

# French aircraft carrier *Charles de Gaulle*

***Charles de Gaulle*** is the flagship of the French Navy (*Marine Nationale*). The ship is the tenth French aircraft carrier, the first French nuclear-powered surface vessel, and the only nuclear-powered carrier completed outside of the United States Navy. She is named after French statesman and general Charles de Gaulle.

The ship carries a complement of Dassault Rafale M and E-2C Hawkeye aircraft, EC725 Caracal and AS532 Cougar helicopters for combat search and rescue, as well as modern electronics and Aster missiles. She is a CATOBAR-type carrier that uses two 75 m C13-3 steam catapults of a shorter version of the catapult system installed on the U.S. Nimitz-class aircraft carriers, one catapult at the bow and one across the front of the landing area.<sup>[6]</sup> *Charles de Gaulle* is the only non-American carrier-vessel that has a catapult, allowing operation of American aircraft such as the F/A-18E/F Super Hornet<sup>[8]</sup> and the C-2 Greyhound<sup>[9][10]</sup>

## Contents

### Development

- Construction
- Spying incident
- Trials and technical problems

### Active service

- Refitting
- Link 16
- Afghanistan
- Indian-Pakistani crisis
- Rescue mission
- Continuing operations
- First major overhaul
- Fifth overseas deployment: Task Force 473 and Operation Agapanthus 2010
- 2011 Mediterranean operations
- 2012 FANAL exercises
- Integration in the future navy
- Operations against Islamic State
- Midlife upgrade
- Future replacement

### See also

### Notes and references

- Notes
- References

### Further reading

### External links

## *Charles de Gaulle*



*Charles de Gaulle*, 2009

## History

<span><span></span></span>	<b>France</b>
Name:	<i>Charles de Gaulle</i>
Namesake:	Charles de Gaulle
Operator:	Marine Nationale
Ordered:	3 February 1986 (ministerial decision)
Builder:	DCNS
Laid down:	14 April 1989 (stacking of elements in prefabrication since 24 November 1987)
Launched:	7 May 1994
Maiden voyage:	18 May 2001
Renamed:	Ordered as <i>Richelieu</i> on 3 February 1986, renamed <i>Charles de Gaulle</i> 18 May 1987 <sup>[1][2]</sup>
Homeport:	Toulon, France
Identification:	Hull number: R91 <div>MMSI number: 228711555</div>
Nickname(s):	CDG
Honours and awards:	Jack with the colours of the Free French Forces (front) and the ribbon of the <i>Ordre de la Libération</i> (back)
Status:	In service

# Development

## Construction

The carrier replaced *Foch*, a conventionally powered aircraft carrier, in 2001. *Clemenceau* and *Foch* were completed in 1961 and 1963 respectively; the requirement for a replacement was identified in the mid-1970s.

The hull was laid down in April 1989 at the DCNS Brest naval shipyard. The carrier was launched in May 1994 and at 42,000 tonnes (full load)<sup>[3]</sup> was the largest warship launched in Western Europe since *HMS Ark Royal* in 1950. She was to be named *Richelieu* in 1986 by the French president at the time, François Mitterrand, after the famous French statesman Armand-Jean du Plessis, Cardinal or the Duc de Richelieu.<sup>[1][11][note 1]</sup> On 7 February 1987, however, the name of the ship was changed to *Charles de Gaulle* by the Gaullist Prime Minister at the time, Jacques Chirac.

Construction quickly fell behind schedule as the project was starved of funding, which was worsened by the economic recession in the early 1990s. Total costs for the vessel would top €3 billion. Work on the ship was suspended altogether on four occasions: 1990, 1991, 1993, and 1995.<sup>[11]</sup> The ship was commissioned on 18 May 2001, five years behind the projected deadline.

## Spying incident

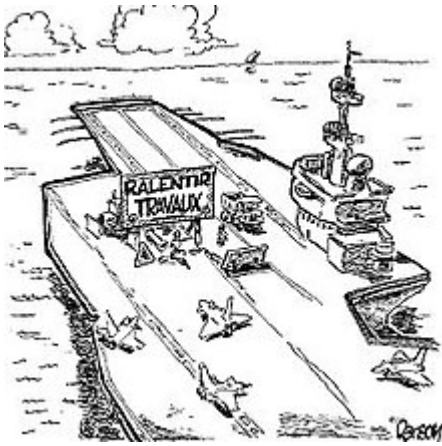
In 1993, it was alleged by *The Guardian* that a group of engineers inspecting the vessel during her construction were British Secret Intelligence Service (MI6) operatives, believed to have been learning the method of shielding the nuclear reactors, amongst other technical details.<sup>[12]</sup> However, the newspaper published a denial by both the British government and the *Direction de la surveillance du territoire* (DST) (in English: *Directorate of Territorial Surveillance*) that there had been any incident.<sup>[13]</sup>

## Trials and technical problems

*Charles de Gaulle* entered sea trials in 1999. These identified the need to extend the flight deck to safely operate the E-2C Hawkeye. This operation sparked negative publicity, however, as the same tests had been conducted on both *Foch* and *Clemenceau* when the F-8E(FN) Crusader fighter had been introduced. The 5 million francs for the extension was 0.025% of the total budget for the *Charles de Gaulle* project.

On 28 February 2000, a nuclear reactor trial triggered the combustion of additional isolation elements, producing a smoke incident.

General characteristics	
Class and type:	Unique aircraft carrier
Displacement:	42,500 tonnes (full load) <sup>[3]</sup>
Length:	261.5 m (858 ft) overall
Beam:	64.36 m (211.2 ft) overall
Draught:	9.43 m (30.9 ft)
Propulsion:	2 × Areva K15 pressurised water reactors (PWR), 150 MWt each <sup>[4][5]</sup> 2 × Alstom steam turbines with a total 61 MW <sup>[5]</sup> shaft power 4 × diesel-electric 2 × shafts
Speed:	27 knots (50 km/h)
Range:	Unlimited distance; 20–25 years
Endurance:	45 days of food
Capacity:	800 commandos, 500 tonnes of ammunitions
Complement:	Ship's company: 1,350 Air wing: 600
Sensors and processing systems:	DRBJ 11 B tridimensional air search radar DRBV 26D air search radar DRBV 15C low altitude air search radar Arabel target acquisition radar
Electronic warfare & decoys:	ARBR 21 Detector ARBB 33 Countermeasures suite ARBG2 MAIGRET Interceptor 4 × Sagaie decoys launcher SLAT ( <i>Système de lutte anti-torpille</i> ) torpedo countermeasures
Armament:	4 × 8 cell A-43 Sylver launchers carrying the MBDA Aster 15 surface-to-air missile. 2 × 6 cell Sadral launchers carrying Mistral short range missiles 8 × Giat 20F2 20 mm cannons.



Satirical strip of *Le Parisien* newspaper. The sign reads : "Work in progress, slow down".

The ship left Toulon for her fourteenth and final sea trial on 24 October 2000. During the night of 9–10 November, in the Western Atlantic while en route toward

Aircraft carried:

28–40 aircraft,<sup>[6][7]</sup> including  
Rafale M  
E-2C Hawkeye  
SA365 Dauphin  
EC725 Caracal  
AS532 Cougar

Norfolk, Virginia, the port propeller broke, and the ship had to return to Toulon to have a replacement fitted.<sup>[14]</sup> The investigations that followed showed similar structural faults in the other propeller and in the spare propellers: bubbles in the one-piece copper-aluminium alloy propellers near the centre. Although the supplier, Atlantic Industrie, was not believed to have intentionally been at fault, it was nevertheless blamed for poor-quality construction.<sup>[15]</sup> A few hours after the French defense minister ordered an investigation on quality management, a fire destroyed the archives of the supplier.<sup>[16]</sup> As a temporary solution, the less advanced spare

propellers of *Clemenceau* and *Foch* were used, limiting the maximum speed to 24 knots (44 km/h) instead of the contractual 27 knots (50 km/h).



USS *Enterprise* (left), the first nuclear-powered aircraft carrier and *Charles de Gaulle* (right), at that time the newest nuclear carrier both steaming in the Mediterranean Sea on 16 May 2001.

On 5 March 2001, *Charles de Gaulle* went back to sea with two older propellers and sailed at 25.2 knots (47 km/h) on her trials. Between July and October, she had to be refitted once more due to abnormal noises, as loud as 100 dB, near the starboard propeller, which had rendered the aft part of the ship uninhabitable.

## Active service

### Refitting

On 16 September 2001 the French press reported slightly higher than acceptable radioactivity levels aboard *Charles de Gaulle*, thought to be caused by a faulty isolation

element. It was later discovered that the radioactivity levels matched the design, but that the regulations concerning acceptable radioactivity levels had changed. While the United States was preparing its response to the September 11 attacks in the form of Operation Enduring Freedom, French media complained about the lack of deployable French military power. At the same time, the Defence Commission reported the maintenance of the Fleet to be substandard. In this context, *Charles de Gaulle*, then under repairs, was again an object of criticism, with former President Valéry Giscard d'Estaing describing it as a "half-aircraft-carrier" and requesting launching of the second carrier vessel (named A2) in order to guarantee an availability rate of 100%.



Command bridge of *Charles de Gaulle*

### Link 16

On 11 October 2001, the frigate *Cassard*, four AWACS aircraft and *Charles de Gaulle* were involved in a successful trial of the Link 16 high-bandwidth secure data network. The network allows real-time monitoring of the airspace from the South of England to the Mediterranean Sea. The collected data were also transmitted in real time to the frigate *Jean Bart* through the older MIL-STD-6011 system.

## Afghanistan

On 21 November 2001, France decided to send *Charles de Gaulle* to the Indian Ocean in support of Operation Enduring Freedom against Taliban-controlled Afghanistan. Task Force 473, with 2,900 men under the command of Contre-Amiral François Cluzel, sailed on 1 December 2001. The task force was composed of *Charles de Gaulle*, frigates *Lamotte-Picquet*, *Jean de Vienne* and *Jean Bart*, the nuclear attack submarine *Rubis*, the tanker *Meuse* and the aviso *Commandant Duceing*.

Embarked air power comprised sixteen Super Étendards, one E-2C Hawkeye, two Rafale Ms and several helicopters. The Super Étendards carried out their first missions above Afghanistan on 19 December, executing reconnaissance and bombing missions, covering over 3,000 kilometres. Overall they carried out 140 missions, averaging 12 per day. Approximately 770 sorties were carried out from the carrier.<sup>[17]</sup>

On 18 February 2002, a Helios observation satellite spotted abnormal activities near Gardez. The next day, after American Special Forces in the region confirmed these observations, *Charles de Gaulle* launched two reconnaissance Super Étendards. On 20 February 2002, British and US forces entered the valley and Operation Anaconda began in early March 2002.

In March 2002, Super Étendards and six land-based Mirage 2000\* aircraft carried out airstrikes against targets claimed to be al Qaeda. A few targets suggested by U.S. forces were denied out of fear of hitting civilians. Nevertheless, French involvement was complimented on 11 March 2002 by US President George W. Bush, who mentioned "our good ally, France, has deployed nearly one-fourth of its navy to support Operation Enduring Freedom".<sup>[18]</sup> At this point, the French air complement had been increased to 16 Super Étendards, 6 Mirage 2000 D\*, 5 Rafales, and two Hawkeye AWACS. From February 2002, the air wings of *Charles de Gaulle* and USS John C. Stennis landed on each other's decks as a means of strengthening the ties between the allies.

- No information about use of Mirages in Charles de Gaulle

On 2 May 2002, *Charles de Gaulle* arrived in Singapore for relief, and returned to Oman on 18 May 2002.

## Indian-Pakistani crisis

In June 2002 while *Charles de Gaulle* was in the Arabian Sea, armed Rafale fighters conducted combat air-patrols with the United States Navy off the coast of India and Pakistan,<sup>[19][20]</sup> marking a significant point in the Rafale M's operational career and its integration with the carrier.<sup>[21]</sup>

## Rescue mission

On 9 October, the *CrossMed* (The Regional Operational Centre for Monitoring and Rescue in the Mediterranean Sea) received a distress call from the 8-metre *Babolin*, whose hull was leaking. *Charles de Gaulle*, on manoeuvres in the region, sent a helicopter that airlifted the three-man crew, despite 35-knot (65 km/h) wind, troubled sea, and bad visibility.

## Continuing operations

*Charles de Gaulle* participated in further actions as part of Operation Enduring Freedom in 2005. It returned to Southwest Asia in May 2006 and shortly after supported coalition efforts over Afghanistan. The aircraft carrier regularly participates in the annual bilateral naval exercises between the Indian and French navies<sup>[22]</sup> called 'Varuna'.<sup>[23]</sup>



A rare occurrence of a 5-country multinational fleet of the NATO countries, the Netherlands, France, the United States, Italy and the United Kingdom, during Operation Enduring Freedom in the Oman Sea



C-2 Greyhound of the US Navy catches the wire aboard *Charles de Gaulle* in 2002.



## First major overhaul

*Charles de Gaulle*'s first major overhaul began in September 2007. The highlight of this 15-month refit was the refueling of the nuclear power plant, a necessary step after six years in service, during which *Charles de Gaulle* sailed the equivalent of 12 times around the world, spent 900 days at sea, and performed 19,000 catapult launches.<sup>[24]</sup> Several improvements were also made, including the installation of new propellers. These allow *Charles de Gaulle* to reach her design speed of 27 knots (50 km/h), replacing the vintage propellers used as a stop-gap since 2001. Aircraft maintenance and weapons stores were also upgraded to allow operation of new Rafale F3 fighters armed with ASMP-A nuclear missiles and SCALP EG cruise missiles, and satellite communications bandwidth will be increased tenfold. This refit increased displacement to 42500 tonnes <sup>[3]</sup> and was completed in December 2008. After technical problems in March 2009 the carrier was back in Toulon for repairs. An intensive work-up period was planned to bring *Charles de Gaulle* and her air group back to operational status.



*Charles de Gaulle* refitting in the southwestern dock of Vauban industrial zone in 2008

On 14 October 2010, a four-month cruise was cut down to a single day when the ship suffered an electrical fault in its propulsion system.<sup>[25]</sup>

## Fifth overseas deployment: Task Force 473 and Operation Agapanthus 2010

A French naval task group, designated Task Force 473, led by *Charles de Gaulle* departed Toulon on 30 October 2010 for a four-month deployment, code-named Operation Agapanthus 2010, to the Mediterranean Sea, Red Sea, Indian Ocean. and Persian Gulf.<sup>[26][27]</sup> The task group also included the frigates *Forbin* and *Tourville*; the nuclear attack submarine *Améthyste*; the replenishment oiler *Meuse*, 3,000 sailors, and an Embarked Aviation Group (EAG) consisting of 12 Super Étendard attack aircraft, 10 Rafale multi-role fighters, and two E-2C Hawkeye 2000 AEW aircraft.<sup>[26][28][29]</sup> The task group commander, Rear Admiral Jean-Louis Kerignard, defined force's mission as follows:

The force would help allied navies fight piracy off the coast of Somalia and send jets to support NATO in the skies above Afghanistan.<sup>[28]</sup>

Once on station, Task Force 473 joined two U.S. Navy carrier strike groups operating in the Persian Gulf (pictured), the Carrier Strike Group Nine led by *USS Abraham Lincoln* and Carrier Strike Group Ten led by *USS Harry S. Truman*.<sup>[28]</sup> On 28 November 2010, according to an Associated Press dispatch, the French Ministry of Defense announced that a French Rafale fighter jet crashed near *Charles de Gaulle*, which was operating 60 miles (100 kilometres) off the coast of Pakistan in the Arabian Sea in support of coalition forces in Afghanistan. The pilot parachuted to safety and was picked up by helicopter, and the cause of the crash was under investigation.<sup>[30]</sup> In December 2010, during its deployment to the Persian Gulf, the British Type 22 frigate *Cumberland* and the United States destroyer *USS Halsey* rotated from maritime security patrol to escort *Charles de Gaulle* in support of coalition military operations in Afghanistan. This represented an example of interoperability pursuant to the recently ratified Anglo-French defence cooperation treaty.<sup>[31]</sup>



Rafale number 9 on the flight deck of *Charles de Gaulle*

Between 7–14 January 2011, Task Force 473 participated in bilateral naval exercises, code named Varuna 10, with the Indian Navy. Indian naval units participating in Varuna 10 included the aircraft carrier *Viraat*, the frigates *Godavari* and *Ganga*; and the diesel-electric submarine *Shalki*. Varuna 10 was a two-phase naval exercise, with the harbor phase taking place between 7–11 January and the sea phase between 11–14 January in the Arabian Sea.<sup>[29][32]</sup> Task Force 473 paid a port visit to Goa between 7–14 January 2011.<sup>[33]</sup> The carrier *Charles de Gaulle* and the frigate *Forbin* also paid a goodwill visit to Khor Fakkan, United Arab Emirates, on 30 January 2011, docking at its container terminal facilities.<sup>[34]</sup>

Operation Agapanthus 2010 concluded on 21 February 2011. Task Force 473 completed more than 1,000 flying hours flown from *Charles de Gaulle* in support of NATO's International Security Assistance Force (ISAF) deployed in Afghanistan. Task Force 473 also participated in bilateral exercises with armed forces of India, Saudi Arabia, and the United Arab Emirates to test the interoperability of French military forces and share expertise with the regional partners.<sup>[27]</sup>

## 2011 Mediterranean operations

On 20 March 2011, *Charles de Gaulle* was deployed to the Mediterranean Sea to enforce United Nations Security Council Resolution 1973 which called for a no-fly zone over Libya.<sup>[35]</sup> Accompanying *Charles de Gaulle* were the frigates Dupleix and Aconit and the fleet replenishment tanker Meuse.<sup>[36]</sup>

During Unified Protector, the air fleet had flown 1,350 sorties during the intervention in Libya. *Charles de Gaulle* was then withdrawn for maintenance at Toulon on 10 August.<sup>[37]</sup>

Following this deployment, *Charles de Gaulle* underwent maintenance and upkeep during an at-sea underway period in December 2011.<sup>[38]</sup>

## 2012 FANAL exercises

On 2 February 2012, *Charles de Gaulle* was underway for three days of sea trials. Beginning on 5 February 2012, carrier qualifications began for the pilots of its air group. This included transitioning of pilots flying Super Étendard Modernisé (SEM) strike fighters to the new Rafale M fighters.<sup>[38]</sup>

On 16 March 2012, *Charles de Gaulle* departed for a one-month deployment to the Mediterranean Sea.<sup>[39]</sup> *Charles de Gaulle*'s task force was under the overall command of Rear Admiral Philippe Coindreau, and it consisted of the frigates Chevalier Paul, Dupleix, Montcalm, and EV Jacoubet; the replenishment tanker Meuse; and the nuclear-powered submarine Émeraude.<sup>[39][40]</sup> *Charles de Gaulle*'s embarked air group consisted of 7 Rafale fighters, 7 Super Étendards Modernisés (SEM) strike fighters, and 2 E-2C Hawkeye airborne early warning (AEW) aircraft.<sup>[39]</sup> The highlight of the deployment for the task group was 2012 FANAL exercises that began on 5 April 2012 which also included land-based Atlantique 2 maritime patrol aircraft.<sup>[40]</sup> 2012 FANAL concluded on 12 April, and this was the first major exercise involving the French Navy's new Caiman helicopter.<sup>[40][41]</sup>

## Integration in the future navy

The French Navy aimed to be a two-carrier navy, mainly to ensure that at least one ship is operational at all times even when the other is under repair. This scheme requires another aircraft carrier to be built; however, *Charles de Gaulle* is the only aircraft carrier currently serving.

Cost considerations have made equipment standardization a necessity. In this context, there is a possibility of collaboration with Britain for future aircraft carriers. Thales UK (with BMT) made the design for the Queen Elizabeth-class aircraft carrier,<sup>[42]</sup> suitable for construction for France as the French aircraft carrier PA2. Steps have been taken by both countries to make such a scenario possible: the new carrier had to be conventionally propelled to meet the requirements of the Royal Navy. France favoured nuclear propulsion, and a study was conducted to see if it is more cost efficient than gas turbines.<sup>[43]</sup> However, as of the 2013 French Defence White Paper, the plan for a second carrier has been cancelled.<sup>[44][45]</sup>



HMS Kent escorts *Charles de Gaulle* off Djibouti in 2015

## Operations against Islamic State

In January 2015, *Charles de Gaulle* began being prepared for exercises in the Indian Ocean. In late February, the carrier and its battle group entered the Persian Gulf to participate in Opération Chammal against Islamic State militants in Iraq.<sup>[46]</sup> France was the first country to join the American-led intervention and has 15 fighters, a patrol aircraft, and refueling aircraft based on land in neighboring countries. The addition of *Charles de Gaulle* added up to another 30 aircraft to France's commitment to operations.<sup>[47][48]</sup> The carrier battle group arrived in the Persian Gulf on 15 February 2015 and began launching airstrikes on 22 February; this occurred seven weeks after the Charlie Hebdo attacks, as France vowed to be more responsive to jihadist terrorism. Sailing off the north coast of Bahrain, the carrier's 12 Rafale and 9 Super Étendard fighters could reach targets in half the time it would take French fighters based in the United Arab Emirates.<sup>[49]</sup> *Charles de Gaulle* left the Persian Gulf in late-April 2015 after launching strike and surveillance missions against IS targets to participate in exercises with the Indian military; the carrier launched 10-15 sorties per day during its two-month deployment.<sup>[50]</sup>



Play media

Chairman U.S. JCS General Martin Dempsey visits *Charles de Gaulle*, 2015

On 5 November 2015, France announced *Charles de Gaulle* would return to the area to conduct operations<sup>[51]</sup> and the ship departed from its base in Toulon, southern France, on 18 November.<sup>[52]</sup> Although originally planned to redeploy to the Persian Gulf, the carrier and its strike group was re-routed to the Eastern Mediterranean Sea off the Syrian coastline, much closer to targets within Syria. Sources claim *Charles de Gaulle* has a larger than normal air wing of 26 fighters consisting of 18 Rafales and 8 Super Étendards; the carrier has approximately 31-34 aircraft total (the official limit is 40 aircraft,<sup>[6]</sup> 35 Rafales + 2 Hawkeyes + 3 helicopters)<sup>[53]</sup> The carrier began operations on 23 November 2015, 10 days after the ISIL terrorist attacks in Paris.<sup>[54]</sup> On 7 December 2015, Rear Admiral René-Jean Crignola of the French Maritime Force, embarked in *Charles de Gaulle*, took command of U.S. Naval Forces Central Command's Task Force 50, leading coalition naval strike operations. He was the first non-American to do so.<sup>[55]</sup>

In June 2016, the United States Navy awarded the crew of the *Charles de Gaulle* a Meritorious Unit Commendation for its accomplishments.<sup>[56]</sup>

In late September 2016, the *Charles de Gaulle* was deployed from Toulon to the Syrian coast for the Battle of Mosul. Its squadron of 24 Rafale M jets is supporting the international coalition against ISIL through airstrikes and reconnaissance missions.<sup>[57][58]</sup>

## Midlife upgrade

The aircraft carrier underwent an 18-month midlife upgrade and refit from February 2017,<sup>[59][60]</sup> returning to service in September 2018.<sup>[61]</sup>

## Future replacement

Following completion of the midlife upgrade, in October 2018 the French armed forces minister announced an 18-month study to determine the requirements for a future carrier. The size requirements, propulsion options - both conventional and nuclear - and aircraft-launching capabilities will be assessed before a decision is made in 2020.<sup>[62]</sup>

## See also

- List of aircraft carriers
- List of naval ship classes in service
- List of ship commissionings in 2001
- French aircraft carrier PA2
- Mistral-class French helicopter carrier

## Notes and references

---

## Notes

1. Following the traditional name Richelieu for capital ships in the French Navy previously the battleship Richelieu of the Second World War.

## References

1. Roche, vol.2, p.423
2. Roche, vol.2, p.128
3. "Le Charles de Gaulle a ses nouvelles hélices américaines"(<http://secretdefense.blogs.liberation.fr/2008/06/04/aujourd'hui-le-c/>) (in French). Libération. 4 June 2008 Retrieved 8 May 2015.
4. Alan J. Kuperman (17 April 2013). *Nuclear Terrorism and Global Security: The Challenge of Phasing Out Highly Enriched Uranium* (<https://books.google.com/books?id=VfrEyyo-1oC&pg=PR189>). Routledge. pp. 189–. ISBN 978-1-135-10586-0. Retrieved 20 October 2015.
5. "Nuclear-Powered Ships"(<http://www.world-nuclear.org/info/Non-Power-Nuclear-Applications/Transport/Nuclear-Powered-Ships/>). World Nuclear Association. August 2015 Retrieved 20 October 2015.
6. "Charles de Gaulle"(<http://www.globalsecurity.org/military/world/europe/cdg.htm>) GlobalSecurity.org. 10 June 2013 Retrieved 7 November 2014.
7. "Historic Super Etendard's final carrier launch" *Airheadsfly*, march 31, 2016 (<http://airheadsfly.com/2016/03/21/historic-super-etendards-final-carrier-launch/>)
8. "U.S. F/A-18E Hornet operates from French Aircraft Carrier"(<http://theaviationist.com/2014/01/20/hornet-on-french-carrier/>). 20 January 2014 Retrieved 8 May 2015.
9. "Libye : un aéronef américain apponte sur le Charles de Gaulle"(<http://www.defense.gouv.fr/actualites/operations/libye-un-aeronef-americain-apponte-sur-le-charles-de-gaulle/>) 7 June 2011 Retrieved 8 May 2015.
10. "French Rafale fighter jets operate from U.S. aircraft carrier"(<http://theaviationist.com/2014/01/15/rafale-operate-uss-truman/>). *theaviationist.com*. 15 January 2014 Retrieved 8 May 2015.
11. (in French) *senat.fr* (<http://www.senat.fr/rap/r99-358/r99-3583.html>)
12. Webster, Paul; Norton-Taylor, Richard (23 August 1993). "French Foil MI6 Carrier Snoop" *The Guardian*. p. 1.
13. "MI6 Carrier Affair Denied". *The Guardian*. 24 August 1993. p. 3.
14. Muradian, Vago (14 November 2000). "French Carrier Cancels U.S. Visit Over Broken Prop, Incident May Delay Commissioning" (<http://www.highbeam.com/doc/1G1-6696047.html>). *Defense Daily*. Retrieved 23 June 2015 – via HighBeam Research (Subscription required (help)).
15. "France Faults De Gaulle Prop Failure On Manufacturer To Seek Second Source" (<http://www.highbeam.com/doc/1G1-68740252.html>) *Defense Daily*. 3 January 2001 Retrieved 23 June 2015 – via HighBeam Research (Subscription required (help)).
16. "Charles-de-Gaulle : la fonderie impliquée" (<https://www.nouvelobs.com/societe/20001222.OBS0479/charles-de-gaulle-la-fonderie-impliquee.html>) *L'Obs* (in French). Retrieved 2018-07-25.
17. "French aircraft carrier returns home after mission near Afghanistan" (<http://www.highbeam.com/doc/1P1-5401035.html>). Associated Press 1 July 2002 Retrieved 24 June 2015 – via HighBeam Research (Subscription required (help)).
18. "President Thanks World Coalition for Anti-Terrorism Efforts" (<https://georgewbush-whitehouse.archives.gov/news/releases/2002/03/20020311-1.html>), The White House, 11 March 2002. Retrieved 31 December 2006.
19. "French jets patrolled Indo-Pak. coastline" (<http://www.hinduonnet.com/2002/07/04/stories/2002070407221200.htm>) Archived (<https://web.archive.org/web/20061111112522/http://www.hinduonnet.com/2002/07/04/stories/2002070407221200.htm>) 11 November 2006 at the Wayback Machine *The Hindu*. Retrieved 3 November 2006
20. "Has Pakistan Lost Its Nuclear Weapons?" (<http://www.bharat-rakshak.com/MONITOR/ISSUE5-1/narayanan.html>) Archived (<https://web.archive.org/web/20120219101127/http://www.bharat-rakshak.com/MONITOR/ISSUE5-1/narayanan.html>) 19 February 2012 at the Wayback Machine *Bharat Rakshak Monitor*. Retrieved 3 November 2006
21. "En Garde!" (August 2002). Journal of Electronic Defense.



22. Dikshit, Sandeep (26 March 2006). "Indian, French navies plan exercises from Monday" (<http://www.hindu.com/2006/03/26/stories/2006032601271500.htm>) *The Hindu*. Chennai, India. Retrieved 1 November 2006.
23. "Indo-French Joint Naval Exercise 'Varuna 06'" (<https://web.archive.org/web/20061113035926/http://indiannavynic.in/pres03.htm>). Indian Navy. 24 March 2006. Archived from the original (<http://indiannavynic.in/pres03.htm>) on 13 November 2006. Retrieved 1 November 2006.
24. "Entretien et Modernisation du Charles de Gaulle" (<http://www.defense.gouv.fr/marine/content/download/100314/884733/version/1/file/071210%2BDR.pdf>) (PDF). French Navy Press Release'. Retrieved 22 May 2008
25. French Carrier Heads Home a Day into Anti-Piracy Afghan Mission (<http://www.defensenews.com/story.php?i=4904778&c=EUR&s=SEA>) AGENCE FRANCE-PRESSE, 14 October 2010
26. "Fifth Deployment for French Charles de Gaulle Aircraft Carrier" (<https://web.archive.org/web/20101106024758/http://www.defpro.com/news/details/19346>) *defpros.news*. Defense Professional. 3 November 2010. Archived from the original (<http://www.defpro.com/news/details/19346/>) on 6 November 2010. Retrieved 12 November 2010.
27. "French naval exercise 'Operation Agapanthus 2010' concludes" (<https://web.archive.org/web/20110708090619/http://www.brahmand.com/news/French-naval-exercise-%E2%80%99Operation-Agapanthus-2010%E2%80%99-concludes/6363/3/13.html>) *Defence & Aerospace News* Brahmand.com. 22 February 2011. Archived from the original (<http://www.brahmand.com/news/French-naval-exercise-%E2%80%99Operation-Agapanthus-2010%E2%80%99-concludes/6363/3/13.html>) on 8 July 2011. Retrieved 23 February 2011.
28. "French warship to join US fleet in PG" (<https://web.archive.org/web/20101101094720/http://www.presstv.ir/detail/148623.html>). *France*. PressTV. 28 October 2010. Archived from the original (<http://www.presstv.ir/detail/148623.html>) on 1 November 2010. Retrieved 12 November 2010.
29. Vivek Ragahuvanshi (6 January 2011). "Indo-French Naval Exercises Set to Start" (<http://www.defensenews.com/story.php?i=5390485&c=SEA&s=TOP>). *DefenseNews*. Retrieved 10 January 2011.
30. "French Rafale jet crashes off Pakistan's coast; pilot parachutes to safety" (<https://web.archive.org/web/20101201083131/http://www.winnipegfreepress.com/world/breakingnews/french-rafale-jet-crashes-off-pakistans-coast-pilot-parachutes-to-safety-110935929.html>) *Winnipeg Free Press* 28 November 2010. Archived from the original (<http://www.winnipegfreepress.com/world/breakingnews/french-rafale-jet-crashes-off-pakistans-coast-pilot-parachutes-to-safety-110935929.html>) on 1 December 2010. Retrieved 28 November 2011.
31. "Navy ship joins French carrier for Christmas" (<http://www.portsmouth.co.uk/newshome/Navy-ship-joins-French-carrier.6669505.jp>). *The News*. Johnston Press Digital Publishing 23 December 2010. Retrieved 23 December 2010.
32. "Largest Indo-French Naval Exercise Yet From Tomorrow" (<http://www.defence.pk/forums/india-defence/87735-largest-indo-french-naval-exercise-yet-tomorrow.html>). *Forum*. Pakistan Defence. 2011. Retrieved 26 February 2011.
33. "Stopover of the French aircraft-carrier 'Charles de Gaulle' in Goa" (<https://web.archive.org/web/20110725002036/http://bombayambafrance-in.org/spip.php?article1195>). Consulate General of France in Bombay 2011. Archived from the original (<http://bombayambafrance-in.org/spip.php?article1195>) on 25 July 2011. Retrieved 1 March 2011.
34. "French Naval vessels berth in Khorfakkan during goodwill visit" (<http://logisticsweek.com/ocean/2011/01/french-naval-vessels-berth-in-khorfakkan-during-goodwill-visit/>) *NewsDesk*. LogisticsWeek. 30 January 2011. Retrieved 23 February 2011.
35. Asif Nazeer (19 March 2011). "France sends aircraft carrier to Libya" (<https://web.archive.org/web/20121004090128/http://www.allvoices.com/contributed-news/8524568-france-sends-aircraft-carrier-to-libya>) *allvoices.com*. Archived from the original (<http://www.allvoices.com/contributed-news/8524568-france-sends-aircraft-carrier-to-libya>) on 4 October 2012. Retrieved 19 March 2011.
36. Pierre Tran (19 March 2011). "France Deploys About 20 Aircraft to Enforce Libya No-Fly Zone" (<http://www.defensenews.com/story.php?i=6007194&c=EUR&s=AR>). *DefenseNews*. Retrieved 19 March 2011.
37. "France to Withdraw Aircraft Carrier From Libya Ops" (<https://archive.is/20120729195040/http://www.defensenews.com/story.php?i=7304005&c=SEA&s=EUR>) *DefenseNews*. 4 August 2011. Archived from the original (<http://www.defensenews.com/story.php?i=7304005&c=SEA&s=EUR>) on 29 July 2012. Retrieved 28 December 2011.
38. "French Aircraft Carrier Charles de Gaulle back at sea for Naval Aviation pilots qualification" ([http://www.navyrecognition.com/index.php?option=com\\_content&task=view&id=317](http://www.navyrecognition.com/index.php?option=com_content&task=view&id=317)) *NavyRecognition.com*. 6 February 2012. Retrieved 29 June 2012.
39. "French Aircraft Carrier Charles de Gaulle deploys in the Mediterranean" ([http://www.navyrecognition.com/index.php?option=com\\_content&task=view&id=392](http://www.navyrecognition.com/index.php?option=com_content&task=view&id=392)) *NavyRecognition.com*. 16 March 2012. Retrieved 29 June 2012.
40. "FANAL 2012: French Navy Carrier Battle Group Exercise" ([http://www.navyrecognition.com/index.php?option=com\\_content&task=view&id=432](http://www.navyrecognition.com/index.php?option=com_content&task=view&id=432)) *NavyRecognition.com*. 10 April 2012. Retrieved 29 June 2012.

41. "In Focus" (<https://translate.google.com/translate?hl=en&sl=fr&u=http://www.defense.gouv.fr/marine/a-la-une/fanal-2012-le-groupe-aeronaval-remonte-en-puissance&prev=/search%3Fq%3DFANAL%2B2012%26hl%3Den%26biw%3D1366%26bih%3D511%26prmd%3Dimvns&sa=X&ei=njHuT48piPryBNH5vYYC&ved=0CFgQ7gEwBQ>) Marine nationale. 11 April 2012 Retrieved 29 June 2012. "Translated into English"
42. "Aircraft Carriers - Queen Elizabeth-Class Aircraft Carriers"([https://web.archive.org/web/20130925073115/http://www.thalesgroup.com/Portfolio/Defence/naval\\_productpage\\_CVF/?pid=1568](https://web.archive.org/web/20130925073115/http://www.thalesgroup.com/Portfolio/Defence/naval_productpage_CVF/?pid=1568)) Thales Group. Archived from the original ([http://www.thalesgroup.com/Portfolio/Defence/naval\\_productpage\\_CVF/?pid=1568](http://www.thalesgroup.com/Portfolio/Defence/naval_productpage_CVF/?pid=1568)) on 25 September 2013 Retrieved 7 January 2015.
43. "Archived copy" (<https://web.archive.org/web/20111120191448/http://www.defense.gouv.fr/dga/equipement/naval/le-porte-avions-2-pa2>) Archived from the original (<http://www.defense.gouv.fr/dga/equipement/naval/le-porte-avions-2-pa2>) on 20 November 2011 Retrieved 2016-02-09. French Ministry of Defence
44. <http://www.defense.gouv.fr/actualites/articles/livre-blanc-2013>
45. Norton-Taylor, Richard (30 April 2013). "Pressures mount on UK defence spending"(<https://www.theguardian.com/politics/defence-and-security-blog/2013/apr/30/defence-budget-trident>) *The Guardian*. London. Retrieved 7 January 2015.
46. "French carrier joins fight as US reviews anti-jihadist effort" (<https://news.yahoo.com/france-deploys-aircraft-carrier-gulf-fight-070241413.html>) *Agence France Presse* 22 February 2015 Retrieved 23 February 2015.
47. "France to send aircraft carrier for exercises in Indian Ocean"(<http://www.euronews.com/newswires/287036-france-to-send-aircraft-carrier-for-exercises-in-indian-ocean/>) *Euronews.com*. 6 January 2015 Retrieved 7 January 2015.
48. LaGrone, Sam (7 January 2015). "French Carrier to Deploy to Indian Ocean, Could Join ISIS Fight"(<http://news.usni.org/2015/01/07/french-carrier-deploy-indian-ocean-join-isis-fight>) *USNI.org*. Retrieved 7 January 2015.
49. French Aircraft Carrier in Gulf for IS Fight(<http://www.defensenews.com/story/defense/international/europe/2015/02/23/france-deploys-aircraft-carrier-gulf-fight/23909577/>) *Defensenews.com*, 23 February 2015
50. French Carrier Charles de Gaulle Bound for India After Two Months of Strikes Against ISIS(<http://news.usni.org/2015/04/20/french-carrier-charles-de-gaulle-bound-for-india-after-two-months-of-strikes-against-isis>) *News.USNI.org*, 20 April 2015
51. France To Deploy Aircraft Carrier in Anti-IS Fight in Syria, Iraq(<http://www.defensenews.com/story/defense/naval/ships/2015/11/05/france-deploy-aircraft-carrier-anti-fight-syria-iraq/75229194/>) *Defensenews.com*, 5 November 2015
52. France Sends Charles de Gaulle Carrier Against ISIS(<http://www.defensenews.com/story/defense/naval/naval-aviation/2015/11/18/france-sends-charles-de-gaulle-carrier-against-isis/75984202/>) *Defensenews.com*, 18 November 2015
53. French Carrier Strike Group to Deploy to Eastern Mediterranean with Largest Airwing Ever([http://www.navyrecognition.com/index.php?option=com\\_content&task=view&id=3247](http://www.navyrecognition.com/index.php?option=com_content&task=view&id=3247)) *Navyrecognition.com*, 16 November 2015
54. French Fighters Launch from Carrier Charles de Gaulle Against ISIS Targets in Iraq(<http://news.usni.org/2015/11/23/french-fighters-launch-from-carrier-charles-de-gaulle-against-isis-targets-in-iraq>) *News.USNI.org*, 23 November 2015
55. France Takes Command of NAVCENT Task Force 50 ([http://www.navy.mil/submit/display.asp?story\\_id=92314](http://www.navy.mil/submit/display.asp?story_id=92314)) - *www.navy.mil*, 7 December 2015
56. Lyons, Patrick, Whose carrier rivals the US Navy's, *New York Times*, August 10, 2016, p.A3
57. Licourt, Julien (30 September 2016). "Premières opérations depuis le Charles-de-Gaulle avant l'offensive sur Mossoul" (<http://www.lefigaro.fr/international/2016/09/30/01003-20160930ARTFIG00055-irak-la-coalition-debute-son-offensive-sur-mossoul.php>) *Le Figaro* (in French). Retrieved 19 October 2016.
58. Pleitgen, Fred (17 October 2016). "On board the French nuclear carrier battling ISIS"(<http://www.cnn.com/2016/10/17/middleeast/france-nuclear-carrier-mosul-iraq-isis/>) *CNN*. Retrieved 19 October 2016.
59. Tomkins, Richard. "Carrier Charles de Gaulle undergoing refit and upgrade"(<http://www.upi.com/Defense-News/2017/02/08/Carrier-Charles-de-Gaulle-undergoing-refit-and-upgrade/5721486576719/>) *UPI*. Retrieved 2 March 2017.
60. [1] (<https://news.usni.org/2018/04/30/33210>)
61. "French Aircraft Carrier Charles de Gaulle Returns to Sea Following Midlife Upgrade and Refit"(<https://defpost.com/french-aircraft-carrier-charles-de-gaulle-returns-sea-following-midlife-upgrade-refit/>) *DefPost*. 17 September 2018 Retrieved 24 October 2018.
62. "France begins deliberations on new aircraft carrier"(<https://af.reuters.com/article/worldNews/idAFKCN1MX1CE>) *Reuters*. Retrieved 24 October 2018.

## Further reading

---

- Roche, Jean-Michel (2005).*Dictionnaire des bâtiments de la flotte de guerre française de Colbert à nos jours***2**. Group Retozel-Maury Millau. p. 423.ISBN 978-2-9525917-0-6 OCLC 165892922.

## External links

---

- Official website (in French)
  - *Charles de Gaulle* aircraft carrier at Alabordache.fr (in French)
- 

Retrieved from 'https://en.wikipedia.org/w/index.php?title=French\_aircraft\_carrier\_Charles\_de\_Gaulle&oldid=875275687'

---

This page was last edited on 25 December 2018, at 04:41(UTC).

Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. By using this site, you agree to the Terms of Use and Privacy Policy. Wikipedia® is a registered trademark of the Wikimedia Foundation, Inc., a non-profit organization.