionals.

We observe two main effects: those originating from sophisticated echo sounders (multibeam echo sounders) and those by Internet communication, in general. Their effects are already being noticed in our offices.

- Increasing volume of data

Now, due to the introduction of multibeam technology and standards that request 100 per cent of coverage, we are faced with the need to manage huge amounts of data that need to be processed in very short time.

- Troubles in keeping hackers away from our information management systems

Paradoxically as knowledge advances, undesirable elements in society quickly become interested in using these facilities against communication data networks, causing serious uncertainties within the user community, and deep inquiries within the organisations, that hitherto had never realised how vulnerable their systems were to the action of these kind of intruders.

The effects of these will become evident, for sure, in new faster and more user-suitable software, and in more restrictions which will be used by organisations trying to keep their information secure. Observers of this type of change in human sociological structures are predicting a distinction between the organisations which are able to process information quickly and those that are not able to do so; for them, in the general world perspective, this may cause disastrous effects in joint projects between fast and slow countries.

At the same time hydrography will not be outside from the consequences of the 11th September attacks on the United States of America. This effect, jointly with the fact that bathymetric data will be required by users in real time, hydrographic organisations will be forced to develop much more secure and restrictive back-up systems than existing ones.

Alvin Toffler in his book "The Change of Power" predicts the keys for the future, which he enunciates as: "interactivity, convertibility, connectivity, omnipresence and globalisation". According to this author, these characteristics of the modern times will

determine a total transformation, not only in the form in which we send each others messages, but about how we thought we saw ourselves in the world and, therefore, where we are in relation to our governments.

How this will affect hydrographic activities will depend on the capacity to keep unchangeable the particular "personal" characteristics of hydrographic surveyors. Without going too far we have what in 1996 the FIG identified as some of the more well-known changes which had occurred during the previous ten years in relation to two topics: the way to conduct businesses in the hydrographic environment and the personal perspective of professionals in general. The following two tables provide the comparison between "before" and "after"; they give an strong definition of the rhythm with which hydrographers should react today, and also to the institutions that should keep the best facilities for their Continuing Professional Development (CPD).

Being aware of this situation, FIG's willingness is to invite learned institutions to consider under the professional hydrographic education pro-grammes umbrella, the so called concept of "Continuing Professional Development (CPD)", not only in relation to technical matters but also on human aspects.

The Human Factor

We are of the opinion that the "principles" of what we call the human factor, will be decisive in keeping our profession at the appropriate prestigious level. Having true leaders who are able to look beyond the computer science, not to reach immediately for the solution provided as a medicine by the systems, but get involved in finding the origin of the problem and with a team approach, will be vital for hydrographic offices. If on the other hand, those who are called upon to cultivate leadership rely exclusively on the technology to achieve their goals, losing the human contact with their teams, the results will be meagre, and perhaps disastrous.

Finally, a message based on our experience. For those developed hydrographic offices with access to modern technologies and good infrastructure, we recommend keeping personnel matters at the highest level of priority and to consider the allocation of time for their training - to keep abreast of the technology - and for the improvement of their personal relations.

For those hydrographic offices under development, that do not have such advanced means and normally rely for their results on the will and effort

of their human resources, we re-commend exploring the possibility to dream collectively with other offices. It is within those dreams where the solution to success and the way to import technology might be found.

For all hydrographic offices, we recommend that human resources are considered as the most valuable, no matter the level of technology which they have experienced.

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