

**25 YEARS OF SERVICE DEVOTED
TO FRENCH HYDROGRAPHIC SURVEYING**
In Memory of Ingénieur en chef
Jean-Claude GAILLARD
(1945 - 1997)

by F. MILARD ¹,

with assistance from former SHOM directors and active and retired staff members

Ingénieur en chef de l'Armement (hydrographe) Jean-Claude GAILLARD, Deputy Director of EPSHOM, died on 11 January 1997, following a short and terrible illness. Beside his family who were cruelly affected by his death, the SHOM staff were deeply saddened by the loss of a man who was recognized by all as being someone out of the ordinary. Whether we had the privilege of having him work under us, or the honour of having him as a boss or simply were lucky enough to have him as a friend, we wish to honour his memory and to show our gratitude for the eminent services rendered to both French and international hydrography. Contributions have been made to these few lines, either directly or indirectly, by all those who knew and appreciated Jean-Claude GAILLARD from the time of his arrival at SHOM in 1971, and they are a tribute to him which could have no better place than the *International Hydrographic Review*.

Born on 6 September 1945 near Nantes, Jean-Claude GAILLARD completed his further education at the "Ecole centrale" in Paris. After a short period at the "Commissariat à l'énergie atomique", he joined the "Service hydrographique et océanographique de la Marine" (SHOM) in 1971.

¹ Ingénieur général de l'Armement (hydrographe), Director of SHOM (Service hydrographique et océanographique de la marine), 3, avenue Octave Gréard - Paris 7ème, BP 5 - 00307 ARMEES - France

That year marked the end of a reorganisation of the French Hydrographic Service which was one of the many small consequences of the big changes which came about in the world and in France at the end of the Second World War. In order to meet the newly-emerging hydrographic and oceanographic needs, both civilian as well as military, the "Service central hydrographique de la Marine" became the "Service hydrographique et océanographique de la Marine" (SHOM). Concurrently, there was a decentralization operation - before decentralization had been invented - with the land technical division of the department leaving "the grand 13", a lovely town house on the rue de l'Université in Paris, and moving to Brest in October 1971; this then became the principal establishment of SHOM (EPSHOM). It was this group of 260 people that Jean-Claude GAILLARD joined when he was appointed as a civil engineer to the completely new "calculation and documentation centre".

This centre, which was already supposed to run a marine data base, comprises a specialized library as well as the department's computer facilities, which are required in order to carry out scientific calculations, data capture, filing, as well as exploitation and distribution of data. Jean-Claude GAILLARD brought with him the skills of an engineer from the "Ecole centrale" and his expertise in informatics, as well as the enthusiasm of his total professional commitment to two major projects : CARTAS and SATAD.

The CARTAS project (computer assisted cartography) originated because of the increasing volume of information needed in the production of nautical charts and, within the framework of this project, it was planned to automatize the formatting of data and the plotting of charts. The first system which came into service in 1974 offered the cartographer the possibility of digitizing existing charts, of manipulating and maintaining digitized data files and enabled him to automatically plot the matrixes of new charts. As from 1977, it was the production of nautical documents which was to benefit from the advantages of automation, starting with Lists of Lights.

The SATAD project (system of data acquisition and automatic data processing) aimed at installing a system onboard hydrographic ships which would facilitate data capture at sea, their verification and their exploitation. The first system was developed to equip the oceanographic vessel D'ENTRECASTEAUX as from 1975. Designed around a shipboard Mitra 15 computer, it provided in real time the acquisition and classification of positioning and sounding data, and served to evaluate the automation methods used in coastal or oceanic hydrography such as hydrology or marine geophysics. This experience enabled good programmers to be trained and resulted in the widespread use of automatic data capture and data processing by the whole hydrographic fleet, with the second generation of the system, called HYDRAC (data capture) and HYTRAI (data processing), developed as from 1980. One of Jean-Claude GAILLARD's main concerns was to resolve the problem of heave compensation, which influences the automation of the processing of the sounding but no satisfactory solution for hydrographic launches was found until the 1990's.

It was during the trials of the SATAD system that Jean-Claude GAILLARD discovered hydrographic and oceanographic work at sea and he became full of enthusiasm for this singular facet of the engineering profession. Conscious that his status as a civil engineer would not allow him, at that time, to fully embrace a maritime vocation, he agreed to take a professional examination - which was not just a simple formality and the preparation for which came on top of a flurry of other important

activities - to become in 1979 a hydrographer "ingénieur de l'armement hydrographe". He thus chose, in spite of the disadvantages linked to the rather unfavourable statutory conditions, to show his deep attachment to SHOM by not looking for a better paid job outside which he would have had no problem in finding.

As Deputy Director of the Atlantic Oceanographic Mission "Mission océanographique de l'Atlantique" (MOA) onboard the D'ENTRECASTEAUX from February 1981 until November 1982, Jean-Claude GAILLARD confirmed his many intellectual and human qualities. He proved to be a brilliant engineer, endowed with a rigorous scientific mind and was always anxious to find the best and most elegant solution to every problem. Despite his flawless mathematical expertise, he only used formal demonstrations and calculations after having researched the physical solution which his good sense and accurate perception of the environment gave him. This enabled him both to explain to his subordinates his conception of the problems by placing himself at their level and to report precisely on the work undertaken and the difficulties encountered. Whilst concerned about fairness and attentive to staff needs, he could nevertheless be severe for any lacking in the quality of the work carried out. In the difficult and arduous conditions of work at sea in bad weather in the North East Atlantic, he was an example to all of someone who had courage and a remarkable strength of character. Curious by nature, he was very interested in the work of Hydrographic Services in other countries and the difficulties that these services encountered. Easy human contacts enabled him to get the most out of these encounters, international operations and meetings in which he willingly participated, without being put off by language barriers. At the beginning of 1982, he was able to pride himself on having equipped the mission with the means and procedures which enabled it to autonomously process all of the data captured both in hydrography and in hydrology; he thus played an important role in the transition of SHOM's sea operations into the era of "distributed" computing. He was awarded the Binoux prize in 1985 by the Academy of Science for the role he played in SHOM's mastering of new technologies, from the beginning of computer-assisted cartography to the widespread use of positioning by satellite, including the experimentation of a new marine gravimeter.

On returning to EPSHOM in 1982, Jean-Claude GAILLARD was head of the computer centre up until January 1985. This period was marked by the transition from the centralised data processing by batches, carried out since 1978 on the main computer CII-HB 7730, to interactive data processing with the new configuration DPS8 Multics which came into service in 1983. Jean-Claude GAILLARD knew how to cope with this major change which opened the way to a computer explosion in all areas and to its spreading to all departments, and to all categories of personnel; in particular he always remained attentive both to the needs of the EPSHOM departments as well as to the operation units at sea. After a brief period spent in the cartographic division in order to prepare the necessary adaptations in the methods and the organisation used, Jean-Claude GAILLARD took over the functions of Director of Mission, from October 1985 to September 1991, first in Toulon where he ran the "Mission océanographique de la Méditerranée" (MOM), and then in Brest at the head of the "Mission hydrographique de l'Atlantique" (MHA). He clearly "blossomed" in this role as "conductor" and his "mastery" resulted in him receiving full support from both ships' crews and from the hydrographic units at sea. With LA RECHERCHE and the GAZELLE, he directed several coastal surveys in the Mediterranean, and completed the resurveys of the Corsican and Provence coasts, in time for the reorganisation of

SHOM's missions which took effect in September 1988. During these two successive assignments, his talents as a leader, engineer and officer were unfailing and he knew how to make and maintain constructive relationships both in military and civilian circles. Those who worked with him or who served under him during these seven years will have, for a long time, a deep feeling of gratitude for his availability and his concern to put everyone in a position to give the best of himself. This concern stemmed from a desire to educate people and from the fact that he was conscious that his most important task was to train people.

This period was as interesting from a technical point of view as the earlier ones had been, with, in particular, the putting into service at the MHA of the first multibeam sounder installed on one of SHOM's vessels.

It was in 1988 that the first two coastal hydrographic vessels, of the LAPEROUSE class, came into service, thus starting the often delayed renewal of SHOM's hydrographic fleet. Whilst the LAPEROUSE was equipped with a hydrographic sonar adapted for searching wrecks and obstructions, the BORDA was equipped with the Lennermor multibeam sounder, developed for SHOM by Thomson Sintra ASM. The trials of this sounder had just started when Jean-Claude GAILLARD took over the directorship of the MHA. During the two years which followed, up until the commissioning of the sounder in 1990, several trials were necessary and Jean-Claude GAILLARD actively contributed to seeking the solutions needed to improve the sounder prototype. A study both theoretical and in situ of the acoustic emission diagrams of the sounder, a study of the effects of platform movements on the behaviour of the sounder, an improvement of the processing algorithms, were all subjects which enthused the engineer who was always passionately interested in signal processing techniques and the hydrographer who was aware of the importance of what was at stake: to qualify the sounder against international standards of hydrographic surveying. The study of the precision of the sounder and the evaluation of its ability to detect and mark the dimensions of wrecks and obstructions were essentially carried out during operations off south Brittany where the MHA was undertaking hydrographic surveys required to redo the nautical charts of the area. Putting this first multibeam sounder into operation also involved a change in the survey procedures and in the data processing procedures. In order to take full advantage of the notion of surface sounding with total ensonification of the bottom, it was necessary to define and develop a completely new computer processing chain with automatic functions - rendered necessary by the sheer volume of soundings to be processed, which were far greater than those obtained from traditional surveys with a single beam sounder - and to adapt the drafting procedures in relation with the definition of new types of documents combining digital field models and characteristic soundings. Jean-Claude GAILLARD, as usual, knew how to channel energies and effectively guide the necessary evolutions for this project to succeed.

Whilst overseeing this renewal of methods Jean-Claude GAILLARD took over, at the same time, the heavy responsibilities of safety of navigation on the French coasts, which the surveys he was directing involved, from Calais to the Isle of Yeu. The "GAILLARD Method" was as effective as ever: he used his unfailing creative imagination to solve both technical questions as well as organisational problems, constantly adapting to the circumstances but always giving priority to the personnel. If we had to define this method, we could try to describe it as a balanced mixture of a desire for immediate effectiveness and a concern to prepare for the future - in particular through human investment - always looking to increase the abilities and autonomy of

each one. It is only justice if Jean-Claude GAILLARD was one of the rare hydrographers to be awarded the "Mérite maritime".

Jean-Claude GAILLARD returned to EPSHOM in October 1991, first as Deputy Director in charge of general studies, and then as head of the "Centre océanographique militaire" (CMO) created in 1990. This creation consolidated SHOM's role as coordinator of activities working towards satisfying the defence needs with full knowledge of the marine environment. Although the organisation and responsibilities of the CMO were clearly laid down, there still remained a lot to do. Having understood straight away the importance of this creation and the opportunity for modernisation that it offered SHOM, Jean-Claude GAILLARD immediately involved himself in the development of the CMO. The delicate phase of the "rise in power" of this centre made the organisational questions and objectives pass from a theoretical status to a practical reality. The matter was delicate because although the decision to create the CMO had been taken within a relatively easy budgetary framework, its application proceeded in a much less favourable context. The recruitment of specialised personnel, for the most part beginners, their integration into an organisation which was also new, the assimilation of preexisting structures, seeking the necessary funds for the aims of the centre - the allocation of which was far from being automatic - all these actions benefitted from his never-ending energy and comprehension of human nature.

The CMO personnel were particularly impressed by Jean-Claude GAILLARD'S dynamism, as well as his ability to map out the route to follow and his ability to encourage his subordinates. He also had to demonstrate a certain amount of self sacrifice to carry out this fundamental organizational work, leaving to his young assistants the more rewarding technical tasks, including relations with the Navy, with the industrial and scientific world or with the DGA (délégation générale pour l'armement), whilst channelling their impetuosity and coping with the inevitable conflicts that resulted. There again, efficiency, the valorisation of energies and skills were his only criteria. This is a good illustration of the paradox of a personality always attracted by the light, but whose sense of responsibility and whose ability to analyse a situation make him choose to remain in the obscurity. Jean-Claude GAILLARD thus succeeded in overcoming the organisational and technical problems, albeit already quite complicated, to give a certain style and a soul to this new centre.

It was without hesitation, but with the feeling that he had completed the most exciting part of his professional life, that Jean-Claude GAILLARD gave up his post in 1994. He then had the possibility to change his horizons but preferred to stay at EPSHOM as Deputy Director. He was thus able to ensure that the vitality injected by the creation of the CMO benefitted the whole establishment. Concerned that there should be an even distribution of skills amongst the various centres of EPSHOM to increase the overall performance, Jean-Claude GAILLARD placed at the disposal of all his intuition for organization and his deep knowledge of all the categories of personnel which make up an establishment as diverse as EPSHOM.

Notably in charge of administration and finance, he was both Director of Human Resources and Financial Director, without however losing an interest in the technical aspects. The self-sacrifice which he demonstrated in these tasks was not surprising; this was just the continuation of his work at the Centre océanographique militaire, but it took on another dimension because it was within a context of increasing constraints and re-evaluations against which he worked relentlessly so as to enable

others to pursue the work more productively. His sharp mind and speed of analysis enabled him to master, for the great benefit of all, a complex financial situation. Associated with his experience and exceptional skills of dialogue, these qualities made him play a growing role in the definition of the major technical orientations of the department, at a time when the ambitious objectives that SHOM had set itself came up against increasing difficulties.

Also, as Director of the hydrographic school, Jean-Claude GAILLARD was the driving force behind the major remodelling of the hydrographer's initial training, made necessary by the rapid evolution in both techniques and equipment. His efforts notably brought about the modernisation of the courses and a significant enriching of the education related to oceanography and geophysics, both for naval officers and engineers. He played an active role within the advisory board of ENSIETA (Ecole nationale supérieure des ingénieurs des études et techniques d'armement), at a time when the new training thrust of this school, which produces SHOM's future hydrographic surveyors, electronic engineers and computer engineers, was being defined.

His human qualities made him more generally a most respected director of personnel; he weighed up the human and organizational problems, and knew how to deal with them with the necessary serenity and firmness and was always concerned about the need for continuing training at all levels. Finally, his integrity made him the person to whom people in difficulty, or those simply in doubt, naturally turned. Many worries, sometimes real misfortunes, ended up in his office, where the persons concerned always found an attentive listener, or indeed concrete help. His ability to listen to people and to analyse the most complex situations, just like his concern for justice, remained incomparable, even when he was struck by illness.

Jean-Claude GAILLARD'S illness was a shock to all those who, selfishly, knew the importance he had. The firmness with which he immediately considered all the possibilities was characteristic of him, just like the energy he expended to ensure that everything was done. He was filled with anguish at the thought of leaving something unfinished and was concerned about still being useful, but never was he filled with despair nor discouragement. During these difficult moments, we were distressed at only being able to repay him a small part of what he had so generously given to us.

After his death, which has left such a big void, the least we could do was to pool our memories and share them with the international hydrographic community, to which he was so justifiably proud to belong, at the end of an unusual career going from being a computer expert to a real hydrographer. We thus pay him a tribute, he who knew how to give so much without counting and who represents, at the centre of the main activities of a large technical service, twenty-five well filled years in the life of the French Hydrographic Service.