

Your naval
partner

LE TERRIBLE

LE TERRIBLE

Breaking the limits of
possible

STRENGTH at sea

DCNS

Integrating the most sophisticated skills

Designing and integrating SSBNs is a complex industrial challenge very few countries can meet. As the historical prime contractor to the French Navy, DCNS has developed an unrivalled expertise in this field.

As both designer and integrator of nuclear-powered ballistic missile submarines (SSBNs) ever since France decided to acquire an independent nuclear deterrence capability, DCNS has been a key contributor to France's oceanic strategic force (FOST). Supporting the FOST requires to constantly foster the appropriate skills to design, integrate, build and maintain SSBNs. Such key mission is achieved by DCNS through dedicated skill-management policies.

Complexity to its very limits

DCNS is one of the few world's experts in the complex field of SSBNs. Figures are significant: no less than 15 million working hours are necessary to assemble the Le Terrible, and no less than 75,000 pieces of equipment must be integrated before the vessel can enter active service. The project uses resources from the DGA (Délégation Générale pour l'Armement), the CEA (Commissariat à l'Energie Atomique) and many key research facilities and first-rank colleges. All DCNS' ship-building sites have been involved in this ambitious programme, working

in close cooperation with over 6,000 suppliers.

Such a technological and human challenge requires the ability to integrate a wide array of complex technologies, drawing on the expertise and capabilities of key industrial partners among which AREVA TA, EADS Astrium ST, SAFRAN, THALES or CNIM.

SSBNs: silence is gold

France's dissuasion strategy has been closely linked to DCNS since the end of the 1960s. March 1967: France launches its first generation of SSBNs. Starting with the launch of Le Redoutable, it is followed by five others (Le Terrible, Le Foudroyant, L'Indomptable, Le Tonnant and L'Inflexible).

Setting new standards in stealthiness thanks to a considerably enhanced acoustic signature

As early as 1981, just as L'Inflexible is about to be commissioned, DCNS is already looking at a second generation of SSBNs. Such ambition will peak with the launch of Le Triomphant in 1994 (commissioned in 1997). Capable of operating at much greater depth than their predecessors, Le Triomphant, le Temeraire and le Vigilant set new standards in stealthiness thanks to a considerably

enhanced acoustic signature, being 1,000 times as silent as Le Redoutable.

No doubt several of these breakthroughs are already being integrated by DCNS' naval architects into the design of French SSNs and conventional submarines which are exported to friendly navies.

Fourth and last of DCNS' second generation, Le Terrible will begin patrolling in 2011, with the new M51 ballistic missile on-board.

Final milestone before commissioning, it has just passed, on time and successfully, the firing acceptance test of this missile.





15

million working hours

75,000

pieces of equipment

FOCUS ON



Dissuasion breeds progress

Less than 15 years after the end of World War II, in the light of the Suez Canal events, France decided to develop an independent deterrence force and committed to making the investments necessary to sustain such autonomy. As a result, considerable progress has been achieved in the field of submarines. Such breakthroughs also benefit the Group's range of conventional submarines designed for exportation like Agosta, Scorpene® and Andrastra classes. Boasting unprecedented speed and stealth, they set new standards in their own class.

As an example, the MESMA® Air Independent Propulsion (AIP) system creates new standards in SSKs submerged endurance, making conventional subs rank just behind SSNs and SSBNs.

Fostering highly complex skills: a critical issue

IN ORDER TO SUSTAIN THE BEST SKILLS IN BOTH NUCLEAR AND CONVENTIONAL SUBMARINE DESIGN, CONSTRUCTION, AND MAINTENANCE, DCNS CAN DRAW ON ITS STRONG COMMITMENT IN RESEARCH AND DEVELOPMENT AS WELL AS ITS CAPACITY TO CONSTANTLY IMPROVE EXISTING SYSTEMS.

Part of DCNS' responsibility towards its markets is to guarantee that the best skills to design and build the most complex naval solutions are available today and tomorrow. Such commitment demands ambitious research and development programmes, but also that the Group's original designs have the intrinsic capacity to evolve.

DCNS' Research and Development policy aims at both developing new offers and improving existing solutions. Part of R&D programmes is dedicated to carrying out prospective studies and inventing new concepts that could be tomorrow's most outstanding breakthroughs. The Group's programmes are conducted in partnership with first-rank colleges and research facilities as well as industrial players.

DCNS' research teams are constantly challenged to push the limits of endurance, stealthiness, hydrodynamics, energy storage for instance. In the Group's dedicated centres, new technical solutions and improved capabilities are thoroughly tested before being offered to the market and fitted to existing vessels. As a result, DCNS' range of solutions is constantly modernised, enlarged and enhanced, whilst the state-of-the-art skills necessary to operate this continuous innovation process are permanently fostered.





Jewel of the second generation of SSBN's, Le Terrible is the first of its kind to be equipped with the new M51 missile. The three sister-ships will be retrofitted during their major overall to operate this missile.

Together with Le Triomphant, Le Téméraire and Le Vigilant, the Le Terrible will provide France's oceanic strategic force (FOST) with enhanced deterrence power and credibility as new challenges keep emerging in a world whose complexity seems to expand and change faster than ever.

A major asset for the deterrent force

The new-generation of SSBNs designed by DCNS are powerful tools for France's political ambitions. In particular, they are designed to play a key role in France's independence in the field of nuclear deterrence, most of which relies on the country's naval forces.

One of the French Navy's commitments is having SSBNs permanently at sea at any given time. This implies that the ships and their support system are extremely sturdy to guarantee that at least two SSBNs are always available and fully operational.

At the ship level, highly available systems and redundancies guaranty that the submarine can operate in complete self reliance all along its scheduled patrol duration.

The support system, including the naval base, needs also a special attention. It is working on a permanent mode, every day of the year. Of course a very strong and heavy organisation is needed but it requires also a good deal of agility to be able to cope with any unusual outcoming situation.



STRENGTH at sea

DCNS is Europe's key global player providing high-value-added naval defence systems. The Group offers the world's navies a turnkey approach to warships, including all related equipment and services. As prime contractor, designer, builder, and integrator, the Group masters the overall value chain and life-cycle of naval systems, from initial design to full operational maintenance.

An international player

DCNS' capacity for innovation allows it to respond to the complex challenges of navies around the world by proposing cost-efficient integrated solutions, which are both interoperable (air/naval/land) and applicable to inter-allied operations.

DCNS

36-42, rue du docteur Finlay
F-75732 Paris Cedex 15
+33 (0)1 40 59 50 00
www.dcnsgroup.com

