

PRESS RELEASE

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The mid-life refit of the Charles de Gaulle aircraft carrier, a real industrial challenge, has been completed

The sole prime contractor for the entire mid-life refit of the *Charles de Gaulle* aircraft carrier, Naval Group has returned the vessel to the French Navy. The vessel will now start ramping up its systems before returning to its operational cycle.

One sole prime contractor for the entire project

Designed and built by Naval Group and entering service in 2001, the Charles de Gaulle aircraft carrier, further to its modernisation, has now entered the technological era of the 21st century. This mid-life refit included unprecedented renovations and a density of work that gave the project a level of complexity unseen until now. This veritable industrial challenge required exceptional organisation to achieve the real-time coordination of the entire project, Naval Group's core business.

"We are proud to have completed this exceptional project at the service of the French Navy within the imposed deadlines. I would like to thank in particular our clients, the DGA (Direction Générale de l'Armement) and the SSF (Service du Soutien de la Flotte), who entrusted us with the responsibility of overall prime contractor. This success is the fruit of a collective effort made possible by the commitment of the aircraft carrier's crew, Naval Group's teams, those of the Defence sector's major original equipment manufacturers such as Technicatome, Thales or Safran, the generalist companies and the SMEs originating mainly from the local and regional industrial fabric", underlines Nathalie Smirnov, Senior Vice Président Services at Naval Group.

An in-depth refit

The in-depth renovation of the Charles de Gaulle aircraft carrier was performed to ensure the vessel's operational performance levels for the next 25 years and ensure that it maintains its technological advance at the service of France's interests. This refit focused on **three major challenges**. Firstly, the modernisation of the **combat system** in particular with the modernisation of the tactical system, the brain that manages the sensors and weapons, the installation of new digital networks, the complete replacement of the Control Room, the renovation of the telecommunications systems, the replacement of the air search and navigation radars. Secondly, the modernisation of the **aviation installations** covered all the

necessary modifications to switch to an "all-Rafale" setup: modification and renovation of the aviation spaces, renovation or replacement of deck-landing systems... The third challenge of this refit relates to the renovation of **the platform** i.e., amongst other things, the modernisation of the vessel control PLCs, the renovation of the automatic stabilisation and steering control system, the replacement of two units of the vessel's cooling system, but also the refit of the control simulator and of one galley.

Through-life support work

In addition to this renovation, the mid-life refit of the Charles de Gaulle aircraft also comprised through-life support work. This aspect of the project related essentially to the **maintenance of major installations**: the inspection of the two nuclear reactors and the replacement of their fuel elements, the maintenance of the electrical power plant, the maintenance of the propulsion system, the inspection of the catapults, shaft lines and stabilizing fins, and the painting of the underwater hull and topsides.

Key figures

- 18 months of work (as a comparison: 4 years for a US aircraft carrier)
- Over 200,000 tasks performed of which 50% by the crew
- Over 4 million hours of work
- On average, 2100 persons working each day: 1100 crew members, 1000 employees of Naval Group and its 160 subcontractors
- 2000 tests performed
- 5 years of preparation
- A budget of €1.3 billion (as a comparison: €4.7 billion for a US aircraft carrier)

"Team France" at work

This exceptional programme was conducted by "Team France" bringing together the DGA, the French Navy, the SSF, the aircraft carrier's crew and actors from French industry. Naval Group worked with major Defence original equipment manufacturers such as Technicatome, Thales or Safran, generalist companies but also SMEs originating mainly from the local and regional industrial fabric.

The timeline

The aircraft carrier entered dry dock in February 2017; it was floated out in May 2018 and at the end of July 2018 it docked at its operational quay for harbour acceptance trials. It then performed sea outings for the trials that must be performed in operational conditions, with the support of other French Navy entities. The final date on which the vessel was made available was 16 October 2018, after the complete recertification of the systems was completed.

Videos and photos available on www.salledepresse.com

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About Naval Group

Naval Group is a European leader in naval defence. As an international high-tech company, Naval Group uses its extraordinary know-how, unique industrial resources and capacity to arrange innovative strategic partnerships to meet its customers' requirements. The group designs, builds and supports submarines and surface ships. It also supplies services to shipyards and naval bases. In addition, the group offers a wide range of marine renewable energy solutions. Attentive to corporate social responsibility, Naval Group adheres to the United Nations Global Compact. The group reports revenues of €3.7 billion and has a workforce of 13,429 (data for 2017).

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