

DCN: moving toward a new efficiency

Summing up the lessons learned from the Gulf War for the U.S. armed forces, Colonel Harry G. Summers stressed the importance of the naval component in new forms of war. The West, through doctrines, has reoriented naval forces toward offensive actions, allowing forces projection and rapid reaction military responses based on aircraft carriers and destroyers. In France, projection is also a core concept. In this context, France has begun a large-scale renewal of its military ships, relying on DCN and its experience. In 2005, DGA, the French procurement agency, entrusted prime contractorship for the multi-mission frigates (FREMM) to OCCAR, which on 16 November 2005 awarded the frigates design and production contract to Armaris (joint subsidiary of DCN and Thales) and Orizzonte Sistemi Navali (joint subsidiary of Fincantieri and Finmeccanica) on behalf of France and Italy. This programme is the biggest of its kind ever carried out in

Europe (17 frigates for France and 10 for Italy). In parallel, DCN has teamed up with international partners for industrial and technical cooperation projects, enabling it to benefit from major economic synergies. The Scorpene and Horizon programmes are two good examples. Scorpene, the conventional propelled submarine, was jointly developed by DCN and the Spanish company Navantia. The frigate's prime contractorship has been entrusted to Horizon SAS, a joint-venture between Armaris and Orizzonte. Among other major programmes for DCN are the French programme Barracuda (aimed at replacing the nuclear attack submarine fleet) as well as the future aircraft carrier. The French Navy is also paying particular attention to the BPCs (Bâtiment de Projection et de Commandement) Mistral and Tonnerre. The French Marine Nationale recently indicated its satisfaction with this programme. DCN has gone from a difficult

relationship with the French Navy (until DCN was transformed from a state company to a private one, on 1 June 2003), to a positive one today. In order to achieve this (to meet the private legal process), DCN had to undergo a major transformation. Although the company is still 100 per cent owned by the French government, under new DCN CEO Jean-Marie Poimboeuf, its working methods have completely changed. DCN now pays close attention to its customers' needs, ensuring complete satisfaction of the Marine Nationale regarding its fleet maintenance and high availability of ships. Indeed, through-life support has become a challenge of prime importance for the company. Meeting deadlines (through-life support and ship deliveries), is a top priority for the newly privatised company, and one that DCN also respects regarding its export customers, as illustrated by the Sawari 2 contract or Scorpene submarine sold to Malaysia and India.

Interview with Jean-Marie Poimboeuf, DCN CEO

Given that the Defence industry has seen major European regroupings over the past several years, what role do you see for DCN in the naval field?

Based on solid programmes (FREMM, BPC, through-life cost, export submarines and tomorrow's Barracuda), DCN is well positioned to play a major role in the consolidation of the European naval sector.

Cooperation programmes are numerous, whether with Italy (Horizon, FREMM, torpedoes), Spain (Scorpene submarines), or the U.K. (future aircraft carrier), paving the way for European regroupings. DCN will also be pleased to work with TKMS when the opportunity arises.

Negotiations between DCN and Thales have already begun. What will this rapprochement

bring to your company?

This rapprochement with Thales will increase our commercial effectiveness as well as improve the management of large-scale projects thanks to the unification and facilitation of offer structures and export projects as well as cooperative undertakings. Other synergies will be developed concerning combat management systems or services. Finally, other complementarities between the two companies will allow us to increase the number of common offers, which is in the best interest of our clients.

What is DCN's position regarding exports?

DCN is still closely following all major export markets for armed ships: the Middle East, India, Pakistan, South East Asia, Australia and South America. ■

Toward a culture of results

► Challenge 2008 trophy

Created to encourage progress, "En avant 2005" (Moving Forward) and "Challenge 2008," both voluntary programmes, serve as incentives for DCN staff to launch progressive undertakings. While slow to get off the ground, the latest programme has become popular among staff. During the last edition, 97 applications were examined, for the most part developed by teams. The selection committee chose 12 files (three nominations for each of the four categories), and the jury, headed by Jean-Marie Poimboeuf, selected the winners. Prizes were awarded during an official ceremony, marking the importance of this initiative.

► Progress Roadmap

Tested for the first time in 2006, the Progress Roadmap is a schedule outlining objectives for all parties: whether financial (improving productivity and offers), customer relations, production (optimising the production process) or human relations (skills management, capitalising on specific competencies). In addition, a management referential, based on the European EFQM model, makes it possible to evaluate management's progress on a scale ranging from 1 to 5.

► Suppliers' adaptation

DCN would like its suppliers to adapt to its new working methods. In this respect, DCN has developed a suppliers' development plan. Quality audits have thus been organised, with impressive results so far.

► Communities involved

Every decision taken by DCN, each change or development in a programme has an impact on the communities where DCN has facilities. This impact is being evaluated in order to better manage DCN's actions in terms of how they affect cities.

► IQP

The IQP (ingénieur qualité projet) plays a major role in the company. Reporting to the director of quality control, the IQP can block any project in the event the latter does not conform to standards.

New status, new methods, new culture

On 1 June 2003 DCN became a private company; its staff are no longer government employees. This change has brought about major reforms, especially in terms of workflow organisation as well as "company culture," without which the transformation of the company would not have been successful. Today, new methods have been implemented, and the staff, from CEO to workers, are committed to providing customers with top quality, i.e. meeting customer expectations within specified deadlines. Every year, quality control is reviewed: during the last audit, AFAC-AFNOR estimated the process to be on par with that of the top European private companies. This has been achieved through ongoing self-examination based on a respect for deadlines and goals established by Jean-Marie Poimboeuf. This year, the CEO of DCN has set four goals: meeting deadlines (a big issue for all defence companies, taking into consideration programme complexities), developing customer relationships using objective indicators (meeting the client's needs as best as possible), keeping within budget, as well as development of a company culture which forms the basis for a truly unified group. Today DCN can be proud of its transformation, having shifted from a culture of means to a culture of results to become one of today's most efficient companies.

The through-life support revolution

Every Monday morning, the senior officer in charge of maintenance (through-life support), provides Jean-Marie Poimboeuf with a summary of the situation. This is noteworthy, as maintenance activity, which totals 30 per cent of DCN's turnover, reflects the Marine Nationale's satisfaction. Since its transformation, DCN has met its clients' needs in terms of availability of ships, and regularly beats availability records: 1,286 days for nuclear attack submarines in 2005, 71 per cent availability of the French fleet in 2005 and 81 per cent in May 2006. Maintenance contracts have on average 25 per cent of unexpected damage or problems. But according to the administrative procurement contract code (code des marchés publics) this rate of uncertainty is unacceptable. Moreover, there were too many different contracts regarding maintenance activities, and a rationalisation was necessary. DCN and the French Navy thus jointly carried out a major transformation, regrouping maintenance among 50 contracts, while modifying remuneration, basing it on ship availability. The first contract of this type concerned the nuclear attack fleet. In 2004, 12 contracts were regrouped under a new formula, paying DCN 40,000 euros for each day of availability. This new concept has generated a great deal of interest worldwide, especially in the U.S. Navy. Since then, the SNLE (SSBN) frigates, aviso, mine hunters and torpedoes have applied the same kind of contract. Of the contracts opened to invitations to tender, 70 per cent were awarded to DCN, and in total, the French ship manufacturer has been entrusted with 95 per cent of maintenance for the French fleet. DCN has even granted a 20 per cent price reduction regarding maintenance activity. In this sector DCN is also promoting innovative ways of ensuring through-life support. For instance, in partnership with the German company Doorbos, a new system has been tested for hull stripping. The anti-submarine warfare frigate Dupleix hull was cleaned by a robot using UHA (ultra-high pressure). The hull was completely cleaned in two weeks. Soon, the CV Charles de Gaulle will be stripped using this system. DCN is planning to renew its maintenance contracts in 2008.

Barracuda programme: future of the nuclear submarine

A global project

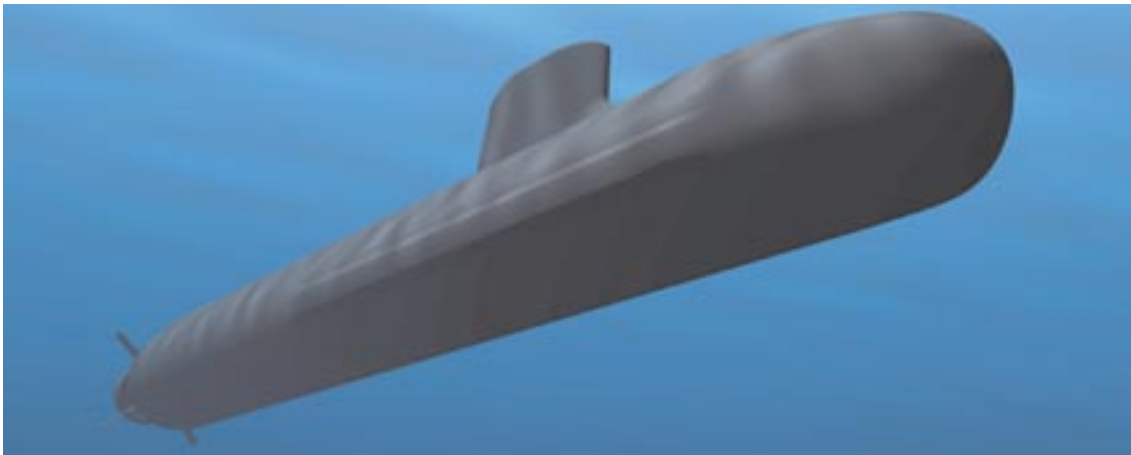
The Barracuda project, today at the end of its definition phase, is aimed at replacing Rubis-class nuclear submarines (in Améthyste version). All DCN facilities are involved with this major programme (Cherbourg, DCN propulsion, Toulon...). Over the next 20 years, it will include the development (more than 10 years of work), industrialisation, logistics and production of a submarine every two years. The contract also includes the through-life support without which the Marine Nationale could not operate these ships. Through-life support provides the maintenance of the first three submarines until 2026.

Project managers

The Barracuda programme is being carried out by DCN and Areva TA (Technicatome), an independent partnership, with each company in charge of its own workload. The prime contractorship is ensured by DGA and CEA regarding nuclear propulsion, in collaboration with French Navy staff.

► Features

The Barracuda measures 99.5 metres long and weighs 4,765 tonnes. It can descend to a depth of 350 metres and reach a speed of 25 knots. The submarine is powered by a nuclear engine derived from those aboard the SNLE (SSBN) Le Triomphant-class and CVN Charles de Gaulle. It is also powered by a combined mechanical and electric propulsion. Its armaments include wire-guided heavy torpedoes and SM39 anti-ship missiles.



A tight schedule

The Barracuda programme was first discussed in 1997. Following a feasibility study transmitted to the Defence Ministry in 2001, it entered the definition phase in 2002, wrapping up on 22 April 2006. A first offer was expressed on 25 June 2005. DCN expects a firm order soon to launch the programme. In the event DGA accepts the contract, the first nuclear submarine will be delivered by mid-2016, following which the navy will carry out a 10-month test period. Barracuda will hence enter service by 2017.

Barracuda assets

Compared with nuclear submarines in service, the Barracuda-class will be slightly different, featuring significant improvements. Its acoustic detection capabilities have been notably improved with a suspended system inside the submarine (propulsion). The crew, which will for the first time include women, has been reduced to 60 personnel, and the rear of the ship will not be armed (automatic controls). Measuring 150 m², the vessel will be able to accommodate 150 persons for three years. The Barracuda will be able to navigate without any operational restrictions and in extreme conditions. Its mobility and autonomy are much greater than the preceding class. It will be fitted with complete weapon systems (naval cruise missiles, Exocets, heavy torpedoes, mines). One of the requirements is that the Barracuda be capable of accommodating 15 commandos and their equipment. Not to mention its intelligence means (communication, surveillance equipments, etc.).

► Nuclear safety

DCN has always paid particular attention to nuclear safety measures, anticipating their implementation in order to minimise effects on the programme. Contrary to the Rubis-class, the Barracuda file was examined even before the construction phase..

► 3D studies

To design the SNA nuclear attack submarine, DCN acquired three-dimensional software, called CADDs, developed by the firm PTC. Today, DCN handles its own design activities using this software, which has been customised to meet the company's needs.

► Through-life support

In response to the needs of the client, the French Marine Nationale and DGA, through-life support has been taken in consideration from the design phase.

Paying less for more

► Continuing education

Because of the poor job prospects it offered in the past, the role of “buyer” did not attract many people. But today, buyers play a key role at the heart of the company’s activities, attracting many people. Purchasing has become an important career step, one that requires training in the use of new tools. DCN has thus made significant investments in training, which today involves more than 300 persons.

► Teamwork

In order to optimise its internal work organisation, DCN favours teamwork between buyers and consultants. Training and information workshops have been developed in this area, as well as more specific initiatives on large projects, such as the FREMM or Barracuda.

► European dimension

In Europe, in order to increase gains, Navantia, Fincantieri, BAe, VT and DCN joined to create the Warship European Procurement Club in mid April 2006. Each company is a leader in its field. The idea is to determine if similar acquisitions exist among the companies. A rationalisation and a globalisation of these acquisitions could thus be developed.

► Creating value

In addition to improving quality, DCN strives to use the experience of its subcontractors, which it views as true partners in creating value. DCN and its suppliers are always on the lookout for the best possible organisation, favouring innovative solutions. These suppliers are in regular competition, with the possibility of communalising acquisitions.

Reducing costs, remaining profitable

In today’s increasingly competitive environment, DCN has set two goals: earn enough in order to grow and lower prices to the benefit of the French Navy as well as export customers. This cost decrease for the same performance satisfies the needs of both the Marine Nationale and its stakeholder (Ministry of Finance). This policy implies a decrease in acquisitions (external expenses), which account for more than 65 per cent of operating costs.

DCN’s new “buying” tools

In 2000, DCN adopted a special accounting system enabling it to prepare its transition from state-owned company to a private firm. Prior to 2003, each DCN facility had its own buying information system, with the data taking about three months to reach head office. Today, to achieve greater efficiency, DCN has modernised its finances. Projects are now managed with the Oracle system (on 9 May 2006, Toulon became the first facility to be equipped with the new system). The data integration tools that streamline account certification and purchase management are based on the MAAS system (Management Achats Appros Stocks), which will be in development until November 2006. All the data will be networked, and DCN will soon have for the “buying” part, a decisive and transactional tool. Moreover, collaborative tools have been created, such as the “Metier Intranet,” which includes a suppliers file, all of the framework agreements (about 100), as well as a system of notes designed to assist buyers in their choice of suppliers. A website dedicated to subcontractors was also recently launched to help them quickly find the right contacts within DCN.

Before the Barracuda, the FREMM

Thanks to a strict methodology employed by the buyer and senior engineer in charge, cost reduction opportunities have been found for about 20 pieces of equipment. As of 1 June 2005, the best offer for these items was 32,378 thousand euros per frigate. A year later, the same offer was down to 26,407 thousand euros. In total, the money saved per frigate totals 5,971 thousand euros (18.4 per cent). The same cost reduction efforts have begun with the Barracuda class submarine, with the goal of achieving 25 per cent in savings on about 30 items. Gains could also be made in the area of logistics. DCN stresses that these gains reflect the three axes of DCN management’s buying policy: making better purchases (globalising acquisitions when possible), fewer purchases (thanks to enhanced productivity), and useful purchases (correct acquisition to meet the need).

The impact of earnings on “acquisitions”

On 13 January 2006, 80 buyers gathered to present their schedule and priorities for the year ahead. The stakes are high as the impact of earnings on this sector is significant, notably on the results account. Some have mentioned an earnings figure of 280 million euros. DCN will thus pursue its efforts in this direction, further modernising the sector, to better serve the interests of its French and export customers.

Human resources evolving

DCN’s buying directorate has made substantial efforts to increase its staff resources. In 2002, the company had 516 ETP (Equivalent temps plein: full time) versus 370 on 1 January 2006. Overall, 49 per cent of departures involved public sector workers while 82 per cent of engineers were recruited externally.

At the heart of the Second Aircraft Carrier

The programme

Since the decision was made to build two aircraft carriers for the French Navy plus the CVN "Charles de Gaulle," the second aircraft carrier (PA2 programme) has always been mentioned in successive French defence programming laws. Preliminary studies have been carried out since 2003. In February 2004, President Chirac chose non-nuclear propulsion to power the French aircraft carrier, launching a cooperation programme with the British CVF (Future Carrier Vessel) for the Royal Navy, even though the embarked aircraft are different (JSF and Rafale). DCN and Thales approached the DGA with a proposal to join their competencies and knowledge within a joint structure called MOPA2 (65 per cent owned by DCN and 35 per cent by Thales), charged with leading the programme from conception to completion and entry in service. Studies have been carried out with two goals in mind: first, to determine if the British CVF programme could meet the needs of the French Marine Nationale, and second, to develop a first feasibility study for a French aircraft carrier, the Juliette programme. The possibility to carry out the French PA2 programme based on the British CVF, integrating specific installations for the French aircraft fleet (catapult, landing brakes, ASMP...) having been demonstrated, the DGA has given its green light. This solution favours wide-scale cooperation, with the aim being to identify as many communalities as possible between the two countries' ships. A report reviewing the PA2 programme's progress was recently forwarded by the DGA to the British DPA.

Franco-British cooperation: a common melting pot

Cooperation with the U.K. was reinforced on 6 March 2006, with the signature of an MoU by the two ministers. The agreement makes it possible to speed up cooperation among all British industrials involved in the CVF project as well as to obtain information essential to pursuing the design of the French PA2 while respecting the confidentiality rules. Creation of the joint company MOPA2 (DCN and Thales) has also been decided in order to facilitate the French programme. The company brings together more than 40 engineers and senior officers, and now has a permanent team based in Bristol, in charge of making sure that the documents received from the British teams meet France's needs and offer options suitable for the PA2. MOPA2 also has French experts at the ACA (Aircraft Carrier Alliance) in Bristol to speak for France's programme requirements and to gather technical, cost and schedule information regarding the CVF project. Today, MOPA2 has more than 1,000 documents describing the CVF design as well as access to the British secured network of about 6,000 sources. MOPA2 members are participating in the preparation of common acquisitions within the ACA. French teams can lend their experience to the British teams, especially in the field of operating a conventional take-off and landing embarked aircraft fleet if this option is chosen by the U.K.

► Partners

MOPA2 maintains an office for the major programme partners: Armaris (combat systems), Aker Yards France (platform), EADS (combat system modules), MBDA (ammunition management) and Berlin Technologies (human factors study), all associated with the programme's definition phase. This participation in the studies does not reflect each industrial's specific role, which will be decided later. These French and British industrials will of course have to decide on the best industrial organisation in terms of profitability.



CVF - UK - Thales

► Programme goal

MOPA2's purpose is to provide the DGA with an offer for the PA2 by December 2006, largely based on the CVF definition. The offer should enable the DGA to decide on the ship's manufacturing by 2007 after having implemented a maximum of cost savings through close cooperation with the U.K.



PA2

Preparing for the future

► SMX-22

SMX-22 is a submarine platform concept composed of three different submarines: the central vessel is the master platform, fulfilling various kinds of missions generally entrusted to a central command system; two other submarines are dedicated to attack missions, offering very high capabilities. All these platforms can be interconnected or operate individually depending on needs. SMX-22 has been designed to meet the requirements of very diverse types of assignments: in-depth strikes, attacking naval forces or special operations. Its weapon system, organised in modules, can vary according to the multiple combinations of weapons, sensors, mines, specific special operations equipments or additional unmanned underwater vehicles (UUV).

► Gowind corvettes

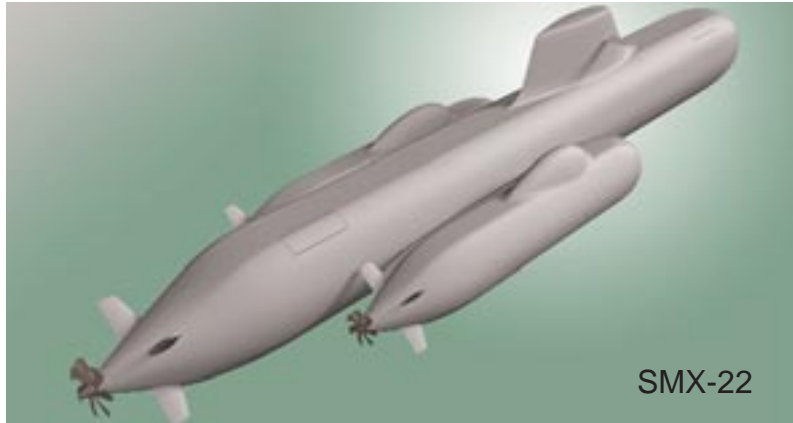
The new Gowind 120, 170 and 200 corvettes are specialised in coastal defence. The advanced weapon system (Setis product) has been jointly developed by DCN and Thales. The ship's self-defence is ensured by either the Aster 15 or the VL Mica (MBDA). These corvettes have a single integrated mast fitted with a multi-function radar. The bridge features 360-degree vision, and the propulsion is particularly efficient and powerful thanks to water-jets.

► UAV integration

DCN is working on the integration of a rotary-wing unmanned aerial vehicle (UAV), called the VTOL (vertical take off and landing). In December 2005, DCN was awarded a competition launched by the DGA aiming at studying this integration on a ship. Sagem and the ONERA are partners in the study.

Focusing on R&D

With a 73 per cent increase in the self-financed portion of the R&D budget, DCN continued its efforts in 2005 to prepare for the future. In 2005, R&D activities in charge of production represented about 8.2 per cent of the total turnover, not including fleet maintenance activities. DCN foresees a strong increase in its R&D investment: its plan is to double the number of studies in order to reach an annual volume of about 5 per cent of its turnover by 2008.



SMX-22

Propulsion studies

As the rise in energy prices affects everyone, DCN Propulsion is working on the energetic efficiency of its solutions in terms of energy propulsion systems. Thanks to significant efforts in R&D carried out since the company was privatised, DCN Propulsion has carried out several studies concerning the architecture of the propulsion and technologies modes (hybrid propulsion, electric equipment and networks, hydrocarbon reforming, pod) at its Indret facility, near Nantes. The goal is to improve the performance of ships while reducing acquisition costs and lowering the operational energy bill (paid by the owner at the end of a year of use). These studies, carried out in close collaboration with teams working on future ship projects, have made it possible to offer the FREMM frigates hybrid propulsion systems, combining several types of propulsion, based on diesel engines, turbines and electric engines. Individually, each of these modes is perfectly suited to a specific use of the ship. When joined together, they offer a wide range of uses, simplified maintenance and a greater overall efficiency. Similar studies are underway concerning the PA2 programme, whose turbo-electric propulsion will consume about 30,000 tonnes of fuel per year. More generally, the process triggered by DCN Propulsion simultaneously concerns the adaptation of the ship's concept of use and its energy and propulsion system architecture, while developing innovative technologies. Considering that a 20 per cent reduction in speed results in a 50 per cent decrease in fuel consumption, that two different system architectures can double fuel consumption and that various propulsion and engines technologies can trigger a 30 per cent difference in terms of efficiency, it is easy to understand why the economic and ecological stakes are so high. DCN Propulsion has the knowledge and is developing these competencies for the Marine Nationale and export customers.